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Big data makes its presence felt across the energy industry

q&a Amy Myers Jaffe

A transformation is taking place that will change the way the business works sooner than many think, says Amy Myers Jaffe, executive director of the energy programme at the University of California, Davis.

How long is the current slump in energy prices going to last and what impact is it having on the oil and gas industries?

The prolonged upcycle in oil prices that lasted from 2002 to 2014 was supported by three major theses that no longer prevail: peak oil, unbridled Chinese industrial growth and rising upstream oil and gas exploration service costs. Firstly, the unconventional drilling technology breakthrough has ended concerns about a structural shortage to remaining oil and gas reserves. The changed economic outlook for China and other emerging markets, combined with emerging carbon policies in the US and China, is prompting some larger oil and gas companies to reconsider the viability of expensive mega-capital exploration in long-time horizon projects such as the Arctic, Caspian and even some locations for deepwater. Increasingly, oil and gas companies are seeking capital flexibility to be better positioned for short term merger and acquisition opportunities or to shore up balance sheets.

What about the impact of shale going forward?

The industry is learning to tap oil and gas from source formations with new cost-effective approaches, ending concerns about future shortages. Still, shale is only a small percentage of global world crude oil supply, leaving open the possibility that sustained low oil prices and ongoing conflicts in the Middle East could eventually translate into cumulative losses in new oil production from traditional oilfields over time, tightening markets cyclically as economic growth resumes in the medium to longer term.

How will action on climate change affect the outlook?

Currently, climate policy is being implemented piecemeal in the United States and globally, and that, combined with current low oil and natural gas prices, has increased the level of risk exposure for investment in future energy production capacity. The challenge for industry is that without regulatory

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certainty, it is hard to know how to value the risk of carbon regulation in the future as part of the next 10-year investment cycle, increasing the risks of future supply dislocations and extreme price volatility.

What will be the greatest technological disruptor to hit the oil and gas industry in the coming five years?

Big data technologies are just beginning to be integrated into all aspects of the oil and gas business. Big data satellite imagery is already transforming the accuracy of market forecasting by providing real-time information about oil supply movements, logistics and storage. Some day, advances in data collected and stored about urban traffic congestions and vehicles miled travelled will allow more accurate assessments of oil use in real time, eliminating the high level of uncertainty in the market about short-term oil use trends. In the upstream industry, big data and artificial intelligence technologies will allow more advanced analysis of oil and gas well operations that can be used to improve productivity and enhance recovery rates of oil and gas, lowering costs.

What has been your greatest learning from building a zero net energy community on campus at UC Davis?

There is a general scepticism inside the business community about the scalability of carbon-saving technologies and lifestyles. The University of California Davis West Village

community is a living laboratory built by a commercial developer that demonstrates the commerciality of a diverse range of solutions to energy and fuels, vehicles, water, smart grid and distributed electricity, heating and cooling. I think the greatest lesson from the West Village is that not only do these technologies work and meet an increasing demand for climate-friendly products and living environments, they can be deployed at costs that are in line with business as usual commercial real estate development. As Leed [Leadership in Energy and Environmental Design] certification and net zero becomes an increasingly desirable feature of lifestyle and building, investors in less sustainable infrastructure will become second tier. The lesson is that change is coming and will influence the structure of energy markets sooner than many in traditional industries believe.

If you could achieve one thing in Abu Dhabi this week during the summit, what would it be?

We are bringing together two Councils: The Future of Oil and Gas and the Future of Investing. This is an important dialogue. Markets are beginning to discount future losses of value for coal assets and coal-fired power stations in certain major markets earlier than might be “physically” justified by current energy sales. Calls for a carbon price by some energy firms and financial institutions is more than greenwashing but rather based on recognition of the capital challenges that might face the energy and utility industries if an orderly transition for future energy scenarios is not planned earlier rather than later.

*** Courtesy WEF**