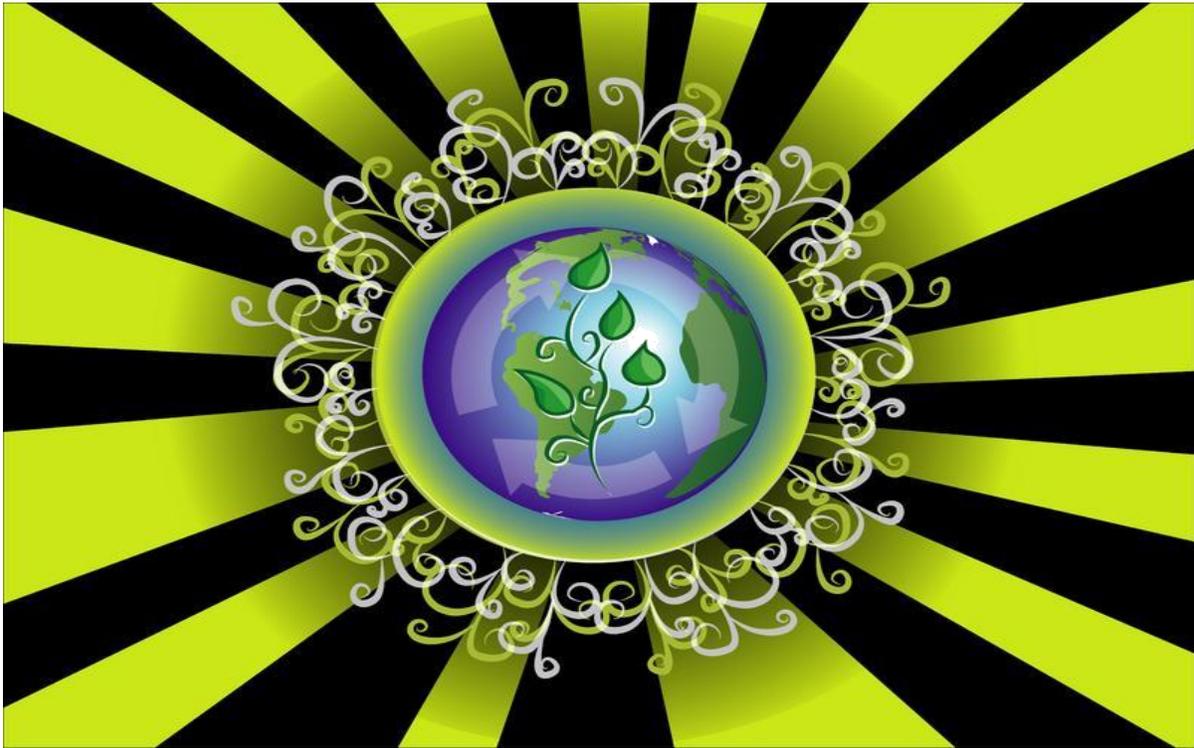




2008 – ENERGY IN FLUX: POLITICIZED ENERGY



Creating an Energy Plexus: *The Intersection of People and Purposeful Action*

The Bordeaux Energy Colloquium was created to bring together the voices of various industry constituents to engage in a series of dialogues regarding the global energy marketplace. Hosted annually, the Colloquium addresses the current issues and obstacles facing the creation of competitive and sustainable energy markets. Tapping the benefits of global dialogue Colloquium members represent utilities, grid operators, generators, industrials, financiers, regulators, legal experts and environmental specialists from around the world.

Structured around a weekend of topic debates, participants were immersed in various viewpoints that led to a broader understanding of the issues currently facing the energy marketplace. This year's event focused on three salient themes:

- 1. Energy Sustainability**
- 2. Pricing and Affordability**
- 3. Stability and Security**

The debates quickly uncovered the more controversial aspects of these rather broad subjects. Participants worked through the weekend to develop cohesive themes that effectively framed the current controversies. This year's synopsis covers collective insights as well as some individual member viewpoints. Full text of the additional reports can be obtained on the Bordeaux Energy Colloquium website: www.bordeauxenergy.com.

Thanks to everyone for another fantastic event-

Kimberly & Fahim Samaha

Participant Biographies



Leonardo Sferrazza first on the list and in our hearts! Leo is the coordination backbone of the event and our head wine sommelier. Leo was previously the head sommelier at the prestigious French restaurants Lasarre, Jarrasse



Joyce Berman is an independent consultant in the psychology of international business organizations. A specialist in energy efficient 21st century architecture, she also is a lecturer in international politics concentrating in Afro-Asian Studies. Joyce received degrees from New York University and City College in Architecture and Afro-Asian Studies and a Masters in psychology from Catholic University.



Tony Brereton worked as a Chartered Accountant with Price Waterhouse, for 27 years where he became Corporate Reconstruction Partner. Recently he has worked as a Turn-around or Troubleshooting Executive in a Chairman or Chief Executive role, which has encompassed Energy, Telecoms, Rental Business and Insurance Consultancy and Outsourcing Services. For the last 3.5 years he has been acting as Executive Chairman of the only independent UK Offshore Gas Transportation pipeline business, implementing a strategy to make the company a significant independent infrastructure business in the Central North Sea.



Naji Boutros is a principal of Colony Capital and the head of the firm's activities in the Middle East and North Africa. As such, Mr. Boutros provides leadership, strategic planning, regional capital formation efforts and the identification, evaluation, consummation and management of investments in this region. Prior to joining Colony Capital, Mr. Boutros was an investment banker with the Merrill Lynch and led Merrill's European real estate activity across Continental Europe and the Middle East. Mr. Boutros received his B.S. in Electrical Engineering and Computer Science from the University of Notre Dame (Summa Cum Laude) and his Masters in Management Science and Engineering from Stanford University. In addition Mr. Boutros is the Chairman of Chateau Belle-Vue and La Tour Health Network in Switzerland.



