

## ROUNDTABLE

## Energy &amp; utilities sector

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## R O U N D T A B L E



## ENERGY &amp; UTILITIES SECTOR

The energy and utilities sector continues to face challenges across the globe, exacerbated by sweeping reforms and an uncertain economic climate. As CO<sub>2</sub> regulation squeezes fossil fuel generation, and renewables continue to enter the mainstream, the shale gas boom remains a major story. Today's executives stand at a crossroads of tremendous change. They must carve out new strategies if they wish to remain relevant and profitable in an evolving and unpredictable energy landscape. ▶▶

## THE PANELLISTS



**Wolfram Rehbock**  
Senior Partner, Arzinger  
T: +38 044 390 55 33  
E: wolfram.rehbock@arzinger.ua  
www.arzinger.ua

Wolfram Rehbock has been a senior partner at Arzinger law firm since 2002. He is an expert on public-private partnership and energy law. He also specialises in international corporate and tax law matters with a local and international background. Mr Rehbock is one of the initiators of the European-Ukrainian Energy Agency taking the lead in supporting and promoting the development of renewable energies and energy efficiency in Ukraine. He is registered with the Superior Court of Berlin.



**Block Andrews**  
Strategic Environmental Solutions Director,  
Burns & McDonnell  
T: +1 (816) 349 6796  
E: bandrews@burnsmcd.com  
www.burnsmcd.com

Block Andrews serves as Strategic Environmental Solutions Director at Burns & McDonnell. Mr Andrews advises energy clients on the impacts of environmental legislation and regulation. He has developed environmental licensing in 38 states for various industries. For six years, He was Director of Environmental Services for Aquila, where he oversaw environmental compliance, risk mitigation and strategic direction for Aquila. Mr Andrews assisted in development of Aquila's integrated resource plans and developed the company's first greenhouse gas report.



**Raquel Bierzwinsky**  
Counsel, Chadbourne & Parke LLP  
T: +1 (212) 408 5219  
E: rbierzwinsky@chadbourne.com  
www.chadbourne.com

Raquel Bierzwinsky advises US and international clients in the areas of project finance, international finance and mergers and acquisitions, with a particular emphasis in Mexico and Latin America. Ms Bierzwinsky represents project developers, sponsors, commercial lenders, and multilateral and bilateral agencies in energy and infrastructure project financings, as well as in acquisitions and dispositions of projects. She also advises government and international financing agencies in international grant and investment projects in developing countries.



**Doyle N. Beneby**  
President & CEO, CPS Energy  
T: +1 (210) 353 4158  
E: ceo@cpsenergy.com  
www.cpsenergy.com

Doyle Beneby is the Chief Executive Officer of CPS Energy, the largest electric and gas utility in the nation. Mr Beneby is a 25 year veteran of the energy industry and has expertise in strategic planning, generation and delivery operations and asset acquisition. Since joining CPS Energy, Mr Beneby has led the transition to a lower carbon intense generation fleet, utilising clean coal, natural gas and nuclear combined with targeted renewables such as wind and solar.



**Clinton A. Vince**  
Partner, Dentons US LLP  
T: +1 (202) 408 8004  
E: clinton.vince@dentons.com  
www.dentons.com

Clint Vince is chair of Dentons' legacy Energy, Transport and Infrastructure sector team, with professionals in more than 79 locations worldwide, and is based in Washington, DC. He is widely recognised for his cutting-edge counsel and innovative solutions within the energy industry and pertaining to international commercial law. His experience includes high-profile litigation and appellate cases, including US Supreme Court advocacy, major project development, and legislative and regulatory advocacy on behalf of public and private clients.



**Munish Sharma**  
Partner, Dua Associates  
T: +91 11 2371 4408  
E: munish@duaassociates.com  
www.duaassociates.com

Munish Sharma is a partner at Dua Associates. His legal practice focuses on mergers and acquisitions, private equity, inbound and outbound investments, public-private partnership concessions, infrastructure projects, project finance, capital markets, corporate finance, cross-border transactions, joint ventures, business restructuring and corporate and commercial transactions. Mr Sharma has been involved in infrastructure projects in energy, oil, gas, power, airports and roads and in other sectors such as insurance, telecommunications, consumer goods, public relations, advertising, business process outsourcing.



**Jochen Terpitz**  
Partner, Simmons & Simmons LLP  
T: +49 69 9074 5451  
E: jochen.terpitz@simmons-simmons.com  
www.simmons-simmons.com

Jochen Terpitz is a corporate finance lawyer based in Frankfurt. He specialises in the energy and infrastructure sectors. Mr Terpitz has handled a wide variety of energy and infrastructure-related transactions for German and international clients, including M&A transactions and privatisations in Germany and Central Europe. He specialises in power projects and has expert know-how in particular with regard to the development, financing and acquisition of renewable energy projects. His practice also covers relevant regulatory aspects.

**FW:** Could you provide a brief overview of the energy and utilities sector in your region? What major trends have you seen in the last 12 months?

**Rehbock:** Gas, nuclear power and coal prevail in Ukrainian energy consumption. It should be noted that Ukraine is still dependent on Russian natural gas, at the same time disposing of its own coal deposits. Such circumstances form the direction of today's government's policy, one of the main targets of which is diversification of gas supply and exploration of new energy sources. In order to eliminate its dependence on Russian gas, Ukraine has commenced importing gas from Germany through Poland and, starting from April 2013, from Hungary. In addition, for a certain period of time Ukraine has been negotiating with a number of international oil extractors including Shell, Chevron and ExxonMobil.

