



## World Forum on Energy Regulation III October 8 – 11, 2006 Washington, DC USA

### SESSION SUMMARIES

On October 9-11, 2006 more than 600 participants from 85 countries, including representatives from more than 97 state and national energy regulatory authorities, gathered in Washington, DC, USA to attend the World Forum on Energy Regulation III. Delegates included energy regulators, government officials, policy makers and experts, energy industry executives, investors, academia, consumer associations, environmental groups, development agencies, and other energy experts from around the world. The Forum focused on three main tracks: Investment in Energy Infrastructure, Regional Energy Markets, and Energy Access and Affordability.

Below please find the session summaries<sup>1</sup> in the order of the program agenda. The full program agenda with speaker names is available at: <http://www.worldforum2006.org/agenda.htm>. All presentations and speaker biographies are available at: <http://www.worldforum2006.org/login.htm>.

#### **Opening Session, October 9**

Chairman Joseph T. Kelliher, USA, Chairman of the Federal energy Regulatory Commission, opened the Forum with his perspective of energy regulation in the United States. National energy policy in the US relies on competition to assure adequate supply at reasonable prices. This is different from a policy of deregulation. Competition and regulation are twin instruments of policy. Effective competition requires good regulation.

Chairman Kelliher described US wholesale electricity markets as regional, and outlined four types of regional markets in the US: “Day-2” RTO markets, “Day-1” RTO markets, bilateral markets; and one non-competitive government-supplier market, the Tennessee Valley Authority (TVA). Current challenges to electricity market in the US are assuring adequacy of future supply, strengthening transmission grids, and developing effective demand response.

In US gas markets, the trend is an expanding scope of market. What was once a US market is now a North American market, and is further becoming a world market. Chairman Kelliher encouraged regulators to be agents of change. Markets are dynamic; regulation must adapt. Static policy is doomed to fail.

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<sup>1</sup> NARUC expresses its sincere appreciation to those who prepared the session summaries: Mr. William Nugent, Executive Director, New England Conference of Public Utility Commissioners; Mr. William Smith, Executive Director, Organization of MISO States; Mr. Raj Barua, Advisor to the Chairman, Pennsylvania Public Utility Commission; Mr. Joseph McGarvey, Research Association, National Regulatory Research Institute; Mr. Miles Keogh, Director of Grants & Research, NARUC; and Ms. Grace Soderberg, Assistant General Counsel, NARUC.

**General Session, October 9:**

**Roundtable on Investment in Energy Infrastructure: Regulatory Expectations**

Well conceived regulation, consistently and skillfully executed, is the key to sound capital formation; regulation must be clear, stable, and predictable. Moderator Branko Terzic of Deloitte Services noted that a third of the world has a developed electricity industry, a second third has electricity supply but it is inadequate, and a final third has no electricity service at all. He urged the world's energy regulators to carefully enforce competition rules with the expectation that well designed and functioning markets would attract necessary capital.

AES Executive Vice President Robert Hemphill said that the goals of regulators and AES's business are fundamentally compatible. Both seek to improve standards of living and sustain economic development by operating a reliable, reasonably priced electricity system. This is true, he emphasized, even though regulatory environments can vary widely; he pointed to AES's success in jurisdictions as diverse as Kazakhstan, Cameroon, Chile, and the U. S. state of Indiana. He believes a company's people are the key to its sustainable growth. AES carefully analyzes prospective business partners' or acquisitions' projects, risk management, focus on productivity gains, financial discipline, and skill at working with regulators.

Stressing that the more capital that is available, the lower will be the cost of capital, Marc Lipschultz of Kohlberg Kravis Roberts & Co. (KKR) said that available private equity this year exceeded \$400 billion, triple the amount available just two years ago. His firm invests money from institutions (like pension funds) which have very long-term planning horizons which, therefore, care a great deal about where businesses will be many years into the future. They seek predictable future returns; clarity, stability, predictability in regulation.

Investors will readily invest in clear, stable, predictable markets, in which managers will use available capital, employ it widely, and give quality service to customers. He offered as an example ITC (Independent Transmission Company—a KKR investment), which receives close and supportive scrutiny from the Michigan Public Service Commission (MPSC). ITC uses more capital than its currently earns, and is able to attract necessary capital because of the stable, predictable environment provided by the MPSC.

Sir John Mogg, the President, Council of European Energy Regulators (CEER) and Chairman the United Kingdom's OFGEM, also said that regulators play an absolutely critical role in ensuring quality service delivery, sustainability, competitiveness, and security of supply. Liberalized competitive energy markets, independent regulators, and good regulatory models are important to these ends.

In acquiring sufficient capital, the challenge is to demonstrate to investors that there is a stable, long-term climate of legislation and regulation. This requires regulatory independence within statutory rules, known and transparent rules, and consistent, predictable decisions. Sir John Mogg noted that Europe is attempting to serve all European consumers by creating an integrated, competitive energy market out of a historically fragmented industry. European regulators are seeking to stimulate Europe's investment climate by promoting linkages among European member states, harmonizing the powers and independence of national regulators, and working together to advance the interest of all European consumers.

Working through CEER, European regulators are creating seven regional electricity and five regional gas markets as a step toward single Europe-wide markets. Sir John sees investment issues as easier to solve than “not in my backyard” issues or the relinquishment of national authority and control.