Dr. Ashley Brown is the executive director of the Harvard Electricity Policy Group at the Center for Business and Government (CBG). He is also an instructor in Harvard's executive program on "Infrastructure in a Market Economy." An attorney in Ohio, Massachusetts and the District of Columbia, Brown served as an arbitrator in matters relating to the evolution of competition in infrastructure industries. Currently, he is affiliated with the law firm of LeBoeuf, Lamb, Greene and MacRae in Boston. Before joining HEPG, Brown served as commissioner of the PUC of Ohio from 1983 through 1993. Brown was also the coordinator and counsel of the Montgomery County, Ohio, Fair Housing Center; managing attorney for the Legal Aid Society of Dayton. He holds a master's degree from University of Cincinnati and a JD from University of Dayton School of Law.



Nora Brownell Prior to joining FERC, Ms. Brownell served as a member of the Pennsylvania PUC. During her tenure at the PUC, Ms. Brownell took an active role in the rollout of electric choice. In addition to her work in establishing the framework for one of the most successful retail electric markets in the country, Ms. Brownell was a leader in the administration of Pennsylvania's Electric Choice Consumer Education Program. Ms. Brownell is the former President of the National Association of Regulatory Utility Commissioners (NARUC). She has served on the Boards of Times Publishing Company, Millennium Bank, Foundation of Architecture, Philadelphia Free Library, Need in Deed and Philadelphia Regional Performing Arts Center. Ms. Brownell is currently principal of BC Strategies and serves on the boards of ONCOR, Comverge, Leaf Clean Energy Company, and Spectra Energy Partners.



Dr. Maria Dubravka Pineda: Executive Director, International Energy Advisory Council Ms. Pineda activity since 1980 is centered on Senior Economic and Business Advisory Services for national and international clients. Ms Pineda is an international energy expert to corporations, as well as government sector clients. Education: Industrial Engineering undergraduate studies in Louvain-Belgium, M.S. in Statistics and Operations Research-Caracas-Venezuela, M.B.A. in Marketing and Finance from Pepperdine University CA, and PhD from UCLA in Public-Private partnership Risk tradeoffs in the energy sector. Ms. Pineda is a founding member and executive director of the International Energy Advisory Council.



Eric Dyevre graduated from the French Naval Academy in 1975. Specialized in artillery and missiles, he experienced active service on different warships in France and overseas. He was an instructor at the Naval Academy of Annapolis (USA) for two years. A high-ranking civil servant since 1988, he worked at the ministries of Interior and of Industry until 1997. Then, joining Charbonnages de France, the French national coal company, he was first the chief finance officer and later deputy general manager of the company. In 2003, he became the chief executive officer of the subsidiary SNET, an energy producer. He was appointed commissioner at the Commission de Régulation de l'Energie (CRE) in April 2004.



Maria Isabel González Rodríguez holds a Civil Engineer Title from the University of Chile, Chile, and a Master Degree in Public Management from the University of Barcelona, Spain. She worked during 9 years (1990-1999) in the Energy Ministry (National Energy Commission –CNE-), being the Chilean Minister of the Energy State Secretary during the Eduardo Frei Chilean President Rule. She was very successful in promote an effective National Energy Policy, many Tariffication Processes and made a significant contribution during the Negotiation with Argentina regarding the Electric and Gas Interconnection Protocols. She has been part of the of the Chilean Board of the National Petrol Company (ENAP) and the National Mining Company (ENAMI), both of them as a representative of the Chilean Engineers Institute. Currently she is the General Manager of ENERGETICA S.A., being an Associate Founder. ENERGETICA S.A. is focused on energy efficiency, consulting and business development in the energy sector.



Richard Groome is Managing Partner of Notre-Dame Capital Inc., a financial advisory firm based in Montreal, Quebec. His expertise is in the financing of small and mid-size emerging growth companies. Prior he was Senior Vice-President of Strategic Capital and Senior Vice-President of Institutional Equity Sales at Desjardins Securities, a Quebec-based firm. Richard has been in the financial industry for more than 20 years at such firms as Groome Capital, Marleau Lemire Securities, Sprott Securities and Levesque Beaubien Geoffrion. He has a BA in Economics from McGill University. Mr. Groome actively participates on the board of several public companies including CDNIX until 2001 and member of the National Advisory Committee of the TSX Venture Exchange until 2004.



Erica Groome joined us as a guest and representative consumer this year. A recent graduate she has held internships in Canada focussed on marketing and promoting sustainable energy.



Piers Hedley has worked as an investment banking consultant since 1987 with a practice focused on assisting high net worth families create shareholder value. He has a particular specialty in natural resources. After initial training at Williams & Glyn's Bank in London, he was appointed Executive Assistant to the President & CEO of the International Energy Bank . Additionally he has been Head of Corporate Finance at PaineWebber International Bank in London and prior to that Joint Head of Ladenburg Thalmann's project finance advisory company in New York. He was born in London, UK, in 1956. He holds a BA (Hons) from the School of Oriental & African Studies, University of London and is a Fellow of the Royal Asiatic Society.



