

ROUNDTABLE

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# ENERGY AND UTILITIES SECTOR



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# ENERGY AND UTILITIES SECTOR R O U N D T A B L E



## ENERGY AND UTILITIES SECTOR

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The economic crisis has forced a new age of dynamism on the energy sector, framed by environmental issues and concerns about energy security. While renewables are starting to enter the mainstream, shale gas is becoming increasingly lucrative, however there is debate as to whether the 'nuclear renaissance' has, or will ever arrive.

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**Holzschuh: What major trends have you witnessed in the energy & utilities sector over the last 12 months?**

**King:** Today's business environment is the most turbulent and uncertain that I've encountered in my professional career. Government policy is having a particularly disruptive effect on the industry, and it is highly uncertain whether those policies are transitory or permanent. Coupled with volatile commodity prices and the economic recession, this is a particularly challenging time. Demand is depressed by the recession, and efforts to curb its long-term growth through energy efficiency and smart metering may have real impact. While the near-term need for new capacity in the developed economies is quite low, government policy is mandating additions of expensive new renewable capacity and in some cases aggressively promoting alternative generation sources.

**Vince:** It is hard to imagine a more dynamic time in the energy industry, especially as we move toward what many believe will be the new energy economy globally. One game-changer in the US has been low natural gas prices due to the abundance of domestic reserves including shale gas. Another trend is the continued decline of coal new builds. Low natural gas prices, increased awareness of the environmental impact of coal, difficulties with the near-term commercial viability of Carbon Capture and Sequestration (CCS) technology, and new EPA regulation targeting GHG, SO<sub>2</sub>, and NO<sub>x</sub> emissions have been hard on the coal industry. The past year has been complex for renewables too. Failure of the US Congress to pass comprehensive legislation to price carbon and provide long term incentives for the development of renewables, combined with low natural gas prices, has hampered the level of development that was anticipated in this sector. A final trend from the past year is the increasing role of energy efficiency initiatives and demand side management in reducing our energy consumption and associated GHG emissions. Look for this trend to increase exponentially in coming years.

**Bryden:** The impact of the so called 'shale gas revolution' cannot be understated. It is a game changer. The combination of new horizontal drilling and high pressure fracturing techniques have massively expanded the supply of natural gas reserves and dramatically pushed down prices. There is an emerging view that, at least in the short run, the impact of the shale gas revolution may be most significant in North America where a unique combination of a highly integrated gas transportation system, a sophisticated and flexible service sector, government policy, and geological factors have triggered explosive growth in the sector. The knock-on effects are pervasive. Many large players such as Talisman and Encana have either divested themselves of non-core conventional reserves to focus on shale gas, or in the case of some of the majors such as Exxon, have returned to make major investments in on-shore North American operations after many years of focusing on the frontiers. The North American LNG business has similarly been deeply affected with many projects in trouble. The Alaska pipeline and the Mackenzie pipeline are under threat or, some argue, already off the table for the foreseeable future as major reserves are opened up much closer to markets. The availability of cheap long-term supplies of gas is changing the equation in the power generation sector. Additionally, conversion of certain elements of the North American transportation fleet to natural gas is becoming a real possibility.

**Wardlaw:** Even in Russia, we have seen a lot more uncertainty over the effects that shale gas development may have on the

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CLINTON A. VINCE

multi-billion dollar gas projects. Although there is some cynicism as to whether shale gas really is a 'game-changer', the fact is that the addition of shale gas as a variable has made it increasingly difficult to agree on a forward price curve for gas, which makes undertaking long-term project development now even more risky. We expect, for example, that international oil companies will hold off further big LNG development.

**Haslauer:** One major trend has been the recovery of the energy & utilities sector from the economic and financial crisis. 2009 showed that growth rates of the sector are closely linked to macroeconomics, especially GDP development. In many regions, 2010 has seen a slow rebound of growth rates, however not yet to pre-crisis levels. Other regions, especially fast-growing economies like China and India have seen unabated growth throughout the economic crisis. Another overriding topic has been the increasing insecurity regarding future energy sources and power generation technologies. Renewable energy, especially wind and solar, have continued to grow despite the economic crisis in Europe and North America. At the same time a 'nuclear renaissance' is likely to take place in countries that are struggling to meet their growing power supply – China for instance.

**Cuppone:** There has certainly been a drop in demand for electricity and, as a consequence, a drop in prices. In Italy, electricity surplus has resulted in a slowdown in the construction of thermoelectric power stations. As a matter of fact, the 2008-2009 crisis, the reversal in energy demand and price growth, the temperate expectations of consumption recovery and above all the demand peaks, have averted the serious dangers of energy shortages or blackouts feared in Italy until now. Indeed, existing plants and those under construction or planning seem more than sufficient to meet energy demand until 2020. Moreover, the last 12 months have seen an exponential growth in renewable energy sources (RES) and a new interest in nuclear power generation. On the other hand, the Italian gas sector was static during the past 12 months, also due to the lack of supplying infrastructure – as a matter of fact, at present only the LNG regasification terminal of Edison is already in operation.

**Dickenson:** Long-term planning is becoming increasingly challenging for utilities and suppliers alike. In the US, we are seeing increased focus on near-term decisions in power supply – the largest cost component of the utilities sector. This is driven largely by four key trends. First is a decrease in the current and forward prices of natural gas in North America based on expanded unconventional shale-based sources, which makes gas-fired power supply more attractive than just two years ago. Second, the continued decrease in electric demand due to the economic downturn is reinforcing decisions to cancel plans for new coal and nuclear plants in favour of energy efficiency and demand side programs. ►►

Third, the US EPA's continued efforts to reduce coal-fired plant emissions also support the possible accelerated retirement of affected coal plants in the US. The final trend is the lack of federal legislation on carbon emissions and federal renewable energy standards.

