Chapter 11

Investing in energy

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Electricity utilities, a key sub-sector of the global energy sector, are often considered as one of the purest infrastructure plays: If load goes down or costs go up, rates are adjusted and companies earn the same regulated revenue stream year after year with a great degree of predictability and stability.

These days, though, the energy sector overall is anything but stable. On 14 August 2003 an estimated 10 million people in the Canadian province of Ontario and 40 million people in eight US states were left without any electricity for a whole day. At the time, this was the worst blackout in history.

Record volatility in commodity prices, rising building costs, scarcity of capital and regulatory uncertainty have made it an increasingly risky place to invest. As painful evidence of this, the credit spread between 30-year US utility bonds, measured by the Bloomberg Utility Index, and 30-year US treasuries ballooned to nearly 300bps in October 2008 – levels unseen since May 2003, when a record wave of credit downgrades was being made to the utilities sector.[1]

To cope with this, investors in the energy sector should anticipate and plan for the impacts of five key trends that will drive risks and returns in the sector in the near term. These vary from region to region, but no market will be entirely immune from the following:

- the eventual return of leverage to the energy sector over the next one to three years;
- the need to face deferred capital expenditures that can no longer be avoided;
- ramped-up regulatory pressures for cleaner energy sources;
- the continuation of wide fluctuations in commodity and raw material prices;
- vertical integration by strategic players hoping to secure upstream assets.

This chapter will first provide a brief overview of the key sub-sectors within the global energy sector, their respective deal flow and then examine each of these five drivers of change in greater detail.

Overview and outlook

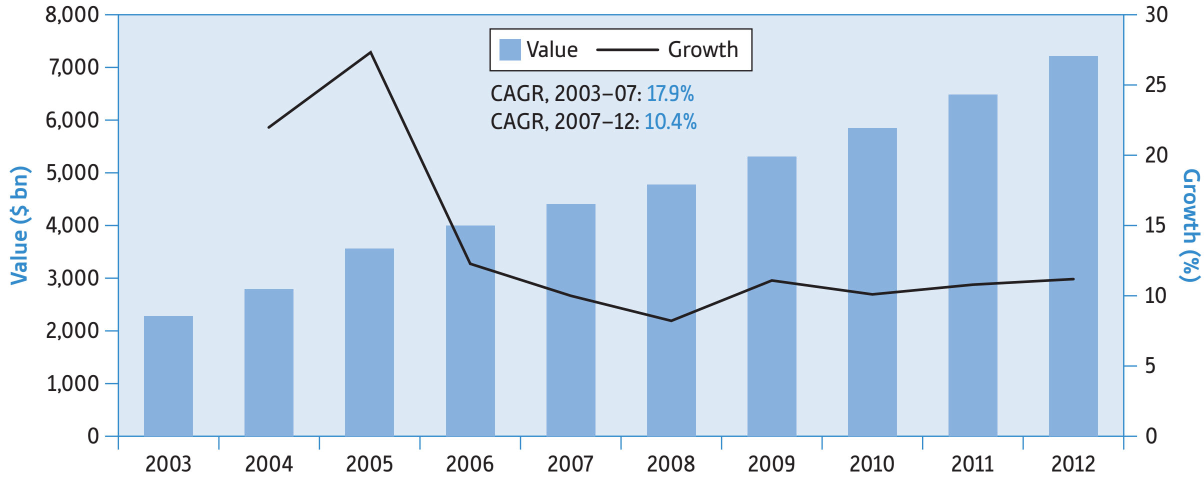
The global energy sector can be broadly broken down into two main sub-sectors: oil and gas and power generation and distribution, (along with related equipment and services providers). As measured by market research provider Datamonitor, excluding energy equipment and services providers such as Schlumberger and Halliburton, which account for about 5 percent of the sector's revenues, the global energy sector earned revenues of $4.3 trillion in 2007.[2] (See Chart 1.)

Of that, the largest sub-sector remains the global oil and gas market, which generated total revenues of $2.3 trillion in 2007, 73.5 percent of which came from oil and the remainder from natural gas.[3] This figure takes into account the total value of oil and gas products consumed worldwide, rather than the value of sales generated at each step of the industry value chain – upstream (exploration and production of oil and gas), midstream (oil and gas transport and storage) and downstream (refining and retailing). By 2012, the value of the global oil and gas sector is projected to grow at a compound annual growth rate (CAGR) of 13.6 percent to reach $4.3 trillion.[4] (See Chart 2.)