Dr. Andrey A. Konoplyanik is energy economist by background. Major professional areas - energy economics, energy & investment legislation, energy financing. PhD (1978) and Dr. of Science (1995) in international energy economics from Moscow-based State University of Management. Through 1980's – researched international energy issues in the Institute of World Economy & International Relations, USSR Academy of Sciences (IMEMO). In 1990-91 worked in the USSR State Planning Committee (Gosplan). From 1991 to 1993 - Deputy Minister of Fuel and Energy of Russia . In 1996-99 - Executive Director of the Russian Bank for Reconstruction and Development. Since 1999 to early 2002 - President of the Moscow-based Energy and Investment Policy and Project Financing Development Foundation. Since 1993 till 2002 also a non-staff Adviser to a number of Ministries in the Russian government and to the Russian State Duma. Since March 2002 till April 2008 – Deputy Secretary General of the Energy Charter Secretariat (Brussels). Since July 2008 – Consultant to the Board, Gazprombank, Russia.



Anne McIvor is the editor Cleantech magazine and founder of Cleantech Investor Ltd. She spent 15 years as an equity investment analyst, including ten years at ABN Amro Hoare Govett, covering European quoted companies and – before setting up Cleantech Investor she was involved with renewable energy companies at Libertas Capital. She holds an MSc in Development Management from the London School of Economics.



Theo MacGregor founded MacGregor Energy Consultancy in 1998, specializing in electric industry restructuring issues in general, consumer, low-income, and energy efficiency issues in particular. Prior to founding her own firm, Ms. MacGregor spent more than ten years with the Electric Power Division of the Massachusetts Department of Telecommunications and Energy (DTE) (the state's utility regulator), most recently as Acting Director. Prior to her utility work, Ms. MacGregor was a social worker for the state of Massachusetts and a history and social studies teacher in New Jersey and Michigan. Ms. MacGregor holds an MBA from Simmons College School of Management in Boston, Massachusetts.



Ken Malloy is the Founder and Executive Director of the **Center for the Study of Carbon and Energy Markets**, where he is pioneering **Energy Progressivism** and was recently named by *Public Utilities Fortnightly* as one of five “**Energy Innovators**. Ken was formerly the CEO of the **Center for the Advancement of Energy Markets** (CAEM), which he founded in 1999. CAEM promoted competition in electricity markets and creator of the Red Index. He was the U.S. Department of Energy’s lead official on policies relating to competition, regulatory reform, and industry restructuring over three Administrations (1987 to 1996). He was Deputy Executive Director and General Counsel of the Illinois Commerce Commission, Director and Assistant Director of the predecessor of FERC’s Office of Economic Policy, and staff attorney in FERC’s Office of General Counsel. Prior to FERC, Ken was a law professor at Western New England College School of Law. Ken graduated with honors from Boston College Law School in 1978.



Jerrold Oppenheim is graduate of Harvard College and Boston College Law School (Juris Doctor). Jerrold directed energy and utility litigation for the Attorneys General of NY and MA. In his 30+ -year career, he has played a key role in the development of regulatory policy in US states as legal counsel and advisor for state governments, consumer organizations, low-income advocates, labor unions, environmental interests, industrial customers, and utilities. Oppenheim directed consumer and utility legal assistance programs for low-income clients in New York and Chicago for the US federal government’s legal assistance program. He was founding Director of Renewable Energy Technology Analysis at Pace University and the National Consumer Law Center.



Dr. Phil O’Connor is Vice President for Energy Policy with Constellation Energy, Inc. Previously, he was the chief utility regulator for the state of Illinois. Prior to mid-1998, Phil was a partner in Coopers & Lybrand and was CEO of Palmer Bellevue Corporation, a utility consulting firm. Phil previously served as the Illinois Director of Insurance and as a member of the Illinois State Board of Elections. From March 2007 to March 2008 he served in the U.S. Embassy in Baghdad, Iraq as an advisor to the Iraqi Ministry of Electricity. A *magna cum laude* graduate of Loyola University of Chicago, Phil received his Masters and Doctorate in Political Science from Northwestern University.



Francisco Pineda has nine years of finance and strategy experience in the energy and real estate sectors. Most recently Francisco headed the acquisitions group of Merrill Lynch’s principal real estate investments in the Balkans and previously as a Senior Associate investment banker at Merrill Lynch’s Commercial Real Estate and Energy & Power Groups in New York City. He also worked at Hess Corporation as a Corporate Strategy Analyst and at BNP Paribas as a Project Finance Analyst in the Power & Utilities Group. Francisco received his M.B.A. in Finance from the Columbia University Graduate School of Business and a M.P.A in Applied Economics & Policy Analysis from the Columbia University School of International & Public Affairs. He also holds a B.A. (Honours) in History from the University of Kent.



Miriam Pineda Miriam is a tenured New York City public school teacher. She began teaching when she joined Teach for America (TFA). TFA is the national corps of outstanding recent college graduates who commit to teach in urban and rural public schools and become leaders in the effort to expand educational opportunity. As a TFA Corps Member, she began working in Harlem, NY, as a Special Education and French teacher. Miriam is also a Junior Board Member of the Victor Pineda Foundation, where she works to educate, inspire, and empower people with disabilities. She is developing a curriculum and mentorship program for High School Students with disabilities. Miriam received her Bachelor’s degree in Urban Studies and Political Science from Columbia University. She also has a Master’s degree in Education from Pace University.



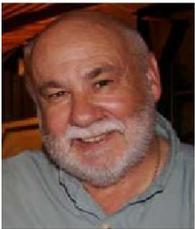
Dr. Milan Radunovic, born in Pec in Serbia. Graduated in electrical engineering on Belgrade University. Did a masters’ thesis on the Electrical Engineering Faculty of Belgrade University, and a Ph D in economy. Over 25 years of experience working in power industry in the field of energy control, developing and constructing 400 kW networks and electrical power industry investments. Involve in work in India, Pakistan and Russia. Currently teaching on the Singidunum university in Belgrade in the field of applied ecology. At the same time, leading the project of the Novi Kovin investments – building a surface coal mine and thermo power plant in Kovin with 900 MW installed power, which is the first project of this kind in the region and is being implemented through the 3P principle with the assistance of private capital.