**Flaherty:** It is actually the 'lack' of discernable trends, versus the impact of current market dynamics that is most interesting. Given the absence of policy certainty, many companies have elected to simply avoid any fundamental shifts to their strategic agenda. This has occurred because these managements believe that the placement of the wrong bet on policy outcomes would be worse than the avoidance of any bet at all. In this case, standing pat on a measured 'no regrets' strategy offers the simplest and most prudent choice given the lack of predictability. Thus, the by-word for 2010 was 'go slow' with little aggressive action taken on any front – renewables, capacity choice, technology innovation, or growth initiatives.

**Holzschuh: What political influences are having an impact on the direction of energy policy? Are you seeing, or expecting to see, a shift in government thinking?**

**Cuppone:** Italy has made some important progress in the legislative framework concerning the production of electricity from renewable sources and nuclear power generation. Regarding RES plants, guidelines were approved by Ministerial Decree on 10 September 2010 and entered into force on 3 October 2010 with the aim of setting unitary procedural criteria for RES plants and ensuring that they are correctly blended into the landscape, hence also facilitating the orderly development of energy infrastructure throughout the country. The new guidelines will constitute a mandatory reference point for the regions which will have to adapt their respective laws and regulations to the new criteria by 1 January 2011. The guidelines give private investors a body of rules that are no longer disparate, but which instead are unitary, certain and constitutionally sound.

**Wardlaw:** European states are still concerned about diversification of supply, and the new pull of China, a state-run economy that can easily pull together the trinity of an offer of cheap loans to sellers, low-cost construction, and high prices to buy the resulting hydrocarbons. China is effectively using its state-owned companies in the energy and banking sectors as tools of its foreign policy. International oil companies cannot compete with these of-fers and western countries do not have state-owned companies that can help push the agenda of portfolio diversification. I think that the financial crisis will also result in a downgrading of expensive credit and grant regimes for renewable energy.

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THOMAS J. FLAHERTY III

**Flaherty:** A blend of constrained fiscal public policy with pragmatic, financial company philosophies has essentially culminated in a stalemate with respect to energy policy evolution. Throw in a global recession with diminished near-term energy demand and the chance of any forward-looking reshaping of energy priorities amid all the policy gridlock was simply not tenable. However, it is the continuing, decades-long inability to craft a coherent energy policy that is sufficiently comprehensive and far-reaching – not just one that focuses on topical issues – that continues to impede progress on the key challenges facing the industry. This is not likely to change until governmental and industry leadership can freely and effectively collaborate on priorities for policy design, rather than face-off against narrowly targeted and inconsistent agendas.

**Dickenson:** The struggling national and global economy creates a push for the increasingly large expenditures that we are making on energy to emphasise local business and job growth. The focus on job retention and growth by elected officials drives retention of coal-based jobs where that industry presently exists. The need for job creation also drives a push for new clean energy jobs in states, regions and countries where energy policy is already moving in that direction. We expect increased political attention at the local level to focus on the jobs and business effects of energy and utility infrastructure decisions, regardless of whether those decisions are on new energy supplies, or on the retirement of carbon-intensive aging plants.

**King:** Today's business environment is even more shaped by politics than usual. In the developed countries, policies promoting energy that costs more than market prices, in the name of encouraging 'green jobs' and protecting the environment, are pervasive and having a profound effect. While pursuing many of these technologies is likely in society's best interest, there are literally hundreds of billions of dollars of investment flowing into alternative energy sources, ranging from nuclear power and IGCC plants to solar thermal and photovoltaic power plants. Tens of billions of dollars of investment are going into infrastructure necessary to support those alternative energy sources, such as transmission facilities, energy storage, and potentially electric vehicle infrastructure. Almost all of these investments are considerably – and many are hugely – above market prices, meaning that they must increase the cost of energy to end consumers.

**Haslauer:** Political goals continue to vary strongly between regions. Security of supply and low prices for energy have been priorities for governments in growing economies, especially China and India. In this context we are witnessing a massive investment in power generation that is accompanied by a dash for secure energy sources and significant activity in acquiring natural and energy resources, as seen in African countries. At the same time environmental goals continue to play an import role in many regions. Many countries have even accelerated their efforts to develop renewable energy during the economic crisis as a part of economic policy packages to stimulate growth. Also, in regions like China and India massive investment into renewable energies is being undertaken, at least partly driven by security of supply concerns.

**Vince:** Many feel that in the next Congress there will be a focus on spending cuts which might impact availability of funding for renewable development. With the budget deficit, there will be a shift away from legislation to regulate the energy industry, reduce ►►

GHG emissions, and provide incentives for renewables. In the absence of comprehensive energy legislation in the US there likely will be continued emphasis on regulation in the industry. The countervailing political force will be the opportunity for increased congressional oversight of regulatory initiatives by the Administration. During the 112th Congress, assume that cap and trade is dead for the near term. Look for comprehensive energy bills to be replaced by smaller packages with bipartisan support including bills that facilitate increased natural gas use in the heavy transit and utility sectors, end user conservation and energy efficiency measures, and smart grid implementation initiatives.

**Bryden:** US security of supply concerns and greenhouse gas issues continue to be the major influences on North American energy Policy, with profound impacts on all aspects of the energy sector. Greenhouse gas initiatives seem to have been protected from actual and proposed program cuts but there is an open question as to whether this protection will be continued. Any cut backs in Government support would significantly affect the economics of alternative energy projects and threaten government support for Carbon Sequestration research. The impact of the Gulf oil spill, and public reaction thereto, has had, and will continue to have, a fundamental effect on government energy policy regarding frontier development, specifically on Canada's East and West coasts and in the Canadian and US Arctic. While the immediate exploration bans have been relaxed, many observers believe that development will be slower and more expensive and certain sensitive areas may be permanently off limits.