**Andrews:** There are three big driving forces in the US electric utility energy markets. First, there is little to no load growth in many areas of the US. For projects that are being built, it is either renewables or natural gas facilities. Many renewable projects are driven by state-mandated renewable energy standards and are currently subsidised by the government. The natural gas plants are being built in part to diversify generation assets and in part to provide energy in those few areas that are seeing load growth. Second, transmission and distribution projects continue to be a larger portion of utilities capital expenditures. For years, there have been congestion and reliability concerns. Additionally, renewable projects and natural gas fracking are being constructed in areas with little or no transmission or distribution systems. These are the primary drivers for the new transmission and distribution projects. Third, distributed generation is growing in many areas to the point where the traditional rate structures have changed. Electric utilities may not be providing continuous energy to the customer in these instances yet are still on the hook to provide occasional energy and maintain a reliable and safe infrastructure.

**Bierzwinsky:** Latin American countries are going through a growth period, with expanding economies that require tremendous increases in energy supply. Most countries have lacked preparation for this surge in industry and wealth expansion and are now trying to catch up and open up to domestic and foreign private investment to assist the governments in developing their vast energy resources, or securing foreign energy resources. The trend is towards the use of each country's natural resources, be it water, solar, wind or hydrocarbons. Significant discoveries in Brazil with its Tupi offshore deep-water fields and in Mexico with untapped shale gas fields off the Gulf of Mexico have spurred plans for significant industrial growth. Some countries, like Chile and Uruguay, which depend on foreign supplies of natural gas, have several LNG facilities in the works.

**Beneby:** The state of Texas is the most dynamic market in the United States, primarily because of the shale gas boom, renewable energy products and a fully merchant market place. The energy and utility sector in Texas is unique in many ways including an independent system operator (ERCOT) islanded within the state, a market open to competition with the exception of a few municipal and cooperative utilities, and a market based philosophy toward the buying and selling of power. We have seen Texas trending away from coal toward natural gas

and renewables. We are committed to shut down two of our largest coal plants by 2018 and transition towards highly efficient combined cycle natural gas plants. In addition, we are the largest wind off-taker in the state with over 1000MW in our portfolio, and the largest solar off-taker with nearly 100MW in our portfolio with another 350MW in development.

**Vince:** The shale boom remains the major story in the US. Improvements in recovery technologies continue to allow producers to capture oil and natural gas resources previously thought to be unrecoverable. There are some infrastructure and regulatory hurdles to be overcome, as well as environmental concerns that will need to be addressed, but it does not appear that these will prevent the US from becoming a net energy exporter in the near term. Market economics are dominating developments, and are more influential at present than tighter environmental requirements. In terms of power generation and use, the economics of cheap gas is displacing coal and further slowing already stalled nuclear investment. Gas was touted as a bridge fuel to a greener economy, but the bridge now appears longer than originally anticipated. The past year has also seen a flurry of renewable development – particularly wind and solar – in the rush to take advantage of available tax credits whose future is uncertain. Rooftop solar is also gaining traction and has the potential to revolutionise the utility landscape.

**Sharma:** India is the fifth largest electricity-producing nation in the world. Over the last decade it has increased its installed capacity from 107.8 GW to 223.6 GW. Electricity, which has traditionally been a government sector activity in India, has witnessed considerable private sector participation and an increase in capacity after the legal and regulatory environment was changed to facilitate greater private sector participation. The Electricity Act, 2003 overhauled the regulations for electricity generation, distribution and transmission. As of January 2013, 30 percent of the total installed capacity is contributed by the private sector. Changes in the legal and regulatory regime facilitated easy availability of finance for power projects. However, there is a concern that the growth in capacity may not meet electricity demand in the long run, which in turn would stifle economic growth.

**Terpitz:** The entire sector in Germany is experiencing substantial changes – far beyond anything forecast in recent years. The power industry is marked by a widely unexpected decrease of wholesale electricity and gas prices, while at the same time the energy bill for end consumers is steadily increasing. At current exchange power prices, neither conventional power plants nor any renewable energy power plants generate sufficient income to amortise the initial investment. Most of the major players of the past have undergone serious restructuring and are even discussed as potential takeover candidates. Smaller players will have to look out for consolidation. At the same time, the municipalisation of energy distribution networks has become a remarkable trend, and the market share of decentralised energy generation continues to grow, driven by private households, commerce and industry.

**FW:** To what extent are political agendas shaping regulatory and legislative changes in this space? How are these regulatory developments affecting energy and utilities companies in practical terms? ▶▶

**Andrews:** The federal government has not created a national energy policy. So, various actions within key federal energy and environmental agencies, as well as state initiatives are driving whatever energy policy exists. From the federal government, the renewable production tax credits (PTC) and regulations from the Environmental Protection Agency (EPA) are key drivers. The incentives provided by the PTCs have helped drive the construction of over 60 GW of wind and 8 GW of solar. The EPA's tightening of environmental regulations has encumbered primarily coal units with additional costs and risks that make the units less competitive in our current low natural gas price environment. State renewable energy standards make renewable energy a 'must take' energy source. In areas with little or no load growth demand, the renewables are displacing some energy from base load sources such as nuclear and coal.

**Bierzwinsky:** Political agendas are very much shaping changes. In Mexico, the new administration of Enrique Peña Nieto has presented, in the last few months, constitutional initiatives to reform the energy market in that country, both in the oil and gas sector and the electricity sector, as well as much needed – but ill devised – tax reform that, among other things, will eventually decrease the large fiscal load off the shoulders of Mexico's state-owned Pemex. This is a critical political juncture for Peña Nieto and could be deemed his legacy. The reform has been long-awaited, but past administrations have not had the political and legislative leverage to pass it. With the PRI back in power, the reform is expected to pass, but it is not clear yet in what form.

**Beneby:** Texas is fortunate to have a regulatory and legislative environment committed to efficiency and market-based principles. The state is challenged with how to increase investment in generation supply even as wholesale power prices are very soft due to low gas prices and the build-out of significant amounts of wind. It is important to have regulatory certainty as we plan our generation capacity and our demand response programs. Our company has been an active participant in the discussion of resource adequacy here in Texas.