Fahim Samaha: is the Chairman and CEO of the SOFFIMAT Group which is active in Energy Production and Conversion in France since 1987. With over 1.2 GW of installed base in France SOFFIMAT is one of the major players of medium and small size distributed generation. SOFFIMAT has affiliated sub-sidiaries in North Africa, Italy, and India. Since 1998, Fahim has been very active in promoting renewable energy in France and has developed over 100 MW of biogas and biomass power plants as well as envi-ronmental friendly public transport vehicles. Fahim holds his MS in Electrical Engineering from UC Berke-ley.



Kimberly Samaha has worked in leadership roles within the deregulating US energy market for the past 20 years. A majority of her work was within the highly volatile climate of the California energy mar-ket. Kimberly headed up two key companies leading entrepreneurial change in the energy sector. First as the COO of New Energy Technologies, a leader in the market driven retail choice programs, and subse - quently as the President of Catalyst Power, an ABB company, focused on distributed energy. Kimberly currently lives in Paris, France where she heads an organizational consulting company, AMP, serving multi-nationals in the energy sector. Mrs. Samaha holds a BS in electrical engineering from Boston Uni-versity, an MBA from Babson College and is currently finishing her PhD. in human and organizational development at Fielding Graduate University.



Henry Sanger is a 35 year veteran in environmental engineering and urban planning. Henry was President of Ogden Environmental and Executive Vice President of ENSR. Previously he held senior management positions with IT Corp, SECOR and Parson Brinkerhoff. He holds a double masters from University of California– Berkeley in Civil and Transportation engineering and a masters from Columbia in Urban Planning Henry is a registered professional engineer in the state of New Hampshire.



Robin Simpson is a senior consultant for Consumers international (senior policy adviser), World Bank and the OECD. He previously was the head of Policy at National Consumer Council, UK. Trained in geography, social administration, his current portfolios include energy, water, international trade regula-tion (WTO), generic consumer protection and covers the following geographical areas: Eastern Europe, Latin America, Africa. Current work on energy includes draft global energy charter for consumers and the ISO standard for energy services.



Rami Shahabi Director and President Sofame International as well as serving as director for few other companies. Rami Shehabi has significant experience as an international energy advisor. After graduating from York University in Oil Economy, he lobbied on behalf oil service companies in the Middle-East. He acted as Vice-President for Environmondiale, President of Blue Mountain Investments and Advi-sor and International Consultant on energy for SNC- Lavalin and Hydro Quebec International . He was also a lobbyist on behalf of oil companies in the Middle-East. He acted as President-CEO of Sofame Technolgies Inc. from 2005-2007 and is now president of Sofame International.



Branko Terzic, Global Regulatory Policy Leader, Energy & Resources Group, Deloitte Services LP, was appointed to the National Petroleum Council in 2006 by the US Secretary of Energy. He served as managing partner in energy for Deloitte & Touche Central Europe (1999-2004). A former commissioner on the US Federal Energy Regulatory Commission and Wisconsin Public Service Commission he also served as Chairman, CEO and President of Yankee Energy System, Inc. A Fellow (FRSA) of The Royal Society Arts, Terzic is a member of the Energy Efficiency Forum and Chairs the 2006 UN ECE Committee on Sustainable Energy Panel on Regulation and Investment.. He holds a BS in Engineering and later was honored as University Distinguished Graduate by the University of Wisconsin- Milwaukee. He is a regis-tered Professional Engineer.



Jorge Vasconcelos is Chairman of ERSE, the regulatory authority of the Portuguese electricity and natural gas industries. Mr. Vasconcelos holds a degree in Power Systems Engineering and a Doktor-Ingénieur from the Erlangen-Nuremberg University, Germany. He was invited to set up the Portuguese Electricity Regulatory Commission and joined ERSE as Chairman of the Board in 1997. Prior to joining ERSE, Mr. Vasconcelos worked at AEG, and EURELECTRIC (European Association of Electricity Indus-try). He was Guest Professor at the University of Pavia, Italy and at the University of Coimbra . Mr. Vas-concelos is co-founder and the first Chairman of the Council of European Energy Regulators. He also chaired the European Regulators Group for Electricity and Gas, set up by the European Commission. He is co-founder of the Executive Committee of the Florence School of Regulation.

ENERGY SUSTAINABILITY

Today, about 50% of the world population lives in urban areas. Sixty years ago this figure was less than 30% and twenty years from now it will be 60%, according to the United Nations prospects . These figures show that urban areas are increasingly responsible for some of our global problems and in particular for climate change. Therefore, cities must take an increasingly active lead in solving global problems, and in particular in reducing greenhouse gas emissions.



Urban areas in Europe and in Northern America have a special responsibility, not only because they represent about 80% of the population in these continents, but also because they have the resources to implement and to test appropriate solutions that cities in less developed areas may not afford today - but will have to introduce tomorrow for the benefit of their citizens and for the sake of a sustainable world development.

Energy systems are also undergoing a process of radical change: partly dictated by new policy and institutional requirements, partly motivated by new technologies. New power generation technologies based on renewable sources are the most visible face of this transformation. However, application of new information and communication technologies to energy systems will have the most disruptive effect and will bring the most important benefits to energy consumers and to citizens.

This panel's debate put in evidence how processes of radical change may intersect and mutually reinforce each other. Urban concentration increases while electricity generation systems become more decentralized. But in reality the two processes converge towards a common result: putting more responsibility and more power at the local level.