**Holzschuh: What trends are you seeing in the push for renewable energy throughout the sector? In what ways is this reshaping the future of the industry?**

**Dickenson:** Renewable energy has become mainstream in the energy and utility sector with three important issues emerging as a result. First is the need to better integrate variable or intermittent renewable resources as part of a regional resource mix. Second is the need for new transmission to support delivery of renewable resources, along with the cost allocation and recovery mechanisms for the new transmission. Third is the challenge of photovoltaic energy (PV) to the traditional utility business model, for instance utility-owned or subsidised customer rooftop installations. Wind energy development is ahead of our current policies and plans to integrate a greater percentage of this variable renewable resource into our power supply. We have to play 'catch-up' with regards to technical and cost allocation issues around integrating variable renewable resources, such as wind and solar generation, and determining how to cost-effectively deliver wind energy to load centres.

**Haslauer:** Given the rapid growth of renewables and decreasing cost of energy from renewable sources there will be increasing pressure to cut back subsidies. Renewable energy will therefore be integrated into the competitive generation market. This will lead to an increased importance of economics and further drive economies of scale – as we already see in offshore windparks – and 'best-shoring' of renewable assets. In an ideal world, investments in renewable energy will be allocated to the best available locations globally to maximise returns. In the mid-term, however, we expect that national strategies to foster a varied portfolio of renewable energy sources will prevail.

**Vince:** While renewables are still clearly seen throughout the sec-

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MIKE KING

tor as a long term solution, the combination of current low gas prices and the failure of comprehensive energy legislation to put a price on carbon and provide long-term renewables incentives to stabilise the industry has created difficulties for many renewable initiatives. Factors that will work in favour of renewables are state Renewable Portfolio Standards, and recent EPA regulation – specifically the CAIR replacement rule, the Tailoring Rule, and BACT and Title V Implementation.

**Cuppone:** Broadly speaking, the current policy of the Italian government is focused on increasing and supporting RES. In 1999 the Italian Parliament introduced a new support scheme for RES based on Green Certificates, which are tradable certificates giving evidence of RES generation. This has replaced the old support scheme based on CIP 6/92 – incentives concerning electricity generated by plants using RES or other eligible sources – with the aim of introducing a competitive system to support RES and coordinate its promotion with the establishment of the energy market. Green Certificates will help their holders to comply with their obligation to inject a certain quota of RES into the power grid.

**King:** In Europe, there is no backing away from renewable energy; rather, the policy debate is largely about how to increase penetration of renewable energy rather than discuss the efficiency of the policies or their cost. There is increasing concern about the effects that massive penetration of renewable energy may have on wholesale market prices and the ability to keep the thermal generation available for integration. Governments in Europe have also seen that their incentives were too rich and are now cutting them; however, they continue to set ambitious goals for the penetration of renewable energy. In the US, the mandates for renewable energy are largely implemented through renewable portfolio standards that require utilities to supply a portion of the energy they deliver to consumers from renewable sources. Congress has been discussing putting in place a Renewable Energy Standard, but its impact would not be that significant given the number of states that already have such standards. Unfortunately, almost all of the renewable energy projects in the US and Europe produce energy at a substantial premium to market prices. This means that the renewable energy industry relies on the continuity of public policy for its health. The industry must relentlessly focus on driving costs out to drive down the cost of energy from these systems and projects to a market price, or at least a much smaller premium to market. Finally, utilities need to consider the timing of when to acquire energy from renewable sources: today, when it is expensive, but some volume may help to drive down costs, or in the future, when the costs may be substantially less than they are today.

**Bryden:** While all forms of alternative energy are being supported by government policy, two major developments stand out on the ►►

basis of the size of the investment and the impact on a continental basis. There is renewed interest in hydroelectric projects, particularly in Canada where massive new dam projects are being planned in Newfoundland, Quebec, Alberta, and British Columbia. Most of these projects are designed with export markets in mind. The other really successful renewable energy technology is wind and there has been very significant investment across North America in large and small scale wind energy projects. At the same time there is a massive continental push to introduce smart meters and smart grid technology which by promoting demand side energy can be considered a form of alternative energy. These developments and the need to harden and secure transmission systems are driving significant new investment in transmission systems.

**Holzschuh:** Where does the future of nuclear generation seem to be headed? What are governments and companies doing to push this energy source?

**Bryden:** Over the past several years, a confluence of trends has breathed new life into the nuclear power industry as nations around the world look for ways to meet energy requirements and deal with concerns about the environment. Many countries also have a growing desire to achieve a higher level of fossil-fuel energy independence. With the belief that nuclear power can be safely employed, today we see rapidly maturing efforts to build new nuclear power facilities. Since 2007, in the US alone 17 licence applications to build 26 new reactors were submitted to the Nuclear Regulatory Commission (NRC) for approval, following a 30-year period in which few new reactors were built although most have not moved on to the construction stage. Other countries have moved faster with significant numbers of new builds in China and other jurisdictions. One of the least well known stories in the industry is that nuclear plant performance has steadily improved over the last decade. For the eleventh straight year, 96 percent or more of power plants met industry goals for availability. This represents an immense opportunity for utilities which, for three decades, have been actively discouraged from pursuing the nuclear option. The build-out of new nuclear power plants represents a major enhancement to national energy grid modernisation efforts. Although the projects are still on the books and in the projections, over the past year enthusiasm for nuclear projects seems to have waned somewhat. There are multiple reasons for this, including the credit crisis and the discovery of shale gas reserves which promise plentiful low-cost gas generation opportunities. However, most observers continue to believe that nuclear generation will play an important role in the future energy mix.