**Vince:** Congressional gridlock remains one of the most significant, albeit negative, legal and policy developments impacting the domestic energy sector. There has been no major piece of energy legislation from the US Congress since 2007. In this legislative vacuum, the Environmental Protection Agency (EPA) has made several bold attempts to set policy impacting the energy and fuel mix, although many of these are still being

developed or are unsettled as each initiative is challenged in the courts. States have become far more innovative and visible in their regulatory efforts. Geology, environmental imperatives, economic priorities and public perceptions vary widely from one region of the country to another, which means that state regulators are often better-positioned to address the issues that arise. For some, this is the preferred approach, while for others a regulatory patchwork increases costs and uncertainty.

**Sharma:** If one were to ignore recent setbacks due to certain regional issues or delays in the enactment of certain proposed legislations for political consideration, political agendas have mostly had a positive influence on shaping the regulatory and legislative regime in India. Governments at both the federal and state levels have aided the energy and utilities sectors. It is only the speed of local and national level regulatory and legislative improvements which has slowed down. For instance, state power regulators have, in most cases, lagged in setting power tariffs annually as they were supposed to, seemingly because of political pressure. The present power tariffs do not reflect the real cost of supply, resulting in increasing losses for distribution utilities.

**Terpitz:** Despite the EU's grand idea of liberalising the energy markets, we have recently seen an increasing influence of the political element on investment conditions for new energy infrastructure. This occurs at all levels of generation: transmission and distribution through planning restrictions, direct payments for offered capacity, guaranteed feed-in tariffs and the like. The difficulty national governments are facing in Europe is that they have to set the right framework to secure the energy supply for the coming decades – ideally climate friendly and not overly import-dependent – and at the same time feel under obligation to prove they are taking care of an alleged consumer 'right' to cheap energy. National politicians also perceive it as a further complication that in an interconnected European energy market these issues cannot be decided on their own. The volatility of such political influence does not correspond to the required level of reliability in planning; indeed, it adds another layer of unpredictability to any investment decision.

**Rehbock:** The Ukrainian energy sector is undergoing a complex transformation. As a member of the European Energy Community, it must implement the energy chapter of the EU *acquis communautaire* in full, including the Third Energy Package, thereby introducing transparency and competitiveness in the energy sector. Following the 15 October hearing on the status of fulfilment of Ukraine's international commitments under the Energy Community Treaty, the energy community has been satisfied with Ukrainian policy on renewables, at the same time stressing the need for Ukraine to urgently liberalise its electricity and gas prices and, prior to that, finally define socially vulnerable customers and put in place adequate measures for their protection.

**FW:** What particular risks and challenges are energy executives facing in today's market? How are these factors impacting business activities, and what steps can firms take to mitigate such risks?

**Bierzwinsky:** Possibly the biggest risks in the Latin America region remain regulatory, environmental, labour and taxation risks. On the environmental front, countries are becoming ►

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JOCHEN TERPITZ

stricter in their assessment and granting of environmental impact authorisations, as are financiers in their analysis of the environmental impact and costs of projects. Several important projects have faced roadblocks that have put their viability into question. The plight and interests of local communities are also harder to ignore and have halted or affected project development. With the adoption of the Equator Principles by international and domestic banks, and the strict environmental and social standards of development finance institutions, which jointly provide a significant percentage of the funds used to finance many large-scale and renewable energy projects in the region, sponsors and developers must spend considerable resources in the environmental and community relations areas.

**Beneby:** There are many risks and challenges facing energy executives, including the impact of future carbon regulation, commodity prices and water shortages, to name a few. Additionally, the lack of national energy policy and price on carbon means that perhaps, uncertainty is the biggest risk. Determining which fuel types and technology to invest in – or not – becomes paramount. Our strategy is to have a diverse, low carbon generation portfolio. By 2020, 65 percent of our generation will come from low carbon facilities including nuclear, combined cycle natural gas, wind and solar, and coal with carbon capture, which should help mitigate some of the impacts of the risk of regulatory and legislative uncertainty.

**Vince:** Increasingly, utility executives are at a crossroads of tremendous change in the energy industry, and must carve out new roles so as to remain relevant and profitable in an unpredictable and ever-evolving energy landscape. Energy company leaders are confronted with the daunting task of addressing declining demand, a shrinking customer base, rigorous national and state environmental and efficiency mandates, an urgent need for investment of trillions of dollars to bring energy infrastructure – and the electrical grid in particular – up to 21st century requirements in terms of security, reliability, incorporation of new power sources, and rapidly changing technology and customer exigencies and expectations, all in the context of an uncertain regulatory environment.

**Sharma:** Major risks facing energy executives in today's markets range from a shortage of fuel, political uncertainty, non-availability of new and more efficient technologies, land acquisition, environmental clearances, and a liquidity crunch in the domestic and overseas markets. Recently, investigations have been initiated regarding the allocation of coal mines, resulting in a negative business environment since executives are apprehensive about the retrospective operation of the law and disputed government allocations of natural resources. Directors and key executives of companies are also facing criminal prosecution in these investigations, a move which has been criticised by the corporate sector.

**Terpitz:** One of the biggest challenges seems to have become forecasting future developments and what product customers are willing to spend money on in a few years' time. The combination of several aspects increases the complexity of prognoses and scenarios. First, a lot of technical innovation is going on, such as decentralised power generation from renewable sources, the developing electro-mobility, and new smart grid controls or new power storage. Second, developments in dif-

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MUNISH SHARMA

ferent parts of the world not only impact on coal and mineral oil markets but also on an increasingly liberalised natural gas market and other sorts of commodities with an influence on energy prices. Third, regulation is being adjusted and changed much more frequently than in previous decades, and policy makers can only be pushed to giving long-term guarantees if the security of supply really seems endangered.