### **Track A, Session 1:**

#### **Creating (and Maintaining) a Good Regulatory Climate for Investment**

The panelists agreed that in order to attract investment regulators should seek to establish a regulatory climate that is transparent, consistent, predictable, unbiased, and operated according to clear rules. Establishing independence of regulators from political pressure is a sometimes difficult but vital task for creating a successful regulatory climate. Commissioners should aim to increase their expertise to help establish their authority and independence within their countries’ governmental system. Commissions should also improve the competency of their staffs through competitive pay and improved training. The Hon. Mr. Smunda Mokoena (Chief Executive Officer, National Energy Regulator, South Africa) and the Hon. Mr. Angel Semerdjiev (Commissioner, State Energy & Water Regulatory Commission, Bulgaria) suggested that smaller developing countries would benefit from enabling regional energy markets to develop, requiring closer cooperation amongst regulators from those countries. The Hon. Mr. Lyndon G. Rowe (Chairman, Economic Regulation Authority, Australia) emphasized that commissions should seek to avoid excessive regulation but also recognize that reducing regulatory risk for investors is not the same as reducing commercial risk and so it is not the role of regulation to help make a bad commercial decision into a good one.

### **Track B, Session 2:**

#### **Regional Regulation**

Dr. Robert Ichord, Chief, Energy & Infrastructure, Bureau for Europe & Eurasia, U. S. Agency for International Development (USAID), presided over this session, which examined regional market models, designs and institutions, both inter-country and inter-regional, sub-state national systems.

North Carolina Utilities Commissioner Samuel Ervin, the Chair of NARUC’s Committee on Electricity; Commission, said that for U. S. state regulators regional regulation is “a work in progress.” The U. S. regions currently feature four different models of regulatory cooperation, reflecting the regions’ different popular preferences and utility characteristics. It occurs in an environment of contested state and Federal authority over some issues. Systems developed for regional reliability purposes have grown to also handle economic trading. State regulators participate in regional state committees, which are generally advisory or advocacy, advising the ISO or commenting to the FERC. These regional entities are also joined for reliability purposes by larger regional and national reliability councils. Commissioner Ervin sees the current U. S. regional approaches as experiments, searching out strengths and weaknesses of regional approach, not necessarily an end state. The U. S. system may evolve further—though the direction is not at all clear.

Jerson Kelman, Director General of Brazil’s Electricity Regulatory Agency (ANEEL), noted that the utility regulatory reforms of the 1990s were focused on mature economies. And “cures”

developed in the mature economies became the bible, prescribed and given to the developing world where, having taken the medicine, the patient died. National governments when faced with the threat of energy shortages tend to reevaluate free trade agreements. Three quarters of Brazil's installed capability is hydro. The country is linked by a large grid to insure against regional effects. Brazil's electricity industry, regulated nationally, is a blend of public and private utilities, including 1,000-plus independent generators, 24 transmission companies, and 64 distribution companies. Mr. Kelman emphasized that competition should be *for* the market, rather than just *in* the market. He encouraged the development of contracts which will attract new entrants to the market—15-year contracts for thermal plants, 30 years for hydro (both signed 5 years before power is first to be delivered).

According to Michael Thomadakis, Vice Chairman, Greek Regulatory Authority for Energy, energy treaty between the European Union and southeastern European (SEE) countries has established Europe's eighth regional government. Ultimately it will be integrated into a grand European market, covering perhaps 38 countries. To get there it must surmount many obstacles, including existing EU legislation based on a national (rather than regional) approach, non-harmonized national market operations (wholesale and real-time), insufficient investment in interconnection capacity, a lack of effective unbundling, political considerations related to multi-national jurisdictions, and a lack of market monitoring institutions. This produces a lack of transparency, even at national levels.

Southeastern Europe is characterized by small countries with dominant players, non-uniform legal and regulatory frameworks, affordability issues, poor investment climate, but with a positive evolution encouraged by EU accession. The authority given to regulators is not uniform. Functional (and sometimes legislative) independence is not always implemented in practice. The absence of cross-border enforcement leads to distortions in wholesale and retail price formulation. There are two regional associations of national regulators, (CEER and ERRA) formed voluntarily. Collaboration is helpful but not sufficient. Commissioner Thomadakis sees three possible approaches to Europe-wide regulation: national regulators advisory to EC (currently preferred), a European-wide regulator comparable to the FERC (with continued existence of national regulators and a division of jurisdiction between the two), and a unified European regulator. Regulatory cooperation in Europe is relatively new and requires bold political decisions and support to ensure its effectiveness.

Sabybek Sultanbekov, Deputy Chairman and State Secretary of Kyrgyzstan's National Agency for Anti-Monopoly and Development of Competition, sees his country as small but possessed of a great energy potential. The country has no oil or gas, so electricity is widely used for heating. The 10-year-old National Agency for Anti-Monopoly, seeks to ensure that prices include all costs. Assistance to low-income consumers is provided through social service budget. A mid-level price is 2 cents/kwh, and lower for lower consumption. The Government has just set a single tariff of 1.2 cents/kwh. With the cost of energy at 2.3 cents/kwh, this creates a "quasi-fiscal deficit." The Agency is introducing an inflation adjustment but continues to face problems of currency fluctuations. Since certain customers have difficulty paying, the Agency is setting up accounts to allow them to consume now and pay later. Kyrgyzstan hopes to expand its hydro capacity with investments from foreign companies (notably AES).

**Track C, Session 3:**  
**Why Access to Electricity is Important**

“Electricity is to the economy as blood is to the human body.”

Energy, in its various forms, is an important prerequisite for development, progress, and growth. The main theme of this panel was that energy, namely electricity, is at the center of the modern world. The modern world needs electricity the way we need food, clothing, shelter, health care, and security. Increasing access to electricity has great potential to stimulate socio-economic development and improve the standards of living of the people.

