



SPECIAL REPORT | ENERGY

Renewing energy

Increased demand for natural gas has caused the Middle East to look at alternative energy sources, with coal mines, solar energy and nuclear power all at different stages of development in the region

WORDS **PHILIP WEEMS**

A common misconception is that all countries in the Middle East have at their disposal an abundance of readily available natural gas supplies. The reality is quite different. The Middle East, which has 40 per cent of the world's remaining gas reserves, is struggling to develop enough gas to meet its own expected demands. In view of below-market pricing and muted incentives for gas sector investment, the evolution of the region's gas industry has lagged behind that of the oil sector despite significant known gas deposits. Concern over the security of gas supplies has become so serious that some governments in the region are looking beyond natural gas for solutions. These include considering more oil-fired and coal-fired power

plants in the short term, despite their less-environmentally friendly reputations, and moving towards nuclear and solar power over the long term.

INCREASED DEMAND

Burgeoning gas demand in the region has been fuelled by many factors, including gas's superior efficiency for power generation, the staggering pace of industrialisation and economic diversification throughout the GCC, and Qatar's rise as a global liquefied natural gas (LNG) supplier. Such increased domestic gas demand, delayed supply response, limited regional pipeline cooperation, and below-market pricing are all threatening the long-term security of gas supply in the region.

Notwithstanding the myth that the entire Middle East is gas-rich, the region is not homogenous. Some countries in the region, such as Qatar, Iran, Egypt and Saudi Arabia have significant gas reserves, while the UAE, Kuwait, Bahrain, Jordan and Syria, for example, are relatively gas-poor. Others, such as Oman and Yemen, have elected to export gas, which could otherwise satisfy their domestic demand for years. Further, gas reserves alone do not result in available gas supply, as evidenced by Iran's inability to become (notwithstanding the March 2009 LNG agreements signed with China) an important gas exporter despite its enormous reserves. Iraq provides another example – the current limitations on successful gas development in Iraq are clear: lack of legal foundation and focus on oil infrastructure to achieve immediate cashflow. Lastly, given that much of the region's gas supply is associated gas rather than non-associated gas, reserves are often not available to supply domestic markets or export markets because re-injection is critical to maintain current levels of crude oil production.

The UAE, which owns the world's fifth-largest gas field, but primarily has sour gas that is more expensive to extract and process, has become increasingly dependent on natural gas to fuel new power and desalination plants and to provide feedstock for new industries. In an attempt to meet domestic demand, the UAE has expanded its gas production over the past 20 years and is hoping to achieve sour gas production for future supplies. Besides domestic production, the UAE is also dependent on the one billion-plus cubic feet per day of Qatari gas it obtains through the Dolphin pipeline. In addition, Dubai in 2008 executed agreements calling for the import of LNG utilising a floating LNG terminal. Similarly, Kuwait, despite its substantial gas reserves, signed LNG purchase agreements with Qatar in 2009 and it plans to receive such LNG through the use of a floating LNG terminal. And both the UAE and Kuwait, like many other countries in the region, including Oman, have attempted to secure gas supplies from Iran; however, due to pricing issues and perhaps certain political opposition, these attempts have not been successful.

Due to the current gas situation, the countries in the region that have been developing their gas reserves successfully are now experiencing development issues. In fact, even Qatar, which is the only Arab country not dealing with security of supply issues and the world's largest exporter of LNG, is so concerned with



FAR LEFT:
TAWEELAH
DOLPHIN ENERGY
GAS STATION,
ABU DHABI

LEFT: MASDAR CITY

meeting domestic needs and ensuring that it does not damage reservoirs through over-production that it has placed, and extended, a moratorium on further development of its gas resources from the North Field until at least 2012. Likewise, last year Egypt placed a similar ban on new export projects.

PROJECTS SHELVED

The region's gas shortage is also adversely affecting the aluminium and petrochemical industries, which rely on cheap feedstock derived from gas. Several such large-scale projects have been put on hold due to the lack of gas, while other gas-intensive downstream projects have been shelved indefinitely. For example, in Saudi Arabia dozens of petrochemical projects have been put on hold or cancelled in the past two years as a result of insufficient allocation of gas-based feedstock. The kingdom's inability to implement a successful non-associated gas exploration programme since 1999, combined with reduced associated gas output due to corresponding Opec oil supply cuts in 2009, have put additional pressure on Saudi Arabia.

The Middle East's supply shortage is not entirely due to a lack of resources, but also lack of investment in vital gas infrastructure. Due to subsidised prices and price settling,

gas sold in the Middle East is often up to ten times cheaper than other regions. In Saudi Arabia, domestic users are charged around US\$0.75 a million British thermal units (BTUs), while international prices in the past year have ranged from US\$6 to US\$20 a million BTUs. Likewise, the UAE purchases pipeline gas from Qatar at around US\$1.30 a million BTUs. As a result of such forced artificially low regional pricing, international and

"THE MIDDLE EAST'S (GAS) SUPPLY SHORTAGE IS NOT ENTIRELY DUE TO A LACK OF RESOURCES, BUT ALSO LACK OF INVESTMENT"

regional companies are less willing to invest in exploration and production for non-LNG supplies and producers have little incentive to sell their gas on the domestic market when they can secure much higher prices elsewhere. Although Middle East gas prices will eventually rise towards global levels, as they have even in India and China, the timing of that reality is less than certain.

The current economic downturn and lower oil price environment are affecting gas sector investment. The world financial turmoil has caused governments to reconsider

additional energy infrastructure projects. Given sharply growing inherent gas demand, decisions not to invest in gas development in the Middle East due to

economic uncertainty are likely eventually to result in an even greater gas deficit and hinder economic progress.

With much of the Middle East short on gas, countries in the region are pursuing short-term solutions to solve these issues. As a short-term solution, for example, some countries in the region, including Kuwait and Saudi Arabia, are consuming more oil for electricity generation. In fact, Saudi Arabia, home of the fourth largest gas reserves in the world, placed a moratorium on new gas-fired power plants and announced that any future demand will be met by oil-fired power plants instead. Additionally, many Middle East countries are exploring more coal-fired power projects to meet power needs in the short term. Both the UAE and Oman are conducting studies for billion dollar coal-fired power plants in the hope of addressing predicted severe electricity shortages due to gas supply issues; in fact, Ras al Khaimah, which is developing a coal mine in Indonesia, announced in March 2009 that it will build a coal-fired power plant in the next two years.

LONG-TERM SOLUTIONS

The growing energy demands of the region have also raised the prospect of nuclear and/or solar energy projects as long-term solutions. The UAE recently initiated preliminary negotiations with potential suppliers of nuclear technology and fuel, and the Abu Dhabi Future Energy Company, Masdar, is carrying out a design study for a major solar power plant. However, while progress is being made by countries such as the UAE toward energy self-reliance, a perceptible shift in the region's fuel mix will take years to materialise and will not help address immediate shortfalls. Therefore, nuclear and/or solar energy are not viable replacements for gas in the foreseeable future and increasing supplies of gas are, in reality, key to a secure energy future in the short or medium term.

The pace of global change is increasing, making it more difficult to predict how the region will deal with its natural gas crunch. All eyes will be on how Middle East gas development requirements are addressed in the coming years. ●

CONTRIBUTOR PHILIP WEEMS IS CO-HEAD OF THE GLOBAL ENERGY PRACTICE AT THE DUBAI OFFICE OF LAW FIRM KING & SPALDING