**Rehbock:** The main risk and challenge that energy executives face in Ukraine is the rule of law, which is declared, but not always complied with. Investments in energy are long-term and require legislation and a political framework that are reliable and stable. In addition, expensive project financing is closely connected with country risk. In terms of the energy sector, despite the fact that both gas and electricity networks are quite developed all over Ukraine in comparison to other CEE countries, they are not always in a good condition. Also, capacity restrictions are a real problem for Ukraine. In the renewable energy market, a degree of market monopolisation is taking place which, to a certain extent, is caused by local content requirements.

**Andrews:** Energy executives are earning their money as the risks they face are numerous. They are charged with the balancing act of satisfying customers with low cost, reliable, safe and environmentally friendly generation and for investor owned utilities, providing a reasonable rate of return for investors. Utilities are reducing risks by having more fuel diversity on the generating side. On the transmission side, utilities have been developing partnerships to increase their odds of winning new transmission line construction. From a rate structure standpoint, utilities have been engaging state public service commissions on developing market risks.

**FW: How would you describe M&A activity in the sector? What are the key drivers behind today's deals and are there any regional hotspots?**

**Beneby:** There has been M&A activity in the sector, especially here in Texas. We have seen a move back towards the vertically integrated utility model where generation companies have bought retail companies. This provides firm loads for generation capacity and price certainty, and MW commitments for the retail business. We are also seeing technology and new business model acquisitions as utilities move beyond simply being a commodity supplier to the customer and rather a broad based services company. ▶▶

**Vince:** Energy sector deals are taking place, but there are fewer big mergers today than a number of years ago. For regulated companies, the hurdles are high, with regulators seeking to extract maximum benefits for customers, which cuts into profitability of a combination. There have been a greater number of transactions involving companies selling off less-productive assets, particularly in the utility sector, and retreating to core businesses. Over the past year, there has also been an uptick in M&A activity involving renewable energy assets. This has been driven primarily by demand rather than consolidation, and has been further fuelled by the race to take advantage of tax credits that may disappear in future years. There also has been a continuing trend of M&A activity related to bankruptcy proceedings.

**Sharma:** There has been no significant M&A activity in the energy and utilities sector over the last 12 months. An uncertain climate of global slowdown and domestic political issues seems to have collectively led to a slowdown in M&A activity. There have been certain deals related to companies which were executing projects, had run into delays and cost overruns, and desperately required capital infusion. Companies executing projects along the eastern coast of India have recently seen some M&A activity. There have been instances where business groups that diversified into renewable energy recently exited the sector due to the prevailing economic downturn and uncertainty, and to focus and consolidate their core business.

**Terpitz:** M&A activity seems to be lower than one could expect in view of the difficulties some of the traditional players are facing. A number of disposals cannot be realised because the requested purchase prices are still relatively high; in some cases, current owners would rather shut down their current facilities than dispose of them cheaply. Many financial investors, such as insurers and pension funds, although very interested in long-term investment opportunities, are reluctant to take on the actual entrepreneurial or trading risk connected with operating generation facilities or distribution businesses.

**Rehbock:** The privatisation process in the Ukrainian energy industry is ongoing, and yet the process is not clear or transparent enough – namely with regard to the state monopoly which is proceeding in private hands. Certain assets in renewable energy are being transferred from developers to end-investors. In general, taking active steps to privatise the energy sector is normal practice in countries with transitional economies, which are not able to ensure the development of industry

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CLINTON A. VINCE

or to invest in infrastructure by themselves. However, taking into account that at the moment the infrastructure is quite poor, the effectiveness of such actions depends on whether a private investor really invests in the development of the privatised asset.

**Andrews:** Recently, M&A activity has been limited among utilities. The biggest active deal is the NV Energy acquisition by Warren Buffett. Generally, mergers are driven by synergistic or strategic advantages. Among the strategic factors for the NV Energy merger are access to the California markets and the abundant solar resources in Nevada.

**Bierzwinsky:** M&A activity in the Latin American energy sector is on the rise. Many regional players have taken steps to position themselves to gain from the further opening and growth of the market. In this sense, M&A activity often involves acquisitions by deep pocketed energy or infrastructure companies of early stage development companies, followed by project financing or other funding, and a subsequent sell-down of equity for substantial returns after the risk profile of the project has been reduced. It is also not uncommon to see transactions between competitors, given the nature of the sector and the heavy investment requirements. Other transactions have involved consolidation or reorganisation of Latin America investments held by international investors.

**FW:** In your opinion, how well is the sector responding to environmental challenges and sustainability issues? Could you provide any examples of key initiatives designed to assist local communities and surrounding areas?

**Vince:** In the US, the market has been the single largest driver of the reduction in emissions in recent years, at least as far as CO<sub>2</sub> and particulate matters go. Cheap gas is pushing out coal on a greater scale than tighter environmental regulations. There is now, however, increased attention being paid to the problem of methane emissions associated with increased natural gas production and use, as well as to environmental problems associated with the North American oil renaissance, such as gas flaring where there is inadequate infrastructure in place to recover the gas produced and carry it to markets. Regions that have been especially hard hit by storms and drought, or that are at risk of such events, are looking seriously at mitigation and adaptation measures, more so than in other, less vulnerable regions.

**Sharma:** Companies in this sector have been fairly proactive in ensuring that they conform to the largely unpredictable environmental and sustainability regulations, and have increasingly become aware as to the risks involved and strengthened their compliance divisions to ensure that they do not become involved in any infringement. The enactment of the Land Acquisition Act is a key initiative which is expected to bring about a well-defined land compensation plan and rehabilitation and resolve pending compensation claims for infrastructure projects.

**Terpitz:** In my view, companies in the industry are positioning themselves in very different ways. A number of municipal power houses, as well as developers of renewable energy power plants, CHP installations or providers of energy efficiency technology, put a lot of work into setting up decen- ►►

tralised structures involving ‘civic participation’. However, in many cases the management of traditional power houses only accepts such developments as an inconvenience, required to placate political decision makers – and perhaps the neighbours of some of their installations.