By comparison, the US market comprised $716.1 billion of the 2007 total oil and gas revenues. That figure is expected to grow to nearly $1.3 trillion by 2012, representing a CAGR of 12.3 percent.[5]

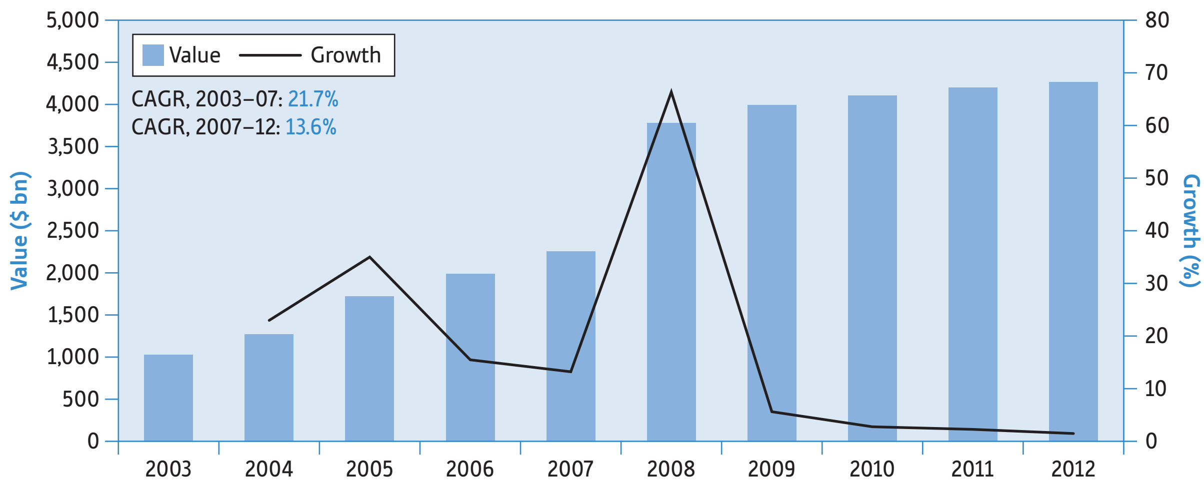
Electricity power generation, distribution and retailing forms the other key pillar of the energy sector. Measured by the global sales of electricity to all end

Chart 1: Global energy market value – historical and projected, 2003–12



Source: Datamonitor.

Chart 2: Global oil and gas market value – historical and projected, 2003–12



Source: Datamonitor.

users, this sector is expected to remain strong, growing from \$1.4 trillion in 2007 to \$2.6 trillion by 2012 – a CAGR of 12.5 percent.[6] These figures include sales by both electricity retailers, or companies that buy electricity on the wholesale market and sell it to end-users, as well as companies that own and operate power generation facilities, such as Italy's Enel, France's EdF and Germany's E.ON. Both retailers and owner-generators are classed as utilities, with utilities further subdivided according to the kind of energy they provide, such as natural gas (gas utilities) or electricity (electricity utilities). Depending on their level of vertical integration, they may be involved in electricity generation as well as other elements of the electricity supply chain such as transmission, storage, distribution and retailing.

By comparison, the US market comprised $321 billion of the 2007 total global sales of electricity. That figure is expected to grow to $504.7 billion by 2012, representing a CAGR of 9.5 percent. [7]