As recognized above, access to electricity is important for obvious reasons. In recognition of the importance of increasing access to electricity, various electricity sector reforms and electrification efforts have been pursued with great enthusiasm in last decade and the degree of success are varied from one region to another due to various underlying factors. This panel focused on such developments in a select group of countries. The speakers during this panel were The Honorable Rodolfo B. Albano, Jr., Chairman, Energy Regulatory Commission, Philippines; The Honorable Radian Ganjuur, Chairman, Energy Regulatory Authority, Mongolia; and The Honorable José Toledo Ordoñez, Chairman, National Electricity Commission, Guatemala. Mr. Bernard Tenenbaum, Lead Energy Specialist, World Bank, United States, provided advice and offered guiding principles in implementing various initiatives. The moderator was Mr. Elijah Sichone, Executive Secretary, Regional Electricity Regulators Association (RERA), Southern Africa.

**Track A, Session 4:**  
**Different Global Models of Energy Regulation**

The main theme was to examine the different models of energy regulation that are prevalent throughout the world and the composition of the panel ensured that a sample of such models were discussed.

The common issues raised during the discussions were the protection of consumers, ensuring quality of service, enabling tariffs to be closer to cost of service, and transparency in the regulatory process. One critical issue that the group recognized was that policies are set by the government and need to be embodied in law which the regulators then have to implement without any changes in the middle of the implementation process. While different regions are at different stages and types of energy regulation, it was recognized that the independence of the regulator was important to ensure confidence of the industry and the consumer in the regulatory process.

**Track B, Session 5:**  
**Perspectives on Creation, Implementation, and Oversight of Energy Markets**

Noting that regional markets are the reality all over the world, President Jorge Vasconcelos of Portugal's Energy Services Regulatory Authority welcomed their transparency, wealth of information, and consumer benefits. He foresees markets' becoming increasingly complex, more inter-connected to gas markets, and being joined by additional markets—e.g., CO<sub>2</sub>—over the next 3 years.

Maria Teresa Costa, Chairwoman of the Ibero-American Association of Energy Regulators (ARIAE) and Chairwoman of Spain's National Energy Commission, argued that integrated regional markets require a competitive model, which can be function only if they have adequate interconnection infrastructure, freedom of access, and allow consumers to choose their suppliers.

Dr. Lawrence Musaba, Coordination Centre Manager of the Southern Africa Power Pool in Zimbabwe, described the 10-year-old SAPP as covering 12 nations (of which nine are interconnected), 230 million people, and generating 55,000 megawatts. SAPP optimizes the use of the region's energy resources and provides mutual support to each nation's electricity system. It began with a base of bilateral contracts, but in 2001 added short-term energy markets (STEM, which requires firm contracts and security deposits, provides for penalties for non-performance). Quality-of-service meters are required at all interconnections, and national law requires the reporting of any system disturbances. Regulators have formed Regional Energy Regulators Association (RERA).

Rick Sergel, President of the North American Electric Reliability Council, said his organization was recently empowered (by the 2005 Electricity Policy Act) to improve the reliability of North America's eastern and western interconnections. NAERC, an electricity reliability organization comprising eight regional organizations, was originally a voluntary organization but now has federally mandated standards. It is a self-regulatory organization in which industry provides expertise (like New York Stock Exchange or the American Medical Association), has an independent board of directors, and many volunteers. It specializes in standards, enforcement, assessments—analysis and bench-marking, readiness programs, situation awareness, and training.

Dr. Gabor Szorenyi, Director of the Hungarian Energy Office, presented his analysis of electricity regulation in more than 40 countries. He noted that competition is not perfect at enforcing efficiency gains and quality improvement. Customer expectations change. RPI-X on network charges "incentivizes" cost reduction; but without standards RPI-X will lead to reduced service quality.

Audrey Zibelman, the Chief Operating Officer of the United States PJM Interconnection, noted her system's transparent information exchange on generation availability, and its transfer capability, pricing, and telemetry systems. PJM has a 15-year transmission expansion plan, economic efficiency planning, long-term products, financial transmission rights and reliability-pricing, and a focus on future market development. In response to a question, she said she believes the US's ISOs are capturing the information on which a generation attributes trading system can be based.

### **Track C, Session 6: Stakeholders' Roles in Promotion of Electrification**

The theme of the session was how to bring the benefits of electricity to the broadest range of potential customers throughout the world. The members of the panel outlined many challenges of extending electric service and gave examples from several countries of projects that show success.

One common issue identified during the discussions was the difficulty of extending service, particularly in rural areas, because of low population density and the poverty frequent in rural areas. Urban areas present some similar and some different challenges. Electrification can enable educational opportunities, reduce poverty, and improve environmental condition. Effective electrification programs should focus on consumers' needs but must also develop financially sustainable providers. Electrification programs are aided if the government makes them a policy priority. Low cost technical options, including renewable technologies, deserve consideration as ways to keep access prices affordable to serve remote locations.

### **Track A, Session 7:**

#### **Challenges/Barriers for the Public Sector in Development of Energy Infrastructure**

Commissioner David Hadley of the Indiana Utility Regulatory Commission, presided as Commissioner Stephen Adu of Ghana's Public Utilities Regulatory Commission (PURC; he is also its Executive Director), emphasized the role of infrastructure in economic development (concrete motorway, new harbor in capital, and a new hydropower system) and government's role in providing that infrastructure in the years after Ghana gained its independence. He noted that the unit cost of utility projects is typically much higher than the unit costs of development projects in health-care, agriculture, and education.

Since Ghana's hydro assets are largely developed, the country likely will develop thermal power plants, which seem likely to require government guarantees. Ghana also needs open access, transparent pricing, an enhanced transmission system to ensure stability, and should have independent system operator (an ISO). GPRS-II seeks to access diverse, modern forms of energy, improved transmission infrastructure, and a quality regulatory system.