**Rehbock:** In Ukraine the main task has been to satisfy energy needs. Environmental and sustainability issues were not pressing concerns for the country. At the same time, together with joining the Energy Community, Ukraine took the obligation to comply with the list of requirements in the energy sector and in the area of environmental protection. One of the most important and complex of the requirements is to fulfil Directive 2001/80/EU, which requires a reduction in emissions of sulphur dioxide, nitrogen oxides and dust from thermo-electric stations. Ukraine is obliged to implement the Directive within a fairly short timeframe, namely by 1 January 2018. According to unofficial information, the energy community has agreed to extend the deadline of the Directive for Ukraine until 2029. However, this challenge is not likely to be met within the set deadline.

**Andrews:** Utilities have done a good job meeting environmental challenges while keeping rate increases low. Air emissions of CO<sub>2</sub>, particulate matter, sulphur dioxide and nitrogen oxides have all been significantly reduced in the last 20 years which has resulted in improved public health. There is still more environmental work to be done but utilities have always met the challenge and I expect they will come through again. Locally, Kansas City Power & Light’s emissions reduction trend has been consistent with others in the industry and the company has been involved with extensive energy efficiency projects, tree planting, energy audits and other programs.

**Bierzwinsky:** The sector is still struggling to deal domestically with stricter environmental legislation and stricter standards applied both by regulators and financiers, as well as increasing activism by local and international groups and coalitions. The interests of local communities are also taking centre stage. Some countries, like Chile, have recently created special courts with direct environmental jurisdiction. Projects seeking financing have increasingly approached development finance institutions, bilateral agencies and export credit agencies, such as the International Finance Corporation, Inter-American Development Bank, Overseas Private Investment Corporation, FMO, US Ex-Im Bank and Proparco, to name a few. These institutions have very strict environmental and social policies for the projects they finance, and compliance with these is meant to deter or minimise any potential impact on the local environment and communities.

**Beneby:** The sector is responding well to environmental challenges and sustainability issues, although it could be more consistent across the industry. For a sector that plans on 50-year horizons, it is exciting and encouraging to see many utilities embrace environmental challenges and re-position their assets here over the past decade. In Texas, renewables have gone from almost nothing 10 years back to counting for nearly 10 percent of the electricity produced today. We have seen that transformation in our numbers. We have partnered with our local water utility on several initiatives to impact sustainability, including building out a solar farm on a water plant site, and utilising solar to power water pumps.

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DOYLE N. BENEBY

**FW:** How do you believe the continuing debate on fossil fuels will change the energy industry over the long term? In the short term, how is regulation on CO<sub>2</sub> emissions impacting energy generation?

**Sharma:** In the long term, the renewable energy sector will play an increased part in contributing to the total production of power. Unlike other countries, where renewable energy projects are undertaken by companies as a part of their corporate social responsibility ventures, in India, renewable energy projects are recognised as the way to overcome the current energy demand supply gap being faced by the country. Apart from the negative impact on the environment due to over dependence on fossil fuels, the negative impact on India’s current account deficit caused due to increasing oil imports will play a major part in the ensuing switchover to renewable energy. We do not, however, foresee fast progress on this switchover due to environmental reasons.

**Terpitz:** It is my strong belief that western European countries will have to convert almost all of their electricity generation to ‘homemade green’ in only a few decades. There is an important reason to do so, beyond the reduction of CO<sub>2</sub> emissions, and that stems from the current dependency on imported energy which does not appear future-proof in a globalised world. Given the low prices for EU Allowances, the EU ETS does not currently have the regulating influence on electricity generation that was expected – on the flipside, some investors fear the additional regulatory uncertainty as European governments might further reduce the number of certificates issued at relatively short notice.

**Rehbock:** In general, Ukraine, as well as Poland, has its own coal deposits, so it is understandable that the country tries to benefit from them. Recently, the Ukrainian government declared that its plan is to transfer state enterprises’ combined heat and power plants into lease or concession provided that the future lessee or concessionaire switches the plant to alternative fuel types – coal, for instance. At the same time, Ukraine is a party to the Kyoto protocol, under which it has committed to reduce its emissions of greenhouse gas to 1990 levels. Moreover, in December 2012 at the Doha Conference, Ukraine undertook to decrease its emissions by 24 percent during the 2013-20 period. In addition, Ukraine is obliged to implement Directive 2001/80/EU on the limitation of emissions of certain pollutants into the air from large combustion plants by 1 January 2018. ▶▶

**Andrews:** The utility industry has been sensitive to legislation and regulations on CO2 from coal and natural gas facilities for several years. The industry has seen utilities just a few years ago that produced most of their energy from coal – Duke, AEP, Southern – diversify into a more balanced portfolio to include natural gas, nuclear and renewables. If the EPA’s proposed CO2 New Source Performance Standard (NSPS) is finalised with a carbon capture and sequestration (CCS) component required for new coal generation, then new coal is unlikely to be built until CO2 can be controlled at a reasonable cost and risk. The CO2 NSPS for natural gas is achievable today without add-on controls. So, in the short term, new coal will not be built, however new natural gas generation can and will be built.

**Bierzwinsky:** The debate on fossil fuels is ongoing and there is consensus, for the most part, that natural gas will be a key fuel over the decades to come. However, countries like Brazil, Mexico, Venezuela and Ecuador are not willing to forgo their vast fossil fuel resources in the short or medium term. Brazil is spending billions of dollars in the development of its massive pre-salt offshore fields, which is seen as a key factor in energy sufficiency for the country. Mexico and Venezuela are as yet unable to shed their dependency on petroleum. However, in Mexico for example, the Comisión Federal de Electricidad (CFE) has designed the country’s electric power growth strategy on the construction of combined gas cycle facilities, the availability of natural gas to fuel such facilities, and the construction of a large and robust pipeline grid that reaches and properly supplies the largest industrial centres in Mexico.