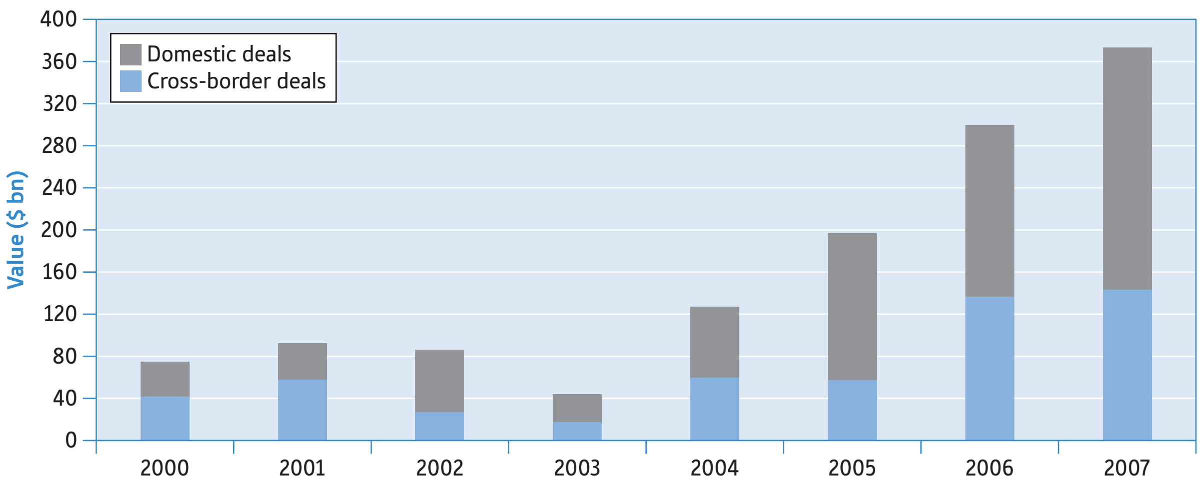
Among electricity utilities worldwide, coal remains by far the largest source of power generation, accounting for about 41 percent in 2006, and is expected to grow to 44 percent of total world power generation by 2015, according to the International Energy Agency.[8] Natural gas (20.1 percent), hydro (16 percent), nuclear power (14.8 percent) and oil (5.8 percent) rounded out the other main sources of electricity generation in 2006, with renewable sources accounting for the remaining 2.3 percent. The US largely mirrors these global figures, with 49 percent of electricity generation coming from coal, 20 percent from natural gas and 19.4 percent from nuclear sources in 2006.[9] US power generation from hydro, by contrast, was about 7 percent. All inclusive, the energy sector is forecast to grow at a CAGR of 10.4 percent to $7.3 trillion by 2012.[10] Although this is a deceleration from the 17.9 percent CAGR for the industry as a whole between 2003 and 2007,[11] overall demand for energy is expected to continue to increase at an annual rate of 1.6 percent per year between 2004 and 2030, according to the World Energy Council's 2007 Survey of Energy Sources. Furthermore, over 70 percent of that demand will come from the developing world with 30 percent alone coming from China.[12]

Energy sector deal flow

Considering the above, the global energy sector is clearly a vast space with very different business activities that attract very different kinds of investors. For example, in the electricity and gas utilities sector, deal-making activity is dominated by large, often state-owned utilities since such companies are heavily regulated and subsidised by their local governments. For example, the total value of electricity and gas utilities deals by strategic and private equity investors reached $372.5 billion in 2007 (see Chart 3). Although up 25 percent over the record $298.8 billion set in 2006 and 89 percent over 2005 levels, only $83 billion of the 2007 total was deployed by private equity firms. Still compared with $52 billion in 2006, that figure only continues to climb, with the US – where deregulation has made electricity and gas utilities more accessible to private equity buyers than Europe – leading the way.

In 2007 alone, the $43.8 billion buyout of Texas-based gas and electricity utility TXU, led by Kohlberg Kravis Roberts and TPG, became the largest private equity

Chart 3: Electricity and gas deal value by year, 2000–07



Source: PricewaterhouseCoopers, *Power Deals 2007 Annual Review*.

deal on record.[13] The Babcock & Brown-led $12.5 billion takeover of Western Australian utility Alinta in March 2007 and a Macquarie-led consortium's $7.4 billion bid for Puget Sound Energy, Washington state's largest and oldest energy utility, round out the biggest deals announced in 2007.

The oil and gas sector, by contrast, is more open to private equity investment, especially in the US, where the vast majority of upstream, midstream and downstream oil and gas infrastructure is privately owned. PricewaterhouseCoopers noted in its 2007 review of oil and gas deals that of the $292.2 billion of total deal value in the sector, "the extent of private equity investment in the top fifty deals is something that has not been seen in the sector in recent years."[14] By contrast, large national oil companies continue to dominate oil and gas deals in countries like China, India and Russia, though they are increasingly becoming competitors for assets outside their home territories.

Private equity deal activity in the oil and gas sector in 2007 was spearheaded by Apollo Management's announced $10.6 billion acquisition of US chemicals group Huntsman as an add-on to its portfolio company Hexion Specialty Chemicals – a deal that fell apart in 2008 and resulted in a $1 billion break-up fee being due to Huntsman from various parties to the transaction.[15] On the strategic side, Texas-based chemical company Lyondell's $20billion bid for polypropylene maker Basell stood out as the biggest deal of 2007.