Yusuf Gunay, the President of Turkey's Energy Market Regulatory Authority said that regulatory reform was promoted by the fiscal collapse of Turkey's welfare state in the 1970s and sectoral restructuring in energy since 1989. Globalization increasingly pressured national economies to reform their regulatory structures, but the energy sector is still dominated by state-owned utilities in developing countries. The unbundling of vertically integrated utilities is the first issue of liberalization; public monopolies failed to ensure the maximum economic benefits because of political interference and managerial insufficiency. Privatization is essential to regulatory reform, but increasing the participation of the private sector requires transparency in market and a non-discriminatory attitude on the part of regulatory agencies. All market participants, including consumers, need current and easily accessed information.

Hans Konow, President & CEO of the Canadian Electricity Association, spoke of the need for unified multi-company, multi-industry communications to promote the development and construction of needed infrastructure. He also described the absence in Canada of, and the desperate need for, a comprehensive and timely statistical reporting system (similar to the U. S. Department of Energy's Energy Information Administration—EIA).

Marco de la Rosa, the Managing Director of Operations for AES Corporation (Latin America), said AES analyzes a variety of systems—political, social, financial, macroeconomic, cultural, regulatory, and energy—to determine whether or not to invest in a developing country. He

presented AES's analysis of the current utility opportunities in Argentina, the Dominican Republic, and Venezuela.

Success should be defined in terms of sector performance. Regulation is not a tool in isolation but should be employed as an integral part of energy and national macroeconomic policies. The most important attributes of an attractive governmental environment are commitment, credibility, and predictability. An independent regulator is very important, but he claimed that AES has frequently run into political interference. Mr. de la Rosa argued that arbitration systems or specialized appeals tribunals staffed by experts, as in Chile, can be an effective tool in building investor confidence.

No one model, Mr. de la Rosa said, is superior to any other in any specific country. While the enumerated desirable characteristics are likely on average to produce the best results and attract the greatest private sector response, the specific combination that is best in any one country must fit that country's individual needs and circumstances.

**Track B, Session 8:**  
**Benchmarking Regulatory Reforms**

The main theme was to examine the progress of regulation and monitoring in several countries throughout the world. The moderator set the stage by indicating that it was difficult to reach the absolute and there were several examples of market failures. Nevertheless, two important factors that affected the success of regulatory reforms were raised: one was the physical capabilities of the transmission and distribution (T&D) network in that jurisdiction; and the other was the government's ability to give up control of such T&D assets and turn it over to private operators.

Some of the common issues raised were the stage of development of different energy markets, the need for transparency, viable market rules, and a process that can be monitored. Data access was stated to be a critical issue and there was a general consensus that new tools for data management could ensure a transparent regulatory process. Finally, benchmarking has to be defined such that performance is measured in realistic terms based on political and technical framework within a jurisdiction.

**Track C, Session 9:**  
**Overcoming Challenges of Energy Availability and Deliverability**

The speakers dealt with the theme of bringing various forms of energy resources to customers at affordable prices, especially where resources are scarce or distant. They represented four countries at differing stages of economic development on three continents.

They noted the common challenges of location and prices and the need to expand fuel and supply options. These result from geography and geology. Sustainability of the fuel mix is a requirement to reduce risk exposure and price volatility. Critical issues the speakers recognized included the need for regional cooperation to enhance investment opportunities. Other important factors are the need to upgrade trading infrastructures and the need to respect contractual arrangements. Future solutions must be environmentally friendly, because growth in developing countries is higher than developed economies.

### **Opening Session, October 10**

Clay Sell, Deputy Secretary of Energy (USA), outlined the major points of US policy after the 2005 legislation. First, diversity of energy supply must be increased, relying primarily on technology, commercialization of renewable sources, and a global nuclear energy partnership. Increased efficiency and conservation is a second key component, with emphasis on developing cost-effective energy efficiency measures and aligning incentives. The third component is modernization of the energy infrastructure, especially the electric grid.

Amory Lovins (USA) listed several “predictable surprises,” showing that saving energy is cheaper than buying it. Benefits of those savings show up in carbon reduction, reduction of petroleum imports, job creation and job retention. Corporate leadership is recognizing these benefits. The Oil End Game report shows a way to eliminate oil use entirely. Rate system should reward utilities for cutting bills, not selling quantities of energy.

Marcus Peacock, Deputy Administrator of the Environmental Protection Agency (USA), spoke on the policy implications of climate change. He reviewed science showing global temperatures are at the upper end of the historic range with some indications of human attribution. The safe policy course for the US and other nations is to reduce emissions now. The US is on track to exceed its goal of a 2 percent reduction in emissions over a ten year period. Other nations are achieving even more impressive results. He challenged energy leaders to see the personal carbon use calculator on the EPA website.

### **General Session, October 10:**

#### **Regional Energy Markets**

One of the main themes was that energy consumption will increase 71% by the year 2030 and security of energy supply becomes a paramount issue. With the increased demand from India and China, the USA and European Union (EU) will lag in national/regional consumption. The question then becomes how such demand will be satisfied, because in spite of a decline in reserve for the next 25 years, there will still be a great dependency on fossil fuels. Not only is there a concentration in production worldwide, there is also a concentration in consumption.

While it is undeniable that the energy and the economy of a nation are linked, a key issue identified was the need for international cooperation in the energy sector. For that to be successful, there needs to be rational energy use, efficiency in energy use, efficiency in energy supply, environmental consideration including costs to consumers, and a business climate that allows investments in energy infrastructure. Of key concern is the need for adequate and secure transmission of energy from source to end user and, therefore, regulators and policymakers need to find ways to bring access to energy for all end users.