**Flaherty:** Globally, nuclear's renaissance has arrived and is flourishing. Governments are incentivised by their concerns over

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STEVE WARDLAW

greenhouse gases, commodity price volatility, job creation, and the need for a balanced portfolio of energy supply sources to invest in the creation or expansion of a vibrant nuclear sector. Sadly, that is not the case for the US. Here, the recession brought many companies' consideration of nuclear to a standstill until a return to prior load levels was assured. Further, an inability to match owner requirements with those of the financial community, EPCs and regulators also stymied efforts to advance nuclear's case. Most importantly in the US, insufficient government support in the form of loan guarantees has prevented more than a couple of companies from pursuing new nuclear without a higher degree of financial security.

**Wardlaw:** Again, there is not any single big theme that emerges. New plants are being commissioned and constructively discussed in the UK, but we are also seeing some potential delays due to global financial constraints and a levelling off of power demand growth in Central and Eastern Europe. We can also see prohibitions on new nuclear coming into effect in Germany. I still think that governments have some way to go before they enthusiastically embrace nuclear as an achievable low-emissions generation source.

**King:** Nuclear power looked extremely attractive when the new generation of reactors was projected to cost \$2000 per kW. In most of the Western world, the estimates of the overnight capital cost for generation III reactors has now risen to \$3500-\$6000 per kW. At these costs, nuclear power is much less attractive and becomes a big bet on the future costs of natural gas and environmental regulation. New nuclear projects in the developed countries using Western designs will require massive government subsidies or mandates that obligate customers to pay for these plants, whether they turn out to be economic or not. In Asia, excluding Japan, the cost of new nuclear plants appears to be far lower.

**Haslauer:** On a global level, nuclear energy will continue to play an important role in the energy mix. However, government policies will continue to differ strongly across regions. While a strong growth of nuclear energy in South-East Asia – especially in China and India – is to be expected, the picture in Europe is quite mixed. Some countries, such as France and the UK are investing in new plants or, as in Poland and Italy, are planning to invest. Other countries, such as Germany, are extending the lifetime of existing plants. In the US, nuclear energy is likely to play an important role in future energy strategy.

**Vince:** Except for the re-licensing of existing plants, the domestic nuclear renaissance is badly stalled. Construction costs have soared, the Department of Energy Loan guarantee program is complex, costly, and under-funded, currency differentials have created unexpected headaches for developers, and new build joint ventures have fallen apart. Further, the economic downturn has caused delays in the need to schedule large base load generating plants in many instances.

**Cuppone:** In Italy we are witnessing a new interest in nuclear power generation. In the 1960s, Italy was a leader in developing and constructing nuclear power stations. However, this situation came to an abrupt halt following the referendums of 1987. In response to the uncertainty that had arisen, the 1988 national energy plan sanctioned a 'nuclear moratorium' allied with a program to cease production of nuclear fuel – a moratorium that continued until 2009. In 2009 the government adopted legislation ►►

which recasts the rules in a number of areas. First, the criteria for selecting the sites for nuclear power plants, nuclear fuel fabrication plants, storage systems for spent fuel and radioactive waste and repositories for radioactive materials and waste. Second, the procedure for selecting sites for such plants. Third, the licensing procedures and individual requirements applicable to the construction, operation and decommissioning of such plants. Finally, the new rules provide for the compensation payable to the affected population.

**Dickenson:** Next generation nuclear technology costs are generally rising across the board. The role of incremental new nuclear generation in the US has dimmed recently for four key reasons. First, the expected costs of next generation nuclear continue to rise. Second, the decline in the cost of natural gas in the US as a result of the discovery of new unconventional sources has significantly reduced the near-term interest in a resurgence in nuclear generation additions. Third, there is very little near-term appetite in the US for additional government cost sharing or loan guarantees on any meaningful scale for nuclear generation to help address the high capital cost estimates. And fourth, the lack of action on climate change legislation has further reduced the potential cost advantage of new nuclear generation.

**Holzschuh:** Can you outline some of the recent developments you have seen in gas-related projects, such as pipelines and LNG?

**Haslauer:** Dynamics in the gas industry have changed dramatically over the last two years, mainly driven by development of new gas fields – especially shale gas in the US – and demand reduction due to the economic crisis. Both elements continue to impact the political dynamics between gas producers and gas importers. The current oversupply in Europe is changing the rules of supply: for instance, the pricing mechanism with wholesale-market based pricing becoming more important. In addition, gas markets will become increasingly global, driven by regional supply and demand imbalances and the further build-up of infrastructure to connect regional markets. LNG projects and ongoing and planned pipeline projects, such as connecting Russian gas supplies with importers in Central Europe, will play a major role for further internationalisation of the markets.

**Bryden:** The impact of low gas prices has had a major impact on LNG development and pipeline development. The economics of LNG facilities that have been built recently are under severe pressure and new LNG developments are stalled. This is not necessarily the case in other parts of the world but the trend is very clear in North America. In the pipeline arena, major planned Northern pipelines, such as the Alaska and Mackenzie pipelines, have effectively been put on hold stranding large proven gas reserves without a means of getting to market. Conversely there has been a construction boom in smaller pipeline projects in the US, aimed at getting new shale gas production to market.

**Vince:** Because of the abundance of natural gas reserves including shale gas, which have reduced the need for imported gas, the LNG business in the US is currently facing adversity and will likely become an export industry. However, the booming US shale gas business has necessitated numerous pipeline and other infrastructure projects to transport natural gas from the shale beds to end users. Look for this trend of substantial increases in domestic natural gas infrastructure to continue in 2011.