Private equity investors allocate capital to deals in the energy sector from many different kinds of funds. Infrastructure funds interested in stable, cash-yielding assets invest in the sector, focusing their energy investments on power generation plants, transmission and distribution companies and similar assets (for example, Macquarie Infrastructure Partners). More specialised, 'power funds' invest primarily in power generation assets (for example, Tenaska Power Funds) while 'energy funds' more broadly encompass a wider variety of energy-related assets and related service providers in electricity generation as well as the upstream, midstream and downstream oil and gas sectors (such as First Reserve). These may also encompass renewable or cleantech investments in non-fossil fuel-based energy sources and technologies, though recent trends have been for private equity firms to raise separate funds for these kinds of investments.

Private equity fundraising for funds across these categories has generally remained strong. In August 2008, Frank Ingrassia, former head of municipal finance at Goldman Sachs in New York, estimated that private equity firms had $50 billion of power funds, whose buying potential exceeded $100 billion.[16] And looking forward, figures from placement agent Probitas Partners[17] suggest that the there are nearly $30 billion of private equity energy funds expected to come to market during the next 12 months across all energy sub-sectors (including renewables, power, oil and gas).

Topping Probitas' list was Connecticut energy heavyweight First Reserve's marketing of its 12th energy fund, targeted at $12 billion and hard-capped at $16 billion,[18] which proved to be the most ambitious fundraising effort of 2008. If successfully raised, it will be the largest fund ever raised for the sector. Other notable fundraisings included Texas-based Quantum Energy Partners' close on $2 billion towards its $2.75 billion Quantum Energy Partners V and Omaha-based Tenaska Capital's $2.4 billion final close on its second power fund, TPF II.

Whether energy deals and fundraising will continue at such a record-making pace will depend on several factors going forward; these are examined below.

Leverage

The severe credit crisis that began in August 2007 has reduced the banks' willingness to provide acquisition debt to every sector, including energy and utilities. All of the biggest deals that contributed to the 2007 record deal volumes in the sector featured debt arranged prior to the outbreak of the credit crisis; going forward, banks have become much more selective in lending to the sector.

A key reason is that utilities are not immune from the knock-on effects of the credit crisis. Industry trends toward deregulation and market liberalisation have left many utilities highly leveraged and more exposed to trading activities; they are also experiencing reduced demand from consumers. Most at risk are utilities that depend on access to credit markets to finance their trading activities, which require them to hold collateral against their positions. The companies that have not been able to secure credit have had to liquidate their positions, often at steep losses. Others that have moved from long-term power purchase agreements to spot pricing are also particularly vulnerable in the current economic slowdown.

These concerns have also reverberated with regulators whose worries about the use of 'double leverage', or the use of debt by both the parent company and the utility which it acquires, have only become stronger. In recent months, the $7.4 billion Macquarie-led buyout of Puget Sound Energy has faced sharp criticism from Washington state's Attorney General Public Counsel because of its use of double leverage. The counsel has argued that the Washington State Utilities and Transportation Commission should not approve the deal on the grounds that it exposes Puget's customers to excessive financial risk due to the $1.6 billion of additional bank debt that the utility would have to borrow in addition to its existing debt. The commission is still widely expected to approve the deal, but increased regulatory scrutiny of the use of double leverage will likely be a mainstay of the industry in the aftermath of the credit crisis.

Still, most energy deal arrangers, from Paul Smith of Tenaska Capital Management [19] to George Bilicic, global head of power, energy and infrastructure at investment bank Lazard,[20] widely agree that once credit begins to flow more easily, it will do so first in the energy and utilities sector thanks to its long-standing reliance on stable and predictable long-term contracted cash flows.

Whether this happens, as optimists predict, in the second half of 2009 or, as pessimists would have it, in early 2012, remains to be seen. In the meantime, there remains a healthy capacity for players in the industry to sell to the unlisted space. This sector continues to see strong deal flow although deals are being completed with more conservative gearing levels, in the hope of refinancing when credit markets finally open again.

Capital expenditures

While tight credit markets may not necessarily constrict deal flow for private equity firms active in the sector, it does have more serious repercussions for the industry's ability to finance capital expenditures going forward.

Before the onset of the credit crisis, investor-owned utilities in the US had ambitious plans to spend more than $1 trillion on new power plants, transmission lines and power grid maintenance over the next two decades.[21] Instead, many electricity utilities, such as Florida Power and Light, which trimmed its 2009 capital expenditure plans by 25 percent to $5.3 trillion, have put such spending on halt due to tight credit markets.[22]

However, they know they cannot do so for long. After an era of chronic under-investment in capital expenditures, many electricity utilities can no longer put off investing in new generation, upgrading and expanding existing facilities and installing environmental retrofits on others. The result is a seemingly unavoidable volume driver for investment in energy infrastructure, particularly in the US, where energy consultancy Cambridge Energy Research Associates (CERA) estimates that over the next 15 years electricity utilities will need to make capital expenditures approximately equal to their current total cumulative asset value of $900 billion.[23] The Edison Foundation, an electricity research group, estimates that electricity utilities will need to make capital investments of at least $1.5 trillion through 2030 to meet the country's electricity needs.[24] This daunting level of capital expenditure is already creating an unquenchable thirst for external capital – another boon for private equity investors in the sector. It is also likely to drive rate increases for regulated entities which are unable to meet the expenditures from existing cash flows.