### **Track A, Session 10:**

#### **Comparison of Private Sector Challenges in Infrastructure Issues**

The panel recognized that multiple regulatory models can be used to react to a particular country’s needs, and that many models can be used to successfully develop infrastructure. But in each case investors are seeking regulatory certainty, a stable market structure, and a clear return before making an investment that will last for decades. A stable market structure and clear return on investment are especially attractive features to investors. The panel agreed that

regulators must address the large costs associated with infrastructure investment. In that regard, regulator should focus on the long term benefits of energy infrastructure, and must engage with and educate the public and government officials to avoid an outcome that is politically expedient but does not serve the long-term interests of the society.

### **Track B, Session 11:**

#### **Market Behavior**

The main aspects of an open energy market are the security of supply, the prevalence of competition, and the need for protecting consumers and the environment. The common expectations are that there be non-discriminatory access to the grid/network, effective development of interconnections, and tangible benefits to small businesses and domestic/residential customers.

In any market, it is critical to note how and who monitors the market. Market monitors can be government bodies (like the FERC in the US), internal monitors (such as the one in PJM), or external monitors (such as the one in ISO-NE). The rules of the market has to be transparent such that all market participants are aware of the expected behavior; it would be unfair (and probably illegal) to penalize a market participant on a rule set retroactively. One has to be aware that that illegal market behavior can be in terms of physical withholding as well as economic withholding. The panel finally indicated that the goal is not achieve perfect competition; rather, it is to achieve a workable competition.

### **Track C, Session 12:**

#### **Regulatory Role in Promoting Efficient Energy Use**

The session considered how a regulatory system can encourage suppliers to invest in demand side efficiency and clean energy resources. Speaking from experience in various parts of the world, the speakers urge regulators and policy makers to set ultimate goals and then adopt regulatory measures that will promote those goals. They point out that benefits often reinforce each other – energy efficiency yields individual savings and results in lower societal/national prices and, at the same time, reduces emissions.

They noted the common challenges of regulatory systems that reward sales of units of energy. Critical issues include need for public education about energy alternatives, infrastructure barriers that limit the availability of some energy supply options, and lack of overall integrated strategies and planning. In addition, regulatory systems do not always accommodate certain renewable and efficient technologies. Both command and control and market tools can play a role in meeting energy saving goals. Regulators should assure eligibility of many kinds of projects and sponsors. The speakers emphasized the complexity of factors involved in increasing efficient energy use.

### **Track A, Session 13:**

#### **Investment in Electric Transmission & Distribution Infrastructure**

The main theme of this session was to examine the critical issue of whether there was significant capital available for T&D infrastructure around the world so that there is viable energy access. The initial question that requires an answered is identifying who is responsible for adequate T&D investment. The common factors for successful investments would be “friendly”

investment environment and evidence of optimal risk/reward ratio. One view was that such investments may also be driven by the successful opening of electricity markets.

There was general consensus that for successful attraction of investments in T&D projects, there needs to be more cooperation among government agencies, regulators, system operators, and regional bodies. Equally important for successful T&D investment is the need for revenue flow from end-use customers, comparable investment in generation, attractive economic climate to attract foreign capital. Security of supply can only be achieved if there is adequacy in generation as well as in T&D.

### **Track B, Session 14:**

#### **Global Natural Gas Issues**

The panelists all highlighted the regional nature of the market for natural gas, and the increasing importance that the global liquefied natural gas (LNG) markets will play in the supplies for North America. However, the supply of gas is distant from demand, necessitating new investments in infrastructure and coordination among national regulatory bodies. Panelists noted that price volatility is a separate challenge from high prices because the volatility makes business planning difficult and, in turn, inhibits investment in natural gas supply and delivery. Regulators must therefore balance the costs of infrastructure with the need to address volatility and ensure adequate supply.

The vast majority of recent generation additions in North America have been gas fired plants. Within North America, Mexico is likely to increase imports of gas for electricity generation, and so will be exploring cross border pipelines from the U.S. LNG is expected to bring price stability and enhance competition in the Mexican market; the Mexican Regulatory Commission has granted permits for five new LNG terminals. In the U.S., power generation remains the largest source of demand for the U.S., and reliance on LNG as a source of supply is expected to rise from two percent of current supply to nearly nine percent by 2020 according to the American Gas Association. Mr. David Parker (President and CEO, American Gas Association, Untied States) estimated that approximately \$100 billion would be needed for new gas delivery and storage infrastructure. Canadian production is expected to be flat, and increased use of natural gas for use in recovering oil from oil sands will lead to a drop in Canada's ability to export gas. Panelists discussed the success of efficiency and conservation efforts in reducing demand for gas over the last decade, the depressive effect of high gas prices on manufacturing activity, the reliability of forecasts, and the limited scope of regulators' influence on gas market issues. The emergence of the global LNG market and the security of supplies obtained from it drew the focus of the panelists as two pressing questions for the future.

The panelists discussed alternative means for meeting demand for natural gas, including long-term contracts, environmental-based taxes, increased conservation, opening restricted land to exploration, greater regulatory allowance for financial hedging of gas volatility, and revenue decoupling to reward gas distributors for encouraging conservation rather than maximizing the amount of gas sold to their customers.