**Beneby:** There is common acceptance that all energy types are important to maintain grid reliability and supply to customer loads, including fossil fuels. There is certainly more interest in low emission resources like natural gas versus coal. It is important to map out a path towards low-carbon emission resources that will shield customers from costly regulations likely in the future.

**Vince:** The North American abundance of cheap gas is having, and will continue to have, a greater impact on the US energy industry than any policy initiatives that may come out of Washington. Reduced CO2 emissions in recent years in the US are due primarily to increased reliance on natural gas, at the expense of coal. Of course, stricter environmental regulations certainly add to the costs of coal-fired generation and further tip the balance in favour of coal. Cheap gas is also impacting nuclear investment. In terms of the national debate, the North

American shale boom is the key to US energy independence. The President this term has changed from a primarily green energy strategy to an ‘all of the above’ strategy, which includes increased production of fossil fuels. This has generated numerous hearings on Capitol Hill, and it continues to be a favourite topic in the media on all sides of the issue.

**FW: To what extent are clean-fuel technologies and unconventional gas becoming a more attractive proposition for energy firms?**

**Terpitz:** Clean fuel sounded like a great proposition to many investors a couple of years ago, but it quickly became a negative ‘school book’ example for a pseudo free market, overly dependent on tax benefits and quota regulation which politics could alter almost overnight. When the public debate on ‘food or fuel’ started, the small players in that market did not even have a chance to think about repositioning their businesses. In reality, unless regulation provides for a reliable support regime for the use of fuel from agricultural produce, it is difficult to guess how, in between the two densely regulated areas of agricultural production and energy, there would be room for big scale fuel production. In contrast, power-to-gas – using excess electricity production from wind mills or photovoltaic power plants – may more easily become an additional source of fuel.

**Rehbock:** At present, the Ukrainian government is actively promoting the idea of shale gas extraction. The government has already signed production sharing agreements and operating agreements for unconventional gas in Yuzivska field with Shell and Nadra Yuzivska LLC. Also, Chevron won a tender to sign a production sharing agreement for the Oleske field, in the Lviv and Ivano-Frankivsk regions. The text of the agreement is currently being negotiated with the respective regional councils. In addition, in August 2012, Exxon Mobil, Royal Dutch Shell, Petrom and NJSC Nadra Ukraine, bidding jointly, won a PSA for the Skifske oil and gas field on the Black Sea shelf. Ukraine is also developing clean fuels such as bioethanol and biogas.

**Andrews:** From a new generation standpoint, the energy prices are low compared to pre-recession levels. There is not a significant capacity payment incentive to build large capital projects. Renewable energy is being subsidised with PTCs so that it can be built and compete in a market with very low energy prices. New natural gas sources can also be built but their cost is more in line with other energy sources in the market. Existing natural gas sources are competitive with other generation sources in most markets due to the low natural gas pricing. Combined cycle facilities have seen a general increase in capacity factors as a result of the low natural gas prices.

**Bierzwinsky:** Clean fuels are an extremely attractive proposition in Latin America at the moment. For the past two years the region has been riding the initial stages of a wave of renewable energy projects being developed, propelled by the fact that markets in Europe and the US have dried up significantly. Wind, solar and hydro players have been flooding the region. Colombia, Chile, Costa Rica and Brazil are developing major hydroelectric power projects – some meeting very significant resistance from local communities and environmental groups. But it is LNG that will make the most significant impact in the region once the proper infrastructure for its extraction, trans- ▶

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RAQUEL BIERZWINSKY

portation, distribution, export and import are developed.

**Beneby:** Clean fuel technologies and unconventional gas are a major part of the future of energy supply in this country. Renewables such as wind and solar are experiencing rapidly declining cost curves and with zero marginal fuel costs to operate they are having an impact in the market. Shale gas has likewise transformed the availability and cost of natural gas making it a dependable, long term energy resource for the power sector. With a much lower emission profile than coal and lower water use, it offers the ability to significantly reduce our overall environmental footprint.

**Vince:** The US is in a markedly different position than most other countries around the globe, not only because it is sitting on top of huge unconventional gas resources, but because it has the structures in place to exploit these resources with relative ease. The energy mix in the US will continue to be driven as much by fuel availability as by policy and regulatory decisions. Strict environmental regulations and abundant, cheap natural gas are prompting a decline of coal new builds and retrofits in favour of less emissive gas-fired generation, although there is a growing recognition that gas, while cleaner than coal, has its own set of issues. New and forthcoming EPA standards for power plants are expected to further discourage new coal builds, although the agency clearly believes they will spur carbon capture technology. Nuclear power is still viewed as a necessary component of the US generation portfolio, however low gas prices are slowing additions to the fleet and serious safety and waste disposal issues still need to be resolved.

**Sharma:** Power generated from clean-fuel technologies and unconventional gas is very attractive to energy firms on account of it being environmentally friendly. Also, the government has shown initiative in promoting and supporting generation of power utilising clean fuel technologies and unconventional gas, by enacting enabling legislation and providing subsidies and incentives to renewable power purchase producers. For instance, state regulators prescribe a higher feed in tariff for electricity generated from renewable power projects. Additionally, solar power projects and wind power projects in India are entitled to receive generation-based incentives from the government, in addition to the feed in tariff.

**FW: How has network infrastructure for delivery, distribution and transmission been affected by events such as the Fukushima crisis and upheaval in the Middle East? How well, in your opinion, are governments and the sector balancing supply and demand, in light of such events?**

**Rehbock:** Frankly speaking, upheaval in the Middle East had no serious effect on Ukraine as the country has its own energy sources suppliers. Also, taking into account that the country experienced the Chernobyl crisis, which had no less dramatic consequences than Fukushima, Ukrainian policy on energy infrastructure has not changed its direction in regard to this. Ukraine is still not ready to withdraw from 'cheap' nuclear power. Amendments to the Energy Strategy until 2030 provide that nuclear power stations will still provide half of the energy produced in the country. Moreover, there are plans to prolong the operational life of some power units for 20 years above the project term, and to construct third and fourth power units at

## Ukraine is still not ready to withdraw from 'cheap' nuclear power. Amendments to the Energy Strategy until 2030 provide that nuclear power stations will still provide half of the energy produced in the country.