Either way, the ability to secure capex lending facilities will be crucial for private equity investors going forward, as funding such massive capital expenditures purely out of equity would lead to exceptionally poor returns. As such, the private sector's ability to meet the daunting capital expenditure challenges in the electricity utilities industry is closely inter-linked with the return of credit markets.

Regulatory pressures

Capital expenditure budgets are not being driven exclusively by past under-investment. Increasingly, markets are pricing in the costs of potential greenhouse gas emissions regulation, which if implemented would redefine the energy landscape worldwide.

This impending regulation is already a large consideration for power utilities chief executive officers. PricewaterhouseCoopers' annual Utilities Global Survey 2008 highlighted that the two major developments in power markets in the next five years globally will be encouraging renewable energy and regulation of emissions. However, these two regulatory issues were nowhere near the most pressing in PricewaterhouseCoopers' survey four years ago.[25] So the question is not if carbon regulation will be passed, but rather when it will be passed.

On this point, of course, there remains great uncertainty. But considering the complexities of designing and implementing an equitable system to address carbon emissions by power plants, as well as the fact that the process will undoubtedly be extremely political and hard-fought, most industry observers do not expect big changes on the legislative front for a couple more years. Van Ness Feldman, an environmental and energy law firm, for example, sees potential for federal greenhouse gas legislation to be enacted in 2010, becoming effective in 2014.[26]

Even greater concern surrounds how eventual carbon legislation will be structured and what costs it will impose on the industry. For the time being, industry observers see some form of a cap-and-trade system – whereby carbon emissions producers are limited to a certain amount each year and can trade their surplus allocations to others who have exhausted their allocation – as the most likely outcome. However, much uncertainty remains over how such a system would be implemented and, more importantly, how the industry would react to it. In the same PricewaterhouseCoopers 2008 survey of utilities CEOs, respondents saw the implementation of a specific longer-term reduction target as the most important attribute in a cap-and-trade system, followed by consistent standards for monitoring, reporting and verification. On the other hand, even if granted the ideal cap-and-trade system by regulators, it is doubtful that it would have its intended consequence of encouraging utilities to retrofit their facilities and cut emissions: nearly 40 percent of respondents also cited geographical repositioning as their response to regulatory challenges.

This suggests that until a degree of global harmonisation emerges between US, EU and other carbon legislation, electricity utilities will likely seek geographic advantages that lower their cost basis. It is easy to see why as factoring in a carbon policy scenario into the Edison Foundation's projected capital expenditure spending through 2030 would add nearly $500 million to the base case of $1.5 trillion. Given this enormous cost, regulatory changes will likely remain one of the most pressing issues for utility CEOs and dealmakers in the coming years.

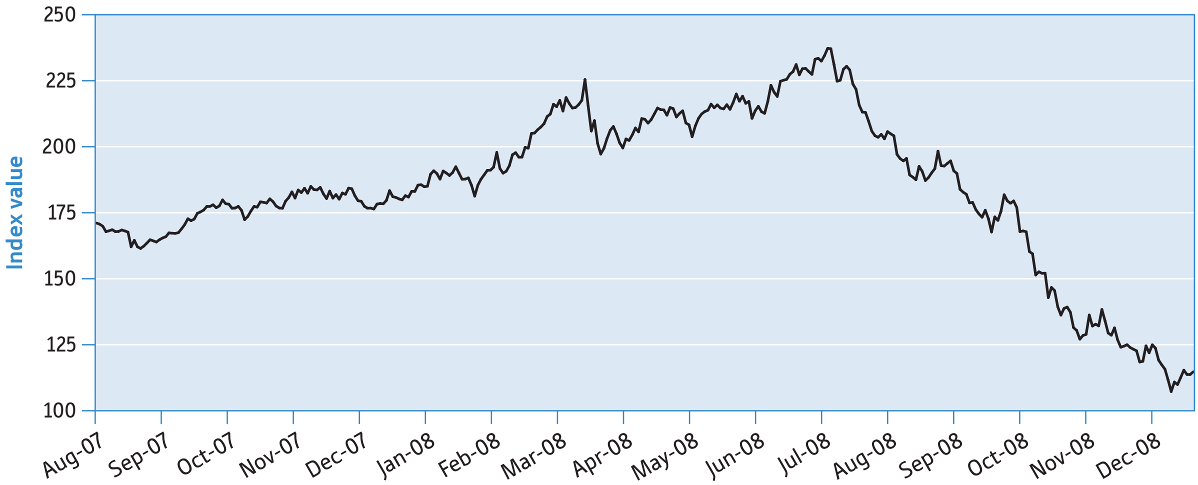
Commodity and raw materials price volatility