Decentralized energy systems basically mean that individuals and communities are empowered to manage their energy needs in a new way. On the one hand, thanks to new generation technologies, they may become energy producers, in addition to being energy consumers. On the other hand, thanks to new information and communication technologies, they may become active masters of energy consumption, instead of being passive slaves of their energy consuming devices.

Technological possibilities and social needs are driving us towards a new energy landscape, getting us away from the old hierarchical, vertically-integrated, supply-side oriented structures. Municipalities can accelerate the creation of more decentralized, customer-oriented structures.

The challenge we face is twofold: on the one hand, city leaders must realize the potential of new energy technologies to help them creating more sustainable cities; on the other hand, engineers and entrepreneurs must provide cost-effective and user-friendly energy solutions to the problems of modern cities and modern societies.

Jorge Vasconcelos

Cisco Connected Urban Development Conference
Sustainable Energy
San Francisco, February 21, 2008



ENERGY SUSTAINABILITY

ENERGY PROGRESSIVISM

Energy is the *Master Resource*, essential to our standard of living and embedded in every product and service. Energy policy is *easily susceptible* to bad analysis and incorrect solutions. Policymakers face unprecedented challenges due to: climate change, national security and dramatic increases in demand and price. These challenges stress an already dysfunctional policy foundation. Solutions do not fit easily within a pure market philosophy or a dominant government/statist philosophy. Energy solutions thus require a very difficult balancing of market principles with government intervention. Energy Progressivism codifies principles of economic and government into a new framework and philosophy for implementing this insight.

Diagnostic Objective: Yogi Berra said “If you don’t know where you are going, you will wind up some-where else.” A close corollary is that if you don’t diagnose the problem correctly, you are unlikely to come up with the right solution. First we must define our energy ‘problem’ correctly.

Innovation Objective: It is often said that there is no silver bullet to solving our energy problems. History has proven, however, that innovation, spurred by our most precious resource— human ingenuity, is the silver bullet to success. Incentivizing innovation must be at the core of whatever we do.

Macroeconomic Objective: Responding effectively to energy and environmental challenges will place great strain on the Nation’s economy. Given the degree of uncertainty that surrounds many key factors, a strong and robust economy is vital to the country’s resiliency. A strong economy will support both the resources and the innovation necessary to meet the challenges of the future. Especially important will be an energy system that can “turn on a dime/” A flexible, adaptive, efficient energy system can make necessary adjustments at a lower cost and less discomfort to consumers.

Daedalian Objective: Energy is a multifaceted commodity prone to market failures, consisting of a complicated infrastructure of production, delivery and consumption. It is analogous to the neural network systems that feeds into and is integral to every other commodity and service in our economy. It is responsible for relaying essential price signals, albeit pleasure or pain, between supply and demand. Piecemeal solutions may provide relief in one area only to exacerbate pain in another. Daedalus conceived a way for his son to fly closer to the sun. In Energy Progressivism, Daedal means those intricate and ingenious solutions that account for complexity of the energy system.

Transparency Objective: Energy policy proposals must be transparent. They must articulated the principles that they rely on for guidance and the linkage between the proposal and the problem to be solved, incorporating an honest and open discussion of possible unintended consequences.

Lifestyle Objective: Energy implicates quality of life, future generations and the environment. It is incumbent on all of us to evaluate our use of energy and adopt lifestyle behaviors that are sensitive to the unique characteristics of energy and sustainability. This objective is critically important in a regime of consumer sovereignty.

Good policy requires careful and difficult balancing. There will be powerful political, economic and social interests that oppose Energy Progressivism. We must be resolute and prepared for disagreement and controversy, confident in the belief that the difficulty is worth the effort.

Ken Malloy

Center for the Study of Carbon and Energy Markets

ENERGY SUSTAINABILITY

"A foolish consistency is the hobgoblin of little minds, adored by little statesmen and philosophers and divines." - Ralph Waldo Emerson



When it comes to energy policy is it good or bad to be 'consistent'?

As a former energy regulator, executive and consultant, I have had more than a few years over which to form an opinion about energy policies globally. Some of my opinions have been consistently held, others have shifted. As Emerson observed, it is acceptable to be consistent in one's views, just not 'foolishly' so. With regard to regulated energy industries, the positions I have consistently held were included in a statement issued at the 2006 Bordeaux Energy Colloquium:

1. Enable, empower and enhance markets for energy wherever and whenever possible
2. Allow and attract private capital to finance energy infrastructure
3. Promulgate progressive regulatory laws and establish viable regulatory institutions

These policies are consistent with the types of goals suggested by international institutions and adopted by many governments. These include: efficiency, supply reliability, sustainable environmental programs, a consensus level of social subsidy and removal of subsidies from prices. There are other goals such as energy security and exploitation of domestic energy supplies which are also compatible with the Bordeaux statement.

Let us consider the three policy positions stated above. First, competitive markets. The European Commission has established its preference for competition in energy by mandating access to markets in electricity and natural gas for all consumers. In contrast, the US federal government has not taken any position, leaving the question to the individual states. Some observers have expressed concerns that markets in electricity may not work well, as the experience in California is supposed to have shown. But the California failure merely proved that when markets are designed badly they will work badly. Successful markets have been established in Europe and in the US and provide a plethora of lessons for other regions.

Secondly, private capital is available to finance the infrastructure. The only time when it is not, is when government regulators do not recognize and treat risk in a symmetric manner. Regulatory structures which do not allow for market based returns on equity can preclude access to vital global capital markets.