**Track C, Session 15:**

**Impact of Training in Improving the Capacity of Regulatory Agencies**

The Honorable Vidmantas Jankauskas, Chairman, National Control Commission for Energy & Prices, Lithuania, noted that training remains a key element for Commissions. Why? Regulation is technically and politically complex: “A fight between economists and engineers written by lawyers.” To be effective, regulators require the best intellectual tools. Prof. Pippo Ranci, Florence School of Regulation, Italy, argued that credibility is the center of regulatory decision-making, and what the decision is, is only as important as how the decision was made, and by whom. Training is important not only for new regulators, but to create adaptive leadership among existing staffs: the situation is always changing. Both presenters highlighted the utility of e-learning as a cost-effective way to bring together key stakeholders.

Mr. Shantanu Dixit, Prayas Energy Group & Electricity Governance Initiative (EGI), India, highlighted how training reinforces the elements of good governance: Transparency, Accountability, Participation, and Capacity. His organization developed a toolkit that trains participants in these elements, and he stated that the effective use of the toolkit has strengthened public decision-making. Dr. Paul Sotkiewicz, Director, Public Utility Research Center, Florida, argued that training creates the capacity to do the technical but also the political aspects of regulation. Two models emerge: in-person training on a regional basis or residential to a university; and e-Learning. The former creates stronger networks, the latter balances demands on the trainee’s time and high costs.

**Track A, Session 16:**

**Global Issues in Natural Gas Pipeline Development**

Panelists presented the progress on gas pipelines in the United States, South America and West Africa. Panelists also discussed the cost/benefit tradeoffs of pipeline construction in comparison to the expense of tight markets for gas in which small decreases in supply can result in large increases in price. Panelists offered alternative solutions for developing natural gas pipelines, including the streamlining of the siting process, increased use of long term contracts to provide price stability and encourage investment, harmonization of the regulatory process across different jurisdictions and among agencies within a given jurisdiction, regulations that support the financial security of the investment in order to attract investment to the gas infrastructure sector, and the use of direct cross-subsidies from high-income consumers to assist low-income consumers.

**Track B, Session 17:**

**Is Competition Working?**

Following moderator John Gulliver of Pierce Atwood and Paul Bulteel, the Secretary General of Belgium’s Eurelectric, T. Graham Edwards, President & Chief Executive Officer of the Midwest ISO (MISO) described the United States 2005 Electricity Policy Act (EPA 2005) as supporting competition, greater system reliability, the role of ISOs/RTOs and the markets they support—with direct access, real time and bilateral markets.

MISO is working to eliminate barriers to competition, ensure price transparency, and achieve security-constrained dispatch. MISO currently has a centralized view of the 26 dispatch centers in the region’s 15 states, but the 26 are being consolidated into one by 2008 with savings to be

passed on to “customers. The use of TLRs is producing savings in consumption. Costs are being flowed through by the use of “cost adders,” but companies may not be coming in for rate cases such that savings would lead to lower rates. Competition is working in the MISO region, but it has only a 1-year history. MISO looks elsewhere in country and sees savings in markets which it expects to realize over the short- to mid-term future.

Jan Moen, Director of Norway’s Regulation, Water Resources & Energy Directorate, compared two studies. The first study, by Lars Bergman of Sweden, says that competition seems to be working, but, since it began when additional capacity was not yet needed, there was no proof that the market attracts new participants. Fortunately, in Scandinavia, while a few major power producers have a national dominating position, none has more than 20% of the Nordic market. Prof. Bergman found no market power apparent in Nordic market. It has a simple market design. The national champions’ strong position in their countries markets was diluted by their having to compete in the larger Nordic market. He found strong support for market-based system and informal but substantial commitment by companies to a competitive market.

The EC Sector inquiry on the gas and electric markets started June 2005 and is due to be reported in early 2007. Its preliminary findings are that markets remain national and are characterized by a high level of concentration in generation, vertical integration persists, the low level of cross border trade has not threatened national monopolies, and the European markets lack of price transparency. “Europe’s Energy giants need to be exposed to more competition. New laws are needed.” (Mr. Barroso, President of European Union, as quoted in Financial Times). Bottom line, according to Mr. Moen: NordPool is successful; European model needs improvement.

John R. Perkins, President of the U. S. National Association of State Utility Consumer Advocates (NASUCA) and Iowa’s Consumer Advocate, changed the session’s question from “Is competition working?” to “Is deregulation working?” and concluded emphatically “NO!” Mr. Perkins primarily spoke to the experience of restructured states that required the sell off of generation assets and capped rates for multi-year periods. Recalling a 2002 NASUCA resolution that urged restructuring states to ensure that default service providers are equipped so as to ensure that customers would be no worse off under restructuring than they would have been under continued regulation, he concluded that deregulation had failed.

### **Track C, Session 18:**

#### **Affordability of Energy for Domestic Customers**

The Moderator, Bob Ichord of USAID, opened the session by highlighting how access to energy is a key development tool for many countries, and regulators’ role in preserving affordability is a central aspect of that. Jonathan Halpern of the World Bank focused on how, in addition to the effects of poverty on energy availability, interconnection obstacles, poor governance over billing and metering, poor quality of service, and low participation in decision-making are factors that make energy less affordable. He argued that targeted consumption subsidies can be improved but only marginally, while connection subsidies seem to have advantages where they are designed effectively. Energy efficiency is a good target for pro-affordability programs where access is well-established. Ms. Nana Janashia, Executive Director of the Caucasus Environmental NGO Network (CENN) provided a case study from her experience in Georgia with using regulatory systems to improve civil society and to extend electricity access by building partnerships. The

panelists noted that difficult relationships between regulators and political forces in government stems from lack of communication and recognition of each others' roles. During discussion, both emphasized the importance of training in overcoming this obstacle.