## Gas markets will become increasingly global, driven by regional supply and demand imbalances and the further build-up of infrastructure to connect regional markets.

FLORIAN HASLAUER

**King:** North America is awash in natural gas. LNG will have virtually no impact on North American gas markets in the foreseeable future. In Europe, LNG will continue to play a significant role in supplying the market's need for energy in no small part because regulators and policymakers see LNG as diversifying supplies and enhancing energy security. Regulators in Europe are keen to promote additional investment in LNG terminals in part by exempting them from the requirements of third-party access. In order to attract capital to these projects, investors need to be convinced that their property rights over the assets will be protected.

**Dickenson:** Multiple pipelines have been built around shale plays: Tiger, Midcontinent Express, and Gulf Crossing, to name a few. There have also been various incumbent-pipeline expansions around the Marcellus shale. Major LNG projects have been completed and put in service, including the ExxonMobil/Qatar Petroleum/ConocoPhillips terminal at Golden Pass. However, the US abundance of shale gas has meant there is little demand for LNG now.

**Cuppone:** The last few years have seen a significant development of gas import infrastructure projects, namely pipelines and LNG regasification terminals. Regarding pipelines, in 2008 the transport capacity of Eni's TAG, linking Italy and Austria, was increased from 38 to 41.5 G (m3) per year and the transport capacity of Eni's TTPC was increased by an additional 6.5 G (m3) per year. Regarding LNG regasification terminals, the Adriatic LNG Terminal, located offshore of Porto Levante, is the first offshore Gravity Based Structure in the world for the unloading, storage and regasification of LNG, with a capacity of 8 G (m3) – approximately an additional 10 percent of Italy's natural gas consumption. Other LNG regasification terminals could be authorised during 2011, including Gas Natural's LNG Terminal located offshore of Zaule with a capacity of 8 milliard m3 per year, for a total investment of €500m, and Anonima Petroli Italiana's terminal, located offshore of Falconara with a capacity of 4 milliard m3 per year.

**Wardlaw:** We still have the 'battle of the pipes' in central and southern Europe. There is plenty of PR, both positive and negative, for Nabucco and South Stream, but both still remain prospects rather than certainty. What may have an effect is the opening of the gas pipelines from Kazakhstan and Turkmenistan to China. Geographically and economically, China has always been the obvious market for central Asian gas. So, we would expect Europe to have an increased interest in LNG, but the low gas prices, current and projected, together with lower than expected demand mean that most LNG projects that are in the theoretical stage look marginal in terms of economics without tax breaks or other incentives. ▶▶

**Holzschuh: How would you describe the outlook for climate change legislation and regulation?**

**Vince:** With the competing issues of a recessed economy and large budget deficit, the prospects of GHG emissions being regulated through congressional action in the near term are almost zero. Despite lack of legislative action, the current outlook is that GHG and other emissions contributing to climate change will be regulated primarily by the EPA. Recent relevant EPA Actions include the Transport Rule (CAIR Replacement), GHG Reporting Rules for new sectors, the Johnson Memorandum, GHG Tailoring Rules, BACT and Title V Implementations, New Source Performance Standards, Performance Standards for Existing Plants, NEPA Guidance from Council on Environmental Quality, and RCRA Rule changes for coal combustion waste.

**Flaherty:** For all practical purposes, the turnover in Washington policy makers means that the potential for any kind of cap and trade legislation is moot. Hence, attention is now directed toward the policies and directives of the Environmental Protection Agency (EPA). We can expect that any attempt to force regulation on the industry will be met with a vigorous response and likely litigation. Nonetheless, companies are already making economic choices based on their read of potential outcomes from EPA regulation. Current thinking is that between 60,000 and 100,000 MWs of coal capacity will be retired as companies seek to avoid expensive and uneconomic capital expenditures for their older, smaller, and less efficient plants.

**Cuppone:** Integrated policy on energy and climate changes is characterised by the CO2 emissions reduction as laid down by the Kyoto Protocol and by the EU Commission act ‘20-20 by 2020’, emission trading systems (ETS), as well as by renewable energy promotion. It goes without saying that such policies have affected – and will certainly continue to affect – decision making at energy and utilities companies, pushing them to think in a more renewable way. It is reasonable to think that the European ETS developments and ripening will give those companies more chances to produce profits through appropriate management of their own portfolio of emission units.

**Wardlaw:** We have noted a slowdown in development work in this sector as the deadline for expiry of national and international schemes comes closer. Our general view is that the scope for a big expansion of legal work in this area is limited for the next two or three years.

**Dickenson:** Current climate change legislation prospects in the US are mixed. On a national scale, the November elections have potentially put a hold on any near-term climate change legisla-

tion. Carbon cap-and-trade continues to be viewed as a tax. The ‘no new taxes’ message combined with concerns about the effects of implementation costs on the energy sector being passed on to consumers during a weak economy makes it an uphill climb for national climate change legislation. The change in control of the House of Representatives reinforces this expectation. Concurrently, California soundly voted for allowing that state’s groundbreaking carbon reduction framework to continue forward. Moreover, California elected a new governor whose administration is likely to support continuing the carbon reduction structure.

**Haslauer:** With the disappointing results of the Copenhagen Meeting in 2009 and the pessimistic messages in preparation of COP 16 in Mexico this December, we think it is unlikely that a breakthrough in international climate policies is imminent. However, as the underlying issue is not going away and the impacts of climate change are increasingly felt across the globe, we believe that nations and regions such as the EU, but also many States in the US, as well as countries such as India, will not reduce their efforts to curb GHG emissions. Hence, while a harmonised international approach to tackling climate change would be preferable, we think that climate change related legislation and regulation will continue to shape the boundary conditions for investment in the energy sector in most economies.