Thirdly, the key to a workable energy policy is the establishment of regulatory systems capable of balancing national interests. Good regulation should be at the heart of any successful regulatory regime are know. They are: transparent process, timely action, balanced decisions, review availability, stability of policies, and independence of decisions from partisan politics. However, knowing something and applying it are two different things.

As an engineer I have confidence that new technologies will appear to improve human life. But experience has taught me that many solutions are frustrated by politics rather than lack of technology. As the world faces the twin challenges of meeting rising energy demand while mitigating the effects of energy use on the climate, the solutions will be found only when political policy and technology implementation are compatibly engaged.

Branko Terzic

European Energy Review
March/April 2008

SUSTAINABILITY DEBATE:

Debate Statement: *Sustainability in energy terms is not a useful concept- Technology will provide.*

Ken Malloy
Jorge Vasconcelos
Robin Simpson
Francesco Pineda

Nora Brownell
Erica Simpson
Piers Hedley
Rami Shahabi

Energy has recently assumed centrality in a web of issues with which society must grapple: health, poverty, infrastructure, environment, technology and on and on. The Four Horsemen of the Energy Apocalypse—climate change, national security, demand/price increases, and an existing dysfunctional policy foundation—are preparing to wreck havoc on our most basic notions of how we produce and use energy. As we respond to these challenges, how then shall we think about energy? The concept of **sustainability** has entered the lexicon, promoting a new dimension for our thinking about energy.



What is sustainability? At a basic level, sustainability has to do with the impact that today's economic, energy and environmental actions have on future generations and developing countries. Some believe economics provides the framework for sustainability. While undeniably energy sustainability has both macro and micro economic implications, economics provides useful tools to achieve sustainability but is not a sufficient definition of sustainability. Economics fails to incorporate certain social justice values. Similarly, some think technology and innovation will be the path to sustainability. Again, they are useful tools but are not sufficient conditions to achieve sustainability, as the distribution of technology may also suffer from distributional unfairness.

While it may be easy to achieve consensus on a broad based definition of a moral obligation to achieve a more sustainable world, issues of implementation and measurement are complex and wrenching issues. The consensus of the Colloquium was that we cannot ignore the implications of sustainability and we should all think critically about how to mesh the concept with our daily thinking about energy and environmental issues.

PRICING AND AFFORDABILITY

Access and sustainability are problems in tandem. For while the world is concerned about excessive emissions, there are approaching two billion people without access to energy services. In developing countries only about two thirds of the population are connected to electricity and in some countries the coverage is far lower, 41% in South Asia, 23% in sub-Saharan Africa. Of the rural population, worldwide, 56% are not connected. Furthermore, in countries with relatively high rates of connection, notably the Former Soviet Union, there are frequent interruptions of supply. Equally the lack of access often leads to excessive emissions due to the use of alternative energy sources such as burning of wood and dung.



Individual consumers and entire economies pay a high price for lack of access in terms of family incomes and health among other social and economic losses, and so does their environment, for example, from deforestation due to foraging for fuel, reported by our members in countries as different as Senegal, Dominican Republic and Macedonia. Huge amounts of time are lost in such foraging, while non-networked fuels such as kerosene, cost much more, for example five times the equivalent electricity bill in rural India, where two thirds of the population use kerosene. Can access to sustainable energy in developing countries reconcile the potentially conflicting goals of :

- Consumer Access (undermined by lack of provision and service interruptions)
- Environmental Sustainability (undermined by low incentives for conservation)
- Economic Sustainability, (undermined by economic losses of utility services)

To this end, CI are engaged with our European colleagues and Energywatch UK in developing a global energy charter to raise standards world-wide. We also hope to propose an ISO standard on services to users of energy. The following bullet points are central features of the charter and we put them forward in the context of the proposed standard:

- The standard should be applied to non-integrated systems,
- The standard should put forward the principle of equitable distribution of service
- The standard should incorporate contractual rights to service. (The contracts should be 'implicit', that is not necessarily in the form of individualised paper contracts for individual households).
- The standard should incorporate public participation in the regulation of the service,
- The standard should envisage payment methods to help those on low incomes.
- The standard should envisage that prices be set in function of a range of factors including capacity to pay of the population, costs of production, historic prices and rate of return on capital (regardless of public or private).
- The standard should envisage that tariffs and subsidies be constructed and administered to take account of the needs of the poor.

These good practice proposals borrow from our recent successful work with ISO on services to users of water and sanitation resulting in the recent publication of ISO standard 24510.

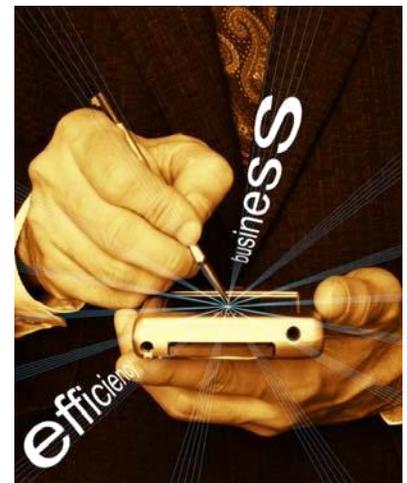
Samuel Ochieng, (provided by Robin Simpson)
President, Consumers International

ECONOMY OF ENERGY DEBATE:

Debate Statement: *Our current energy pricing systems fairly represents the value of different energy supply sources.*

Branko Terzic
Maria Pineda
Milan Rodonovic
Theo MacGregor

Ashley Brown
Jerold Oppenheim
Tony Brereton
Henry Sanger



Exclusive reliance on either government intervention or on markets produces sub-optimal results. Examples of government interventions include subsidies, R&D investments, protective tariffs, and direct or indirect setting of externality values to be included in investment or pricing decisions. Markets include conventional liquid markets as well as long-term contracting and vertical integration.