### **Opening Session, October 11**

The Honorable Katherine Sierra (Vice President, Sustainable Development Network, The World Bank) addressed the Forum on the design and implementation of regulatory systems. Observing that approximately two hundred regulatory entities that have been created around the world in the last fifteen years, Ms. Sierra held that most observers would agree that the promise of regulation has not been realized. Vested interests created by a regulatory system are an impediment to reform. Periodic evaluation is necessary to help close the gap between design and implementation of regulatory systems, and Ms. Sierra recommended the World Bank's "Handbook for Evaluating Infrastructure Regulatory System," by Ashley Brown, Jon Stern, Bernard Tenenbaum, and Defne Gencer for conducting evaluations of regulatory systems.

Ms. Sierra noted that fraud in the power sector costs billions of dollars and undermines the public's faith in regulation. She emphasized the importance of transparency in regulation and the need to engage the public so that they are confident that their interests are being addressed, and not just the interests of investors or other vested interests. In addition, regulators should involve themselves in power purchase agreements and monitor the quality of service in a manner that allows them to offer rewards and penalties for service compared to given benchmarks. Ms. Sierra concluded by calling attention to the effect of regulation on achieving environmental goals including energy efficiency and reliance on renewable sources of generation.

The Hon. Mr. Gordon Kaiser (Vice Chair, Ontario Energy Board, Canada) spoke on the interface between environmental and energy issues. Mr. Kaiser noted how many participants in the Forum expressed the need for new infrastructure investment in their respective countries. Mr. Kaiser observed that there tended to be more of a backlog on electricity infrastructure in comparison to gas. He suggested that because there are fewer substitutes for electricity it tends to be more subsidized than gas. A focus on maintaining a low cost, combined with the difficulty of getting new infrastructure in place, tends to lessen investment in electric infrastructure. Mr. Kaiser explained that the government in Ontario is committed to phase out reliance on coal generation, but that it is up to regulators to finalize an appropriate plan to accomplish such a policy objective. He reminded the audience that conservation is usually a faster route to environmental objectives if regulators can determine how to provide the proper incentives to utilities and customers. Renewable energy sources are an appealing alternative, but they often cost more and linking distant or smaller renewable sources onto the transmission grid is a challenge. Mr. Kaiser explained that in order to address these issues, regulators must maintain their core values of employing a long term approach, a transparent process, clear outcomes, tolerance for the discomfort of stakeholders, and developing solutions that can be implemented successfully.

### **General Session, October 11: Energy Regulation and the Global Environment**

The main theme was how to reconcile growing energy use with the need to protect the environment. The short message is that this is a "globalized grid". The increased demand for energy does mean that there is an increase in the quality of life. The G8 nations recently

recognized that energy security, greenhouse gas (GHG), and air pollution were all related and need to be examined in a concerted basis and not in isolation. To achieve those, there needs to be changes in economic policies, better transportation system, and effective air pollution quality control.

The panel recognized that there is a need for reliable supply of electricity to customers at reasonable prices. There needs to be a long-term view of energy and environmental goals policies along with a harmonization of these two sets. This group has to recognize that while this goal sounds simple, it is hard to achieve, especially across national boundaries. One theme was that the policymakers and industry needs to have a mind set of “cathedral thinking”; i.e., a long-term outlook in planning such that we are building for future generations – while we may know what end results we strive and plan for, we may not be around to see the success of our plans.

### **Track A, Session 19: Nuclear Power Policies**

This panel examined the current use and potential expansion of nuclear power for providing power around the world. The panelists agreed that continued safety of existing plants is a crucial component underlying current and future investor and consumer interest in nuclear power. Panelists explored the renewed interest in building reactors, noting new projects in China, France, and Finland and serious consideration of new reactors in the U.S. and seven European countries. The panel addressed the importance of resolving the issue of waste disposal, noting the French law authorizing a deep geologic repository and the struggle of the U.S. to construct its repository.

While agreeing that a stable, predictable regulatory framework is key to enabling investment in new nuclear plants, the panelists disagreed on the extent to which nuclear power needs to be subsidized going into the future. Mr. Skip Bowman (President and CEO, Nuclear Energy Institute, United States) held that the measures in the 2005 U.S. Energy Policy Act were necessary but not sufficient to attract capital to nuclear power, and that the loan guarantees in the Act did not amount to a subsidy. Mr. Bruno Lescoeur (Senior Executive Vice President, International Industrial and Public Affairs, Electricite de France Group, France) held that France intends to develop the next phase of nuclear power without any type of subsidy, demonstrating the competitiveness of nuclear power. Mr. Lescoeur allowed that the U.S. nuclear industry is in a different position, and emphasized that the usefulness of nuclear power as an energy source depends on the background of a given country.

### **Track B, Session 20: Environmental Concerns in Regional Market Development**

Introduced by Dr. Peter Kaderjak, Director of the Regional Center for Energy Policy Research (REKK) in Budapest, Jeanne Fox, President of the New Jersey Board of Public Utilities, described the urgent for action to restrict emissions. A new Regional Greenhouse Gas Initiative (RGGI) starts in seven northeast U. S. states (Maine, New Hampshire, Vermont, Connecticut, New York, New Jersey, and Delaware) in January 2009. Through the use of allowances and credits, RGGI seeks to achieve a 10% reduction in CO<sub>2</sub> emissions by 2019 and reserves—state by state—a minimum of 25% of the allowances to benefit consumers. It will allow offsets, flexibility to address price spikes (through investments in forest lands, landfill gas, and methane-

capture projects), and addresses concerns about leakage associated with border state imports from non-RGG states. The Governors of the seven states signed the RGGI agreement in December 2005. Commissioner Fox believes RGGI will enhance economic competitiveness and hopes that additional states will join shortly. She sees a national system of carbon trading nationally as likely because U. S. has experience w/ cap and trade systems and finds the insurance industry very interested in measures to address global warming, as a means to reduce its exposure (both in payment of losses and losses of business due to higher premiums) to damages from rising sea levels and others injuries.