WOLFRAM REHBOCK

the Khmelnytsky nuclear power station.

**Andrews:** Fukushima's crisis made us take another hard look at potential nuclear safety issues and develop additional protection measures. We have been able to handle the current Middle East turmoil much better than in the past thanks to shale fracking, which has brought us a significant supply of oil and natural gas. Additionally, if the Canadian oil fields can easily get more oil to the US, we will have much less reliance on Middle East oil.

**Bierzwinsky:** These events have only served to benefit the Latin America region, as investors looking for more stable and predictable governments, agendas and societies – other than, of course, countries like Venezuela, Bolivia and Ecuador – have made commitments for large investments in Latin America both in the power sector and the oil and gas sector. With respect to Fukushima, nuclear energy is not seen as a viable option yet in Latin America. It is too cost-prohibitive compared to other natural sources of clean energy in the region, including the potential for natural gas and shale gas.

**Beneby:** Our country is doing a good job of becoming more energy independent. While many places around the world have shale deposits, the US has shown the unique ability to monetise these assets and change the game in terms of energy independence and security. On the nuclear side, we are seeing stricter policies, rightly so, to address vulnerabilities identified with the Fukushima tragedy. Both in the Middle East and in Japan, there is a trend away from dependence on oil and nuclear, respectively, transitioning to natural gas as the principal base load fuel.

**Vince:** US energy infrastructure, particularly the transmission and distribution network, is far more impacted by domestic events than events abroad. Hurricanes in the Gulf of Mexico region, tornados in the mid-continent region, massive storms in the northeast and widespread blackouts have all shined a spotlight on grid vulnerabilities. Less-publicised but even more concerning are threats from cyber attack and physical terrorism. There is a growing concern that as the grid becomes 'smarter' it also becomes more susceptible to risks. Congress has not been able to accomplish much in terms of infrastructure security, but given that technological developments move far faster than the US legislature, this may be an area where it makes sense to allow businesses and agencies with specialised knowledge to take the lead. A variety of institutions are work- ▶

ing on the issue.

**Sharma:** The Fukushima crisis has caused both the government and environmental groups to take note and emphasise the importance of safety measures with respect to nuclear power plants. For instance, there have been lots of deliberations at the government level and environmental group level regarding the construction of the Kudankulam Nuclear Power Plant, which is being developed in the state of Tamil Nadu in India. Due to upheavals in the Middle East, and more importantly in the Indian context, the sanctions imposed by the international community on the import of oil from Iran, India had to look for alternate suppliers and also bear increased costs for the import of oil. India is a large net importer of oil and even after alternate sources, the government, oil companies and companies dependent on crude oil as a raw material have experienced huge losses in the import of oil.

**Terpitz:** Such global events have surprisingly little influence at the regional level. Despite the symbolic start of the German ‘energy transition’ post-Fukushima, this was just a return to the previous policy of a nuclear phase-out. Interestingly, the immediate impact of the US’ domestic gas exploration on traditional structures in the European market is much higher – namely because no-one included a decrease of gas prices and the un-coupling from crude oil prices in their scenarios. Finally, the disappearance of the former German gas giant Ruhrgas provides evidence of the severe consequences of unpredicted change in the global market. Governments and policy makers will never be able to balance supply and demand – a wise government may be able to set a durable regulatory framework to allow market forces to form such a balance.

**FW: What signs of financial distress, restructuring and bankruptcy have been evident in the sector in recent months? How would you describe the general health and stability of the energy and utilities industry?**

**Andrews:** For the most part, the electric utilities are relatively healthy and stable but not without risks. They have access to low interest rate money and have received somewhat favourable rate treatment. However, the coal industry has been hit hard for a variety of reasons and may not recover to its pre-recessionary health. With our current low natural gas prices, producers in this area with low production costs have performed well. With our current relatively robust oil prices, the oil producers are generally healthy.

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**Bierzwinsky:** Restructuring is the key word for the energy industry at the moment. Processes are in place in several countries to modernise and bring more cost-effective and efficient technologies that will boost production and enable an adequate supply for the growing economies. If these efforts are successful, especially in the case of Mexico, we will see major opportunities for investors. Of course, all this must be supported by well-planned and clear legislation and implementing regulations. The first step towards reform is a constitutional change allowing the state to enter into shared-risk contracts with private entities and taking away some of the exclusivity it currently enjoys in the provision of certain services in key areas, including drilling, production, refining and transportation. The second step will be crafting the details of such reform in the form of implementing legislation and regulations, and that’s where the real changes will be seen.

**Beneby:** The utility sector is financially sound with the exception of some isolated situations resulting from unique circumstances. Here in Texas the situation is the uncertainty of how one utility company will resolve its debt crisis.

**Vince:** Two big bankruptcy stories with implications for the energy industry are unfolding in the US: Energy Future Holdings (EFH) and Detroit. EFH, at the time of the acquisition, was one of the largest privatisations ever in the US. It now may become one of the largest bankruptcies of a non-financial firm. The privatisation deal was undertaken by some of the premier private equity investors and lenders in the country, but unfortunately it was based on a bet that went wrong. EFH’s downfall was prompted by the sudden, unexpected and sustained drop in natural gas prices. Fortunately for customers, the lights are not expected to go out as the electricity providers involved are expected to continue operations. Detroit is significant because it is a new kind of bankruptcy, and may have an impact on municipally-owned utilities going forward if other cities and municipalities follow suit.