Among the considerations in any analysis of this question is the likelihood of unintended consequences from both government interventions and market actions. An example is the government-led development of nuclear power on the basis of submarine -based technology that is unnecessarily complex for land-based uses. In other cases, government has chosen technologies that are inefficient or out-of-date. Another example is the tendency of markets to ignore their consequences on the segment of the population least able to fend for themselves in a way that is unacceptable to society. Markets only reflect internal costs.

Another set of considerations is differential consequences on financial institutions and consumers. For example, financial institutions need to know the accounting cost of technologies in order to make investment decisions. On the other hand, it may be politically and socially beneficial for price signals to consumers to also reflect the differing carbon content of energy resources.

Market prices alone do not reflect many social and political agreements about the values of different energy resources and so do not provide complete guidance to consumption and investment decisions. The question thus boils down to *how much* government intervention *of what kind* is best in a marketplace economy. Government sets objectives; for example, governments decide to serve poor people with energy services even though it may be inefficient to do so. Market mechanisms can then offer an excellent tool to achieve agreed-upon objectives; for example, the cost-effectiveness of low-income energy efficiency investments may be analyzed to include non-market benefits. There may also be other government intervention tools, such as subsidies and direct investments.

Another good example is carbon. Carbon pollution is a collective catastrophe that is unlikely to be prevented by individual choices. Most agree that government intervention, or the threat thereof, has already stimulated technology development and guided investment and consumption decisions to reduce the use of carbon for the benefit of all.

Thus what is needed is a balancing between government intervention and market mechanisms to achieve optimal results from both economic efficiency and overall societal benefits standpoints.

ENERGY STABILITY & SECURITY



Energy consumption grows very fast: in the period 1973 - 2003, total world energy consumption increased 58% from 4,6 Gtoe up to 7,3 Gtoe . Since 2003, we have seen not only steady demand growth, but also sharp energy prices increases, a few large-scale electricity blackouts and limited yet critical shortages of natural gas supply. Therefore, it is no surprise that nowadays security of energy supply is a major concern. Energy consumers fear that one day energy suppliers may be unable to satisfy their growing demand. Several reasons are usually considered; they may be summarized as follows:

- a) Depletion of natural resources (oil, gas and coal).
- b) Unavailability of primary energy due to problems such as protectionism, war and terrorism, in exporting or in transit countries.
- c) Lack of transforming capacity (refineries, power plants, etc.) due to lack of investment, natural disasters or terrorism.
- d) Collapse of energy markets (wholesale or retail) due to flawed design, misbehaviour of supply undertakings, political interferences or regulatory failures.
- e) Lack of reliable transmission and distribution infra-structures due to insufficient investment in maintenance, control, replacement or expansion.

Security of energy supply is a problem of rich and developing countries, i.e., of big consumers. One should not forget that, according to the World Energy Council, “[s]ome 1.6 billion people are still entirely dependent on highly inefficient traditional forms of energy” ; here the basic problem is not how to secure energy supply but how to get access to energy in first place. It is worth pointing out that concerns about energy scarcity, high energy prices and reliability are not new: at least since the first Club of Rome report “*The limits to growth*”, back in 1972 , public opinion is regularly informed about forecasts concerning the amount of available fossil fuel reserves and their respective depletion rates; high oil prices are not uncommon since the first oil crisis in 1973 and large electricity blackouts have occurred several times , for instance in New York City in 1965 and 1977 .

The energy world has always been a mysterious one, an explosive mixture of sophisticated technologies, large investments, huge profits, some dramatic bankruptcies, political strategies and industry plots managed by high-profile personalities. The energy industry has indeed cultivated a very special pathos and it stimulates the curiosity of public opinion, as well as the ingenuity of those who write or talk about it. Hence, it is not surprising that the energy world is full of prophecies – about technologies, about economics and even about geopolitics of energy – as well as full of prophets of different kinds. As G.K. Chesterton put it, “*Real mystics don’t hide mysteries, they reveal them. They set a thing in broad daylight, and when you’ve seen it, it is still a mystery. But the mystagogues hide a thing in darkness and in secrecy, and when you find it, it’s a platitude.*” Discussing security of energy supply today inevitably leads us to revisit some of the old and new prophecies, assessing the light and the shadows they may throw on the current debate and on our future.

Security of energy supply involves many dimensions and many interests. Because the technical aspects involved are very often difficult to grasp, the complex political and economic interests are usually hard to admit and the interactions between policy, business and regulatory decisions are not always easily identified, the debate about security of energy supply is overloaded with several fallacies. In order to promote an objective debate and to reach coherent conclusions and sound operational decisions, it is important to avoid the fallacies which usually underlie and surround this debate.

Jorge Vasconcelos

SECURITY OF ENERGY SUPPLY:PROPHECIES AND FALLACIES

2nd Annual Conference Florence School of Regulation May 12, 2006

ENERGY STABILITY & SECURITY



In recent years, the character of and demand for investment protection and stimulation in energy have been changing due to the increasing volume of energy resources in economic circulation, the expanding number and more sophisticated character of applied energy technologies, the movement of energy-producing operations into more remote locations with more difficult geologic and climatic conditions, and the further increasing internationalization of energy value-chains.

At previous stages of development of mankind, within earlier social and economic systems, the major instruments of such protection of investors (mainly from the then “developed” countries in the then “developing” countries), providing for the security of raw materials supplies to their home countries, were coercive instruments such as colonization and development of the colonies into the raw-material producing appendages of the centers of empires, deploying military forces to protect, inter alia, production facilities and transportation routes of the major raw material flow.