Vinayak Pandey, Assistant Policy Analyst at India's Consumer Unity & Trust Society (CUTS), sees emerging economies as relying on conventional approaches to meet their growing energy needs, and this use of inefficient technologies will cause them to burn much more fuel to match the energy consumption (economic performance) of developed countries. Accordingly, he believes it necessary to factor in the environmental and social costs into the price of energy but recognizes this approach has limitations. Mr. Pandey expressed disappointment with the slow rate of transfer of efficient technology to developing economies and fears the current trend to decentralized energy generation will slow the implementation of new technology. He believes generation, irrespective of its location (central station or distributed generation), must meet new and more stringent emission standards and argues that both global and national systems should provide both carrots and sticks. Environmental and economic regulation must be made "seamless," a problem especially in developing countries. Environmentally unsustainable energy generation/consumption should be rendered economically unsustainable over the long run.

Murray Smith, Counselor-Minister of the Government of Alberta and Alberta's former energy minister, said that the Canadian Province of Alberta – when fully developed – will be the world's largest non-liquid-oil producer of oil and gas. The Province has been the resource owner since 1930. The Government sets policy; regulators carry it out. When a new resource opportunity is identified, the Province bids out the rights to develop it, allowing 5 years to initiate production. Statistics are made public available after 1 year. There is a 1% royalty on production and 25% on the total financial return. The Province recognizes increasing demand for water, and, while Alberta's supply is ample, the Province has over the last 10 years worked to reduce by half the amount of water necessary to produce oil and gas.

### **Track C, Session 21:**

#### **Effects of Natural Disasters on Energy Access**

Mr. Kevin Kolevar, Director, Office of Electricity Delivery and Energy Reliability, Department of Energy, United States highlighted how natural disasters range from localized and mild effects like drought to catastrophes like hurricanes, tsunamis, and volcanoes. He pointed to the US DOE's steps in effectively responding to Hurricanes Katrina, Rita, and Wilma in 2005, along with mechanisms put in place to improve future responses based on lessons learned. The Honorable Munir Ahmad, Chairman, Oil & Gas Regulatory Authority, Pakistan described the effects of massive earthquakes on Pakistan's infrastructure and society, and noted that regulators can help in planning and preparedness, and in response. In describing Jamaica's response to frequent hurricanes, The Honorable Raymond Silvera, Deputy Director General, Office of Utilities Regulation, Jamaica, noted that utilities are best equipped to respond, while regulators give them the regulatory tools needed to be prepared and to have the financial resources to be

effective in restoring service. In his remarks, the Honorable Roy Hemmingway, Chairman, Electricity Commission, New Zealand commented that for the latter, there is a role for regulators, but important to let private sector achieve restoration without heavy-handed involvement. Recommendations from the panelists include establishing clear rules beforehand for cost recovery and communications, and using single points of contact to streamline assistance.

### **Closing General Session: Future of Energy-Working Together-Next Steps?**

The closing session was chaired by Robert Clayton (USA), who recognized the planning committee, the executive secretary, and the event planning staff. Prof. Pippo Ranci (Italy) introduced the International Energy Regulation Network web-based information exchange ([www.iern.net](http://www.iern.net)) for regulatory bodies and others interested in regulation. The site is maintained by the Florence School of Regulation. It will be limited to energy issues at first, but may expand to other areas.

Ten speakers gave closing observations on behalf of their regional associations. The ten regional representatives were: Chairman Clayton for NARUC; Sir John Mogg for CEER; Smunda Mokoena for AFUR; Terry Rochefort for CAMPUT; Roy Hemmingway for EAPIRF; Angel Semerdjiev for ERRA; Francisco Salazar for ARIAE; Paul Morgan for OOCUR; and Priyantha Wijayatunga for SAFIR.

Themes mentioned in the closing observations related to the main themes of the forum – investment in infrastructure, regional energy markets, and energy access and affordability. Representatives noted that it was gratifying to see common themes throughout world, although very diverse nations may take different messages from the forum. Despite different problems and different approaches there are common challenges that developed nations share with others.

Investment capital is available and will be attracted to stable and transparent markets. Infrastructure needs are present in nations at all stages of development. Investment is needed for environmental and efficiency goals. Regulation must create the proper setting to attract investment.

Markets are becoming regional. Regional markets are especially important for smaller nations. Regional markets must be well structured, though problems are more apparent than answers. Regulatory tools and organization are needed to support and give proper oversight for regional markets. Regional regulatory integration must include trained personnel and opportunities to meet.

Regulators have a critical part in extending energy to the 2 billion people who now lack access. Technology and investment are needed, without compromising affordability. Sustainable development is a clear challenge. Energy efficiency and demand side management can help meet these objectives and support environmental improvement.

Other points addressed challenges to security of supply and proper handling of nuclear development. Challenges on nuclear power will continue. Climate change is clearly a challenge underlying regulatory work.

Several observers noted the need for stable, predictable, independent and transparent regulation. They are concerned with improving the performance and developing the capacity of regulatory agencies. Industry should recognize the need for adequate staff and resources.

President Diane Munns (NARUC, USA) gave a closing statement. She complimented all who gave excellent presentations. She announced the steering committee and host selection process for the Fourth World Forum on Energy Regulation. She made it clear that while the Forum spoke about infrastructure investment and market structure, these subjects really address the welfare of the people we care about in our many countries.