

Gas and renewables: partners or adversaries

INTERNATIONAL oil companies claim gas and renewables are ideal bedfellows, while many environmentalists believe the rise of gas, particularly shale gas, will delay the world's shift away from fossil fuels.

There has been a lot of talk across the EU about the need for gas to provide back-up generation for intermittent renewable energy sources, particularly wind and solar.

But "as Germany's experience clearly demonstrates, this factor has been ... exaggerated by opponents of renewable energy", Jonathon Porritt, a prominent UK environmentalist and founder of non-profit sustainability consultancy Forum For The Future, told *Petroleum Economist*.

Still, clearly, until eagerly anticipated breakthroughs in storage technologies occur, there is no reason why – for a short period of time – renewables and gas should not co-exist, Porritt added.

Steve Sawyer, secretary general of the global wind energy council, "does not think they are inherently either partners or adversaries", as all generation technologies simultaneously compete, coexist and cooperate.

However, he told *Petroleum Economist*, that they are often adversaries when lobbying governments regarding energy policy for a variety of reasons in different markets.

Highlighting this aspect of the debate, a recent story in UK newspaper *The Guardian** claimed major fossil fuel companies and energy utilities have used their financial power to take control of key renewable energy lobby groups in Europe in an effort to slow the continent's transition to clean energy.

But putting aside the politics, it's clear that gas, whether from conventional or unconventional sources, will be a critical bridge to a low-carbon economy, as it is the cleanest burning fossil fuel. Gas emits up to 60% less carbon dioxide when burned for power generation compared with coal.

A decade away

Crucially, a market needs to be designed that will lead to zero-emission power systems. Once that is an agreed goal, gas will play a necessary role in some markets, in some cases for many decades. "But until we have that agreement, then we'll all be fighting for market share," added Sawyer.

With cost-effective utility-scale electricity storage solutions for renewables at least a decade or more away, fossil fuels will continue to play a significant role in providing reliable electricity. Even thereafter, storage deployment could take decades.

During the transition to an entirely renewable energy future, which could take 30 to 50 years, gas will be the most reliable and versatile partner to renewables, Paddy Padmanathan, who leads Saudi Arabia-based power developer Acwa, said.

And perhaps the conflict between gas and renewables is overstated. Acwa's latest deal for a utility-scale photovoltaic solar power plant in Dubai was nailed down at below \$0.06 per kilowatt hour (kWh) – \$0.03 cheaper than gas.

"We have come to the conclusion that renewable energy is cheaper than gas in Dubai. That is today's reality in the Middle East, a region awash in gas and oil," Dolf Gielen, director of the innovation and technology centre at the International Renewable Energy Agency (Irena), told *Petroleum Economist*.

Given the falling costs of solar power, renewable energy will march on regardless, while gas will get used more where it can compete with alternatives such as coal, added

Padmanathan. Even in the US, where surging shale-gas production has weighed heavily on domestic gas prices, in many places utility-scale wind and solar is still a more attractive economic proposition, according to a study by the investment bank Lazard.

Without subsidies, the bank's analysis shows, solar costs about \$0.072/kWh at the low end, with wind at \$0.037/kWh. This compares with natural gas at \$0.061/kWh at the low end and coal at \$0.066/kWh.

Chris Nelder, an independent US-based energy analyst, said that nearly every study he has seen on how renewables can obtain a large share of the power generation market assumes that gas will be used for dispatchable supply balancing. In the US, Nelder guesses that the rise of shale gas may have dampened, rather than delayed, the progress of renewables on the grid, but not elsewhere in the world.

The main effect of increasing shale gas production has been the replacement of coal-fired power with gas in the US.

"I don't think we've really seen the point yet where we're locking in gas dependency to the exclusion of renewable energy," says Nelder.

Gas plants are easily turned off and on, so where renewable energy generation is high, it's often the gas plants that power down first.

Generally, gas more often displaces coal and nuclear than defers investment in renewable energy.

And given the rapid pace of technological innovation, which is helping drive down costs, many of the major banks expect that within the next five years renewable energy will generally be the cheapest way to add a megawatt of new capacity in most of the world.

At that point, renewable energy will likely displace any new investment in coal, if stronger carbon policies are introduced, and nuclear, because of its higher cost. But, Nelder says, renewables will not displace gas, as it is a flexible fuel.

"It's really more of a zero-sum game now ... not renewable energy fighting with gas to provide new generation capacity, but rather both competing with and pushing out existing conventional capacity," he added.

Ultimately, though, if the world is to solve the issue of climate change, fossil fuels need to be replaced. The bulk of the transition to renewable energy is taking place within the power sector, which only makes up one-quarter of final global energy demand. Other end-user sectors, such as heating (for buildings), industry and transport, need more attention, Irena's Gielen says.

Gas can play an important role in the energy transition in these sectors, however energy efficiency and renewable energy must play a key role and should feature prominently in the climate talks later this year, he added.

Porritt says that given the increasingly urgent need for swift decarbonisation of our economies, we need to see at least twice as much investment going into renewables every year – so there could be a real problem if capital expenditure continues to flow into unconventional gas and oil.

But that looks unlikely. With Saudi Arabia intent on squeezing the US unconventional oil industry, all the signals point to consolidation and value destruction rather than big new investments into the industry as a whole.

"And where unconventional gas can be seen to be helping kill off thermal coal for power generation, that is at least a small step along the road to the kind of deep decarbonisation we need," Porritt added. **DE** ●

*Read the article at tinyurl.com/nx2qwjw