**Bryden:** Climate change legislation and regulation, while still important, seems to have fallen off the political front burner. Government time and attention is being devoted to other files viewed as more immediately significant. Change will happen but at a slower pace and with more consideration of the economic impact. Legislation and government regulation may continue but large scale government economic support for programs such as alternative energy will likely be constrained by anticipated spending cuts.

**King:** In Europe, there has been, and will continue to be, a significant commitment to climate change regulation. In the US, direct climate change legislation is unlikely to arise in the next few years. But that doesn’t mean that nothing will happen. EPA seems likely to continue with development of regulations under the Clean Air Act and the Clean Water Act that erode the economics of existing coal fired generation. Further, I would expect that the Department of Justice and environmental groups will become even more active in bringing suits under the New Source Review/Prevention of Significant Deterioration regulations to force controls on existing coal-fired generation and, in reality, to force the retirement of coal-fired power plants.

**Holzschuh: To what extent are environmental issues dominating management thinking? Is this a positive development for the energy & utilities sector?**

**Haslauer:** Environmental issues are affecting management thinking to the extent that they impact policies and public opinion, and thus define the framework conditions of doing business. There is, in our view, no dominance of the topic in the mind of most utility managers. As environmental issues have become a mainstream topic in society, they have also become a normal element of the decision making in utility companies. Public acceptance, which we see as an emerging trend, is somewhat linked with environmental issues. We think that the previous ‘energy policy triangle’ of economics, security and the environment is converging into a square, with public acceptance as the fourth dimension. ▶▶

**Climate change legislation and regulation, while still important, seems to have fallen off the political front burner. Government time and attention is being devoted to other files viewed as more immediately significant.**

ALISTAIR E. BRYDEN

**King:** Because energy policy is currently dominated by environmental issues either directly or indirectly, utility management thinking is largely preoccupied with environmental issues in one form or another. Certainly, we all want utilities and energy companies to appropriately consider the environment in the decisions that they make. Government could do a great deal, however, to reduce uncertainty by making credible commitments to the shape and timing of future environmental regulation, and this would free management to focus on other efforts that benefit their consumers.

**Dickenson:** Failing to incorporate environmental issues into planning and long-term investment is perilous. Environmental issues in the utility sector can constrain or modify the direction of developing projects or deploying capital. Management in the non-utility power supply and fuel supply sectors are increasingly incorporating environmental issues in to their corporate and/or asset investment strategies. Renewable energy resource developers will continue to capitalise on the desire to decrease our reliance on fossil fuels regardless of the lack of climate change legislation. Coal-fired plants will continue to face challenges on environmental grounds, despite the recent political shift from the 2010 mid-term elections. For energy and utilities sector players that are able to avoid environmental risks, this is a positive development. For utilities or asset owners that are heavily invested in resources that are subject to greater environmental risks, this is far less positive.

**Bryden:** Environmental issues are dominating management thinking because government policy and society are, in combination, driving this to the top of their agenda. There are numerous examples. Firstly, the Alberta oil sands, with over 170 billion barrels of proven reserves, represent one of the largest resource pools in the world that remains outside the control of state owned oil companies. However, exploitation of this resource is being threatened by a coordinated campaign against so called 'dirty oil'. US laws supporting the use of low-carbon fuel directly target Alberta Oil, and approval of a major new Canada-US pipeline is being delayed. Second, Canada has committed to phase out most coal fired power generation other than some highly efficient units. Third, the Gulf oil spill has resulted in tough new rules for offshore drilling.

**Vince:** Environmental issues will continue to be a dominant strategic issue for management thinking even in the absence of comprehensive legislation. Regulatory initiatives, particularly by the EPA and other government agencies, will have a huge impact on supply side as well as demand side resource decision making. Natural gas will serve as the transition fuel for new build generation as long as gas prices stay low and coal-fired generation is hampered by federal environmental regulation. Look for an explosion of demand-side response, energy efficiency and conservation measures.

**Cuppone:** An environmentally sound managerial policy makes companies more competitive, ensuring more chances to grow. However, we need to be aware that the green economy cannot be considered the solution of all our energy troubles, only part of it. Unfortunately, environmental issues are sometimes manipulated by minorities to stop energy development. Governments must ensure that environmental compliance remains the basis for energy development without frustrating growth prospects.

**Holzschuh:** What do utilities executives need to do to address key power supply and demand issues in the years ahead?

## Governments must ensure that environmental compliance remains the basis for energy development without frustrating growth prospects.

ANTONIO COSIMO CUPPONE

**Flaherty:** The right answer for companies wherever they may be located is to maintain a balanced portfolio of energy supply sources. This means companies must resist the urge to simply default to gas in the absence of more constructive and predictable policy. Since the alternative sources of supply – including demand response – all have particular issues related to their viability or practicality, companies need to understand that there must be multiple options pursued to meet future demand requirements. While large-scale baseload unit additions are difficult to pursue in an era of political, financial and regulatory uncertainty, the need for multiple sources of dependable and economic generation will dictate that the strength of the supply portfolio is enhanced by their presence.

**Wardlaw:** One main question is whether companies have a sufficient capital program for the coming years. In the US, it would be great if some of the innovative state programs, such as transmission in Texas, became federal programs. There is still a market for green field developments where there is strong demand growth, in China for example, or where assets are old, such as in Russia. The question for power executives is whether those regions are sufficiently attractive for their shareholders.