Another factor adding uncertainty to capital spending projections for energy executives is commodity price volatility. In this regard, 2008 has been a record year, in which prices of every commodity including oil, coal and natural gas, as well as raw materials, including copper, steel and others, recorded record volatility. The broad-based Dow Jones AIG commodity index summarises this well (see Chart 4) – it soared 27 percent in the first half of the year and has fallen 47 percent since its peak in early July 2008.[27]

This poses three sets of difficulties for investors in the energy space.

First and foremost, a more uncertain market for commodity prices means a more uncertain earnings stream

Chart 4: Dow Jones AIG Commodity Price Index



Source: Google Finance.

for companies that trade in oil, natural gas and other energy commodities. For gas-fired and oil-fired generators, their profitability will likewise exhibit higher volatility as they may have to purchase their inputs at much higher or lower prices than expected. But in a year that has seen the price for a barrel of oil rise above $147 and fall more than $100 shortly thereafter (a barrel of Brent Crude Oil was trading at $44.6 on 15 December 2008), buyers and sellers have little assurance that they are locking in attractive prices with their hedging programmes.

When combined with mark-to-market accounting, this potential for earnings volatility becomes even higher. Energy Future Holdings (EFH), the parent company of Texas utility TXU, which last year was bought out by a consortium of private equity investors that included KKR, TPG and Goldman Sachs, provides a perfect example. In the second quarter of 2008, the company posted a record net loss of $3.3 billion which it blamed primarily on the application of mark-to-market accounting procedures on its 2008-2014 fuel hedging programme. In the third quarter of 2008 it offset those losses with a consolidated net income of $3.6 billion, buoyed by nearly $4.0 billion in unrealised post-tax mark-to-market gains on the same fuel hedging programme. EFH is not alone; going forward, many utilities will find greater volatility in their earnings thanks to commodity price volatility combined with the requirements of mark-to-market accounting.

Commodity and raw material price spikes will also put further margin pressure on energy companies that rely on growth through capital expenditures. According to the HIS/CERA Power Capital Cost Index for North America, capital costs for new power plants were 130 percent higher in 2008 than in 2000 and 82 percent higher when nuclear facilities are excluded.[28] CERA's capital cost indexes for the upstream and downstream oil and gas sectors show similar upward trends despite weakening economic trends. If rising capital expenditure costs erode the benefits of rising power prices, investors will be further disincentivised to put more capital toward expanding and maintaining the energy sector's infrastructure.

Consolidation and vertical integration

As global competition for resources intensifies, more and more companies are expecting to integrate vertically upstream to secure their supplies of fuels. It is telling that in the PricewaterhouseCoopers annual Utilities Global Survey 2008 more than one-third (37 percent) of power utility executives said they expected to complete an upstream acquisition within the next five years. A further 51 percent envisaged upstream integration through direct investments over the next five years, versus only 33 percent in 2007. In either case, the trend is clearly towards upstream integration.[29]

It would be premature, however, to judge this as a great boon for upstream mergers and acquisitions activity by utility companies. As PricewaterhouseCoopers noted, they will face intense competition from the big oil companies in securing equity stakes in upstream assets. State-owned and national oil and gas conglomerates will likewise be reluctant to cede control of such assets. Instead, with such intense competition, strategic alliances or joint ventures may prove a more fruitful way to secure upstream supply chains.

Conclusion

It remains to be seen which of these challenges will strengthen and which, if any, will fade, and how the industry will adapt to its ever-changing circumstances. But the trend is unmistakably for more investment in energy infrastructure worldwide, with growing interest from infrastructure funds, power funds and energy funds eager to deploy capital into the sector. And even as investor appetite grows, the world's staggering energy needs grow still faster, yielding a fundamental supply and demand dynamic that will continue to provide solid investment prospects in the near future.

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