Black gold to green hydrogen: Will the Middle East's energy transition create a more international supply chain?

James Larnder
Managing Director, Aquaterrra Energy

Since the mid-twentieth century, the Middle East's oil-and-gas boom has been one of the world's defining economic success stories. Now, as we embrace a global energy transition, companies in the region are pivoting to become new forms of energy superpowers. They have no intention of relinquishing the winning positions they have built for themselves, and nor should they.

As a new-look Middle Eastern energy sector emerges, however, it may be more than the energy sources that change. There is reason to think the future is one that leans more heavily and readily on international supply chains, particularly for offshore developments, in a mutually beneficial exchange.

A tale of two transitions

The energy transition – don't let the definite article fool you; there has never been a singular one-size-fits-all energy transition. In the Middle East, there are at least two parallel transitions taking place, each equally important.

On the one hand, there is the transition to new energies. Leaders know that the region's hydrocarbon revenues won't last forever at current levels, and the region is blessed with abundant sun and wind potential for renewables. The UAE aims to generate 50% of its electricity from renewable sources by 2050 and Saudi Arabia plans to install 58.7 GW of renewable energy capacity by 2030.

Moreover, there are opportunities for the region to recreate its status as an energy exporter through new markets such as green hydrogen. The key ingredient for commercial green hydrogen is cheap and plentiful renewable electricity, which the region is primed to deliver. For this reason, some tip the Middle East to become the world's green hydrogen hub.

However, the allure of the new shouldn't blind us to the transition opportunities available with today's methods and technologies. In its Stated Policies Scenario (STEPS), the IEA does not expect oil demand to peak until the mid-2030s, and envisages fossil fuels will still account for 60% of the global energy mix by mid-century. Oil and gas – and Middle Eastern oil and gas specifically – will be with us for decades to come, but that doesn't mean that nothing will change.

The key ingredient for commercial green hydrogen is cheap and plentiful renewable electricity, which the region is primed to deliver.

The second transition is that within the existing energy sector. It is a transition to a more sustainably minded oil and gas sector that is rigorous in its operational emissions and efficiency – as well as cost. It is a global trend in the sector of course, but one that stands to make a big difference in the Middle East by virtue of the region's immense scale in the energy world.

For example, the region is increasingly getting to grips with a rising number of brownfield projects reaching the end of their expected lifespan over the next few years. While some of these will need to be retired and decommissioned, for many others the region increasingly recognises that there are compelling financial and environmental reasons to extend the life of these.

By maximising the lifespan of existing sites, the need for new ones can be minimised, providing a dual benefit of reduced costs and emissions. In the coming years, brownfield projects may even be at the forefront of the energy transition in the Middle East with the potential for CCS projects, to use these depleted reserves to store sequestered carbon dioxide.

CCS also provides a compelling argument for the effective decommissioning of wells in order to leave them open to future carbon storage applications. In this respect, working with service companies from regions such as the North Sea, where decommissioning is as common as new commissioning, could provide added expertise in ensuring previous wells are decommissioned with CCS applicability baked in from the start.

In with the new

These transitions are accompanied by a gradual one in business practices and culture wherein a generation of Middle Eastern business and engineering talent has worked on and studied energy projects all over the world. Right now, nearly 59,000 Saudi Arabian students are studying abroad, including more than 30,000 in the US and 8,000 in the UK.

These shifts open the door for new engineering and procurement approaches – in both new and heritage offshore energies.

Over time, this allows for cultural exchange and an openness to working with international businesses Together, these shifts open the door for new engineering and procurement approaches – in both new and heritage offshore energies.

For example, operators which have taken the same broad approach to drilling literally hundreds of wells offshore are now more open to alternative methods, such as deploying modular platforms installed with jack-up rigs for increased efficiency and time to first-oil and employing riser analysis techniques honed in environments such as the North Sea.

By using modular, flexible designs, these platforms can be adjusted not only to the needs of the field but can save up to 30% in steel weight over traditionally designed jackets. Local content requirements can be satisfied by using the vast array of fabrication facilities in region while also slashing transport related emissions that would be created by importing a platform or componentry from elsewhere. Emissions can be reduced even further if these materials are sourced in-region at a time where the Middle East is also being touted as a potential hub for the nascent green steel industry.

In this way, the oil and gas sector's Middle Eastern decarbonisation drive can continue, but this approach also sets the region up for success in new energies. The same smart offshore fabrication and installation approach can be applied to the region's future offshore wind sector, with potential locations in the Red Sea, Persian Gulf, and Gulf of Oman, which in turn could create new opportunities for green hydrogen production through co-location. That's not to mention the potential for carbon capture and storage (CCS) in depleted reservoirs, which will surely benefit from the novel engineering being done today in the North Sea.

Embracing change, operating efficiently and sustainably within oil and gas while investing in diversification efforts, offers a blueprint for long-term success in the region. To achieve this, operators need supply chains that can help them meet their production targets, reduce costs, maintain high safety and environmental standards, and support the development of local content and expertise. Suppliers who can deliver on these requirements will find themselves in high demand.

Find out how we can support your offshore project and get in contact

Contact us to learn more

About Aquaterra Energy

From seabed to surface, oil and gas to wind and hydrogen, Aquaterra Energy is the offshore energy industry's first choice for offshore products, systems, and projects around the world. Swift, flexible, and responsive, Aquaterra Energy's engineers and analysts create the solutions customers need, while delivering operational improvements, efficiency gains and supporting decarbonisation efforts – whatever their circumstances

Find out more: www.aquaterraenergy.com