**Dickenson:** Utilities executives need to be focused on more accurate assessments of customer demand and changing behaviour. The changes in the economy and increased customer focus on energy-use savings are not a short-term situation. Sustained lower customer demand, even without utility-sponsored or state-mandated energy efficiency programs, is likely the new 'normal'. But this may not be the case universally. At the same time, uncertainty regarding the costs, regulatory requirements, and environmental compliance issues surrounding both existing and new power generation resources has never been higher. Utility executives need a more robust evaluation of a wider array of possible future resource options available to them. Increased flexibility is needed to address demand changes, cost trend changes and externally-imposed regulatory compliance costs – meaning more frequent updates to demand forecasts and resource plans.

**King:** Utilities need to more carefully and comprehensively address risk in the resource planning process. This means not just considering whether fuel prices might be different, or whether demand might be higher or lower. Rather, utilities need to compile an inventory of the mechanisms by which the resource decisions might affect both the shareholders and their customers, then identify comprehensively any risks in the decisions that they are making. Since there will likely be continued significant penetration of renewables in the market, utilities need to further study the impacts that significant penetration will have on their operations and business. ▶▶

**Vince:** Utilities need to take advantage of low cost natural gas as well as opportunities for development of energy efficiency and conservation measures. Additionally, utility executives should push for greater regulatory incentives for the pursuit of demand side management initiatives. Executives should be cautious about new build coal and nuclear in the short term and should diversify into renewables as required by state mandates, as federal renewables mandates will not be developed in the near term.

**Haslauer:** Power supply and demand dynamics will change significantly over the next few years. In industrial countries, an increase in volatile renewable energy production and of distributed generation will lead to challenges for the transmission and the distribution grids in balancing demand and supply. Utility companies need to address these challenges by building up infrastructure to accommodate these new power flows and by developing business models to manage supply and demand patterns in the local grids.

**Cuppone:** The big issue is that the regulatory framework must be supplemented in order to achieve full liberalisation of the market and to further improve access to the grid, even if this is an infrastructure issue more than a regulatory one. In Italy, liberalisation has not yet been completed, as the natural gas market still lacks the essential requirements to be defined as a 'market'. The opening of a gas exchange would certainly help, along with the implementation of a new supply infrastructure which offers actual alternatives to the current system. Moreover energy and utilities companies need to have clear and lasting rules that allow them to fix business strategy in the near term and investments in infrastructure in the long term with suitable economic returns. The uncertainty of legislature and the continuous changes in the relevant rules destabilise the players of the energy sector.

**Holzschuh:** What have been some of the underlying drivers of M&A activity in the energy & utilities sector over the last year?

**Wardlaw:** Clearly we are not seeing significant growth in the supply of credit, although credit is coming back into the market. We are seeing increased activity, however, really because energy companies realise that they need to continue to develop their portfolios, and that even with increased uncertainty in the market, companies cannot wait around for another year or two.

**Dickenson:** The drivers of M&A activity differ between the utility sector and the non-utility sector. The continued challenge of accessing capital has influenced some M&A activity. This is particularly true in the non-utility generation sector where underperforming assets have depleted cash reserves and created opportu-

nities for better capitalised parties to combine assets to create a stronger net financial and market position. Utility mergers are being driven by the challenge of finding growth opportunities within existing utility service territories due to reduced customer demand and associated reduced opportunity for power generation or electric transmission investments which traditionally have driven rate base growth. Utility mergers, or combinations of utilities within holding companies, have also been created as a means to achieve operating efficiencies and associated cost savings.

**Bryden:** 2010 has been one of the most active years on record for power deals. Partly, this is a rebound from 2009 when companies focused their attention on smaller acquisitions reflecting balance sheet constraints. Buyers are betting that electricity prices, which in many jurisdictions are at cyclical lows, will increase with economic recovery. Industry valuations have tracked this price decline. Thus, utility and infrastructure investment is viewed as a lower risk, lower cost home for the vast amounts of cash sitting on the sidelines during a period of significant and continuing uncertainty.

**Cuppone:** 2010 seems to be a period of transition characterised by a lack of large deals but with a high number of small deals concerning renewable energy. Many investment funds have turned their resources towards solar and wind projects, specifically in the south of Italy. The financial potential of renewable energy is highlighted by the deal signed last October between Italian company Terna S.p.A., which controls 95 percent of the national electric grid, and one of the leading private equity firms, Terra Firma Capital Partners Limited. Terra Firma will buy Terna's wholly owned project company Rete Rinnovabile s.r.l. at a price of €620-670m, developing one of the largest solar plants in Europe.

**Flaherty:** In the US, 2010 was the first year in many where multiple transactions were executed. For some sellers, the confluence of uncertain policy, tenuous liquidity, succession gaps and competitive weakness made a sale the logical outcome. For buyers, the prospects of accelerated growth, increased balance sheet strength, scale economies, and enhanced market capabilities enabled the acquisition to be easily rationalised and afforded. As financial and market uncertainty continue, it can be expected that more transactions will be announced as a means to provide for enhanced growth and competitive positioning. With the compression of market caps, mid-size companies have become particularly affordable and smaller companies are easily digestible. Similarly, larger companies can more easily achieve competitive scale through mergers at low premiums given the closer comparability of price-to-earnings ratios.

**Haslauer:** The economic crisis has led to a decrease in M&A activity in the energy & utilities sector. However, as utilities companies in industrialised countries struggle to generate meaningful growth in their home markets and have significant financial power, opportunities for regional diversification and expansion are an important driver for M&A activities. In addition, for utilities in developing countries, access to raw-materials and energy sources is of high importance and M&A is increasingly considered as a potential way to secure it.