**Sharma:** There have been very evident signs of financial distress and instances of restructuring in the energy sector in recent months. While we are yet to see bankruptcy issues with power producers, some project developers are in clear and present danger of being declared as non-performing assets to the banks who have taken large financial exposure in their lending to such projects. The general health and stability of the energy and utilities industry may well be described as deteriorating, but not quite sick. Having said that, distribution utilities are considered to be the weakest link in the power system. According to a recent study by the Planning Commission, the average revenue gap of distribution companies increased by over 14 percent between 2007-08 and 2011-12. This can be attributed to inadequate and delayed tariff revisions, non-payment of subsidies, power theft and technical losses.

**Terpitz:** Despite the dramatic example of mid-size power houses in Germany, which were forced to shut down brand new gas power plants they could not operate without losses, I do not expect many insolvencies in the sector beyond single failed projects. Nevertheless, there will be increased pressure on power houses to re-invent their businesses in order to adjust to a more decentralised and more globalised market. Energy services – including contracting models, en- ▶▶

BLOCK ANDREWS

ergy efficiency management or trading portfolio management – may be one area for compensating the volatility of income on the generation side.

**Rehbock:** It's fair to say that the condition of today's networks does not satisfy the existing demands of the energy industry. There is the problem of loss of energy in the networks, as networks, which were designed for 30 years operation, are already being operated after 60 years or even more. In addition, Ukraine is trying to increase the amount of electricity produced from renewable energy projects, but Ukrainian networks were not constructed for their relatively small capacity and unstable supply of electricity. It is evident that energy infrastructure needs considerable investment. However, there is a lack of such investment in the industry. This can be explained by regulated prices on the market, absence of the investment component in such tariffs, and non-stable legislation.

**FW: What major developments do you expect to see going forward? What issues do you believe will shape energy policy and market activity in the months and years ahead?**

**Bierzwinsky:** Given the difficulties facing the US and European economies, and the turmoil in the Middle East, everything seems to point to continuous growth and development of the energy sector in Latin America and an increase in deal flow. We are likely to see increased investment primarily by multinational investors, followed by Chinese investors and also, to a much lesser extent, Middle Eastern investors, particularly in the oil and gas sector. We also expect to continue to see significant investment in renewable power throughout the region, with wind, solar and hydro at the forefront. Key to further development will be the ability of certain countries to tap and use for domestic consumption, as well as for export, their natural gas and shale gas resources, most notoriously in the case of Peru, Mexico and Brazil, while Chile will depend on construction of viable LNG intake facilities to supply its industry, in particular its mining sector. The price of natural gas will play an essential role in these developments.

**Beneby:** Technology will be a big player in how utilities evolve moving forward. Much like other industries that have fundamentally changed – for example, computing and telecom – utilities will have to figure out game-changing technologies such as distributed generation, integrated demand response, energy storage, and electric vehicles to name a few. Like all industries that transform, there will be winners and losers. One thing for sure is that the winners will be even more successful and influential than they are today.

**Vince:** It is difficult to predict what the energy and utility sector in the US will look like in the future, but it is sure to be very different than it is today. In addition to the gas and oil boom, major game changers such as climate initiatives, big data, regulatory changes, the impact of China and emerging markets on the global energy picture, the development of storage – these all will have a transformative impact on the industry. In the near term, issues such as reliability, access to capital, the effect of federal agency and state government policies on price and availability of fuels, and when and where the next major storm or cyber attack will strike, will be key drivers in national policy discussions. Energy executives will

grapple with energy efficiency measures and demand-side opportunities, allocation of costs associated with infrastructure improvements, and the impact of climate change on the industry. Energy storage and rooftop solar will also be major game changers.

**Sharma:** One development would be setting up a central infrastructure tribunal to resolve disputes in public contracts. Also, an improvement in the domestic financing market is expected as presently the regulatory restrictions prevent financing of infrastructure projects by insurance companies and pension funds. The government may tap into large untapped sources of funds by deregulating this source of funds. The large issue of economic growth in India is directly influenced by, and will be dependent upon, fulfilment of its energy requirements. The government is therefore expected to play an even greater proactive role in rationalising regulatory and legislative regimes, and play the role of a facilitator rather than regulator in the future. Also, due to large energy demands in India and the substantial demand-supply gap, there remains large potential for investments and returns in this sector.

**Terpitz:** With the increasing generation of renewable energy sources, the era of generous feed-in tariffs should come to an end in Europe. Subsidies will need to be provided in a more controlled way, depending on where power plants are really needed and whether they are able to contribute to the stability of the network. At the same time, further research into all types of energy storage and battery technologies is likely to see much stronger support – not only because storage would help with integrating volatile wind power production, but also because of its potential for electricity based-mobility.

**Rehbock:** The main expectation is that the president will sign draft law No 0916, which will lead to reform of the electricity market. The act will solve the problem of cross-subsidisation, whereas the market of retail electricity will be liberalised. Electricity distributors will cease to have a monopoly as far as there will be unbundling of the transportation and supply functions of these companies. A transparent and competitive market system with predictable pricing mechanisms will attract investment in the energy sector. In general, some improvements in the energy market are expected in relation to the fulfilment of Ukraine's obligations towards the energy community and pending the signing of the Association Agreement. Considering diversification of gas supplies, taking into account the huge estimated resources of shale gas, Ukraine has a chance to escape its natural gas dependence and to push its industries as the US did.

**Andrews:** Government intervention into the energy market is a big driver for what the future may see. Today's fashionable energy sources – natural gas and renewable – could easily be tomorrow's stepchild if the government changes policies. If PTCs and other renewable incentives are taken away, and natural gas prices increase significantly due to increased regulation and demand, the future could look quite different. However, any changes that occur are likely to come after the next Presidential election cycle. The other driver for change could be a significant electric demand increase. Although I would like to see economic activity increase, I don't expect it in the near term. So, for the most part, we see *status quo* for the next few years. ■