**King:** Some of the financial investors have had significant calls on their capital, and as a result, have chosen to exit the market. As earnings recover with economic recovery, there may be more interest in M&A as companies reassess their strategy. ►►

**The continued challenge of accessing capital has influenced some M&A activity. This is particularly true in the non-utility generation sector where underperforming assets have depleted cash reserves.**

BILL DICKENSON

**Vince:** There have been multiple drivers of the recent M&A activities in the energy & utilities sector over the past year. Domestically, some sellers of generation fleets have been driven by a need to reduce debt and improve balance sheets. Purchases of generating assets appear to be driven by lower asset valuations in general leading to lower prices, market diversification, fuel diversification, increased renewable capacity in the fleet and forward hedging for load through ownership of physical assets. We expect a new round of distressed merchant plants as natural gas prices have hit recent historic lows and spark spreads have shrunk, resulting in decreased margins for merchant plants. Traditional utility M&A activity has been driven by four dynamics. First, in the case of E. ON, the driver appears to be a desire to exit the US/state regulatory regime. If the US dollar were devalued against other currencies, then one would expect more foreign investment. Second, larger utilities that have been constrained in rate base investments are looking for growth opportunities and willing to pay a market premium to get there through acquisitions. Third, activity on the buy side has also been driven by a need to diversify regulatory risk, maintain critical mass in generation fleets, and diversify market presence. Fourth, potential synergies from geographic proximity have driven mergers such as NStar and Northeast Utilities.

**Holzschuh: What challenges and opportunities are likely to define the sector through 2011?**

**Flaherty:** The lack of a coherent energy policy will unfortunately continue for the foreseeable future. In addition, we can expect more piecemeal attempts to legislate or regulate instead of aligning and integrating multiple dimensions of the supply and demand question. A key factor will be the level of future interest rates as capital spend remains robust, even in the face of continuing inability to earn the authorised rate of return. If capital costs rise and place more stress on company cash flows, this can be an impetus for further consolidation activity to occur. For those financially well-heeled companies, 2011 can provide the opportunity to realise strategic growth that has eluded them in the past.

**Wardlaw:** I think we still need to see where we are with shale gas. The play in the US is clearly different from the play in Europe, which does not have the advantage of wide, open, unpopulated areas. The supermajors are doing a good job of controlling the global market in LNG development projects because of their deep pockets. The question is whether they have sufficient funds – or interest – to develop all of these projects.

**Haslauer:** The development of gas markets will remain a major issue next year. As market imbalances are likely to continue throughout 2011, there are significant challenges related to pricing, sales and procurement of gas. This situation is likely to continue into the following years. Due to the increasing insecurity regarding future energy sources and power generation technologies – for instance the issue of distributed versus central power assets – investment decisions on power generation assets and the grids have been postponed in the last few years. It will be one of the major challenges to make decisions on the investment portfolio.

**Dickenson:** Stalled economic growth will continue to challenge utilities and energy suppliers through 2011. Demand will continue to be flat or in some cases declining in North America and outside of the Asian and some Latin American markets. Wind and PV en-

ergy opportunities will continue to be reasonably strong based on existing orders, existing incentive policies, and remaining uncertainty regarding the timing of climate change mandates.

**King:** The big issues continue to be the impacts of government policy on the industry. This includes how penetration of alternative energy projects will affect the market, utilities, and their customers; how transmission will be sited, financed, and built as well as who will pay for it; the opportunities and threats that the Smart Grid may pose; and how the business and regulatory models may need to change as intelligence and two-way communication are driven into the network.

**Vince:** The availability of cheap fuel, comparatively low construction costs, and reasonably low associated GHG emissions will continue to make CCGT the choice for new base load generation. Look for the US nuclear renaissance to continue in its holding pattern for the time being. However if a national Clean Energy Standard (CES) is enacted and includes nuclear as a qualifying source, the industry could experience moderate growth domestically. Due to competition from cheap and relatively clean natural gas, a lack of comprehensive climate legislation, and a large budget deficit, expect the renewables industry to continue growth at a slower rate in the short term.

**Bryden:** There are some uncertainties on the horizon that may affect the speed with which shale gas reserves are developed. There are emerging signs of environmental opposition to drilling and concerns about rapidly depleting wells. In many jurisdictions the need for massive and urgent investment in generation capacity is matched by uncertainty on many fronts including access to capital, government regulation, the right generation technology decisions, and government policy on greenhouse gas and the speed, or lack thereof, of economic recovery. The opportunity exists for governments to provide some level of certainty and guidance but most governments seem too busy with other issues to resolve any of these questions in a meaningful way.

**Cuppone:** It seems reasonable to think that the recession, by curbing the growth of greenhouse-gas emissions, will make it easier in future to concentrate investment on low-carbon and modern renewable energy technologies, as well as on nuclear power. The latest legislative developments in Italy, confirmation of the support scheme based on Green Certificates, and the simultaneous approval of the new tariffs to incentivise solar power, mean that long-term investments can now be made and the Italian renewable energy sector will probably grow. This is confirmed by the trade associations. In greeting approval of the new guidelines with a sigh of relief, the Association of Producers of Energy from Renewable Sources has stressed “not only do they finally introduce an element of stability and certainty in the industry but they also conduct it with greater credibility towards the binding targets of the 2020 National Action Plan”. According to the Italian Confederation of Industry, the Guidelines “could well allow the overcoming of the main bureaucratic obstacles to the realisation of new initiatives including the complexity and inconsistency of the regulatory system and current institutional framework”. Regarding nuclear power generation in Italy, the recent changes to the relevant legislative framework will probably attract new investments to this sector. I also expect to see advancements in the implementation of new infrastructure which could help the development of Italy as an energy hub between Africa, Middle East and Central Europe. ■