As time has gone on, a combination of military, diplomatic and legal instruments has come to take the place of purely coercive instruments. The role of legal protection of investors and their rights has grown significantly, first, in their internal markets. As the state institutions (and later democratic institutions) have been developing and strengthening, and as the “rule of law” has increased its role in everyday life, including everyday commercial life, implementation of the instruments of legal protection has become more efficient and their comparative role in the above-mentioned triad has steadily increased.

With the evolution of energy markets from national to international, there is a parallel development of the spectrum of legal instruments of investment protection and stimulation, aimed at diminishing investment risks related to the more internationalized type of interactions in energy. Such development took place within the business community (between the business actors), as well as between the individual states and business actors, as well as within the community of sovereign states (between the states).

But each instrument of investment protection does not generally substitute or cancel the previously existing ones, but adds to their sum total, thus providing both states and investors with a broader spectrum of competitive choices of how to reach their aims. So one of the principles of the evolutionary development of the system of the legal instruments of investment protection can be identified as the following: posterior instruments are not instead of, but in addition to, the preceding ones.

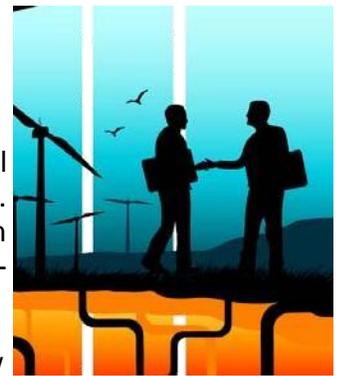
Segment from: *A.Konoplyanik, “Energy Security: The Role of Business, Governments, Inter-national Organisations and the International Legal Framework”.- “International Energy Law & Taxation Review”, 2007, N 6, p. 85-93.*

Dr. Andrey Konoplyanik,

Consultant to the Board, Gasprombank, Moscow, Russia,
Former (March 2002 – April 2008) Deputy Secretary General,
The Energy Charter Secretariat, Brussels, Belgium

ENERGY STABILITY & SECURITY

Progress, peace and prosperity in an inter-connected and inter- dependent world will be a function of the Collabonomic Convergence of Cooperation and Competition (C4). The goal of C4 is to enhance the quality of life for people around the world through the advance of technology and to improve our governmental, business and educational institutions.



Cooperation in making and enforcing fair and durable “rules of the game” will allow for vigorous and productive *Competition* within the boundaries of those rules of the game. Markets for all things, whether for raw commodities, highly sophisticated technologies or complex financial instruments will operate on a sustainable basis in the context of rules for which a common understanding is shared and to which the participants will adhere out of self-interest as well in response to clear terms that enforce compliance. Thus Cooperation and Competition are both compatible with one another and inter-dependent.

The “golden rule” of Collabonomics should be that *investment, property and innovative ideas will be respected and protected from expropriation and will be allowed entry into markets without barriers that give undue preference to incumbent stakeholders*. Rules of the game that are agreed to across borders and to which there are strong and enduring commitments will serve to dramatically accelerate the sharing of human creativity that is the basis for advancement. Collabonomics can have a significant impact on energy and the environment if focused on devising sound “rules of the game” to encourage innovation from all quarters. Collabonomics should open the door to new technology and new approaches, especially those that come from “the bottom up.” There are six areas in which Collabonomics can help to reconcile energy and the environment without the need for intervention that inhibits competition or attempts to direct investment in ways that markets will resist.

Agree that markets in tradable emission allowances will be the mechanism most likely to lead to cost-effective reductions in carbon emissions. Tradable allowances are more politically acceptable than taxes and may well be more effective. Collabonomics can be the foundation for reasonable expectations of fair and effective management and enforcement of allowance allocations. Tradable allowances help identifying the “low hanging” fruit to the lowest cost reductions and thereby produce revenue opportunities for the developing areas of the world. Allowances can be allocated to take account of different wealth and development levels. Reductions can be more easily phased in.

Agree on rules for nuclear power plant development and safety regulation, with attention to accelerating siting, construction, universally safe operations and safe long-term waste management. Collabonomic approaches in the nuclear arena must give a high priority to preventing proliferation and weaponization of nuclear fuel and byproducts.

- Collaborate in the adoption of global standards for electric and low-emission vehicles that contribute to more rapid development and deployment.
- Establish global university research and development networks. The goal is to accelerate innovation by leveraging expertise while at the same time providing protection for intellectual property. This approach would have a special emphasis on energy, water and agriculture.
- Cooperate on agricultural research that contributes to human health and quality of life and at the same time will be compatible with energy, water and environmental enhancement.
- Encourage development and deployment of simple and efficient electric generation units and other energy production technologies such as methane production from agricultural waste. Small scale technology can replace expensive cooking fuels and mitigate deforestation. They can also be combined with simplified water purification systems for use disadvantaged areas of the globe.

Philip R. O'Connor, Ph.D.
WORLD KNOWLEDGE FORUM 2008,
Collabonomics & Greater Asia
Seoul, Korea

ENERGY STABILITY & SECURITY DEBATE:

Debate Statement: Energy Security can be usefully defined and debated meaningfully

**Andrei Konoplyanik
Naji Boutros
Richard Groome
Ann McIvor**

**Phil O'Conner
Eric Dyevre
Fahim Samaha
Joyce Berman**



For a meaningful debate of energy security, a clear definition of the concept is required. Whether at a national or other level, security of energy implies, first, availability of energy. An analysis of how to assure availability should start with analysis of the supply (energy value) chain. The longer the supply chain and the more dependent on a single resource, the less alternatives it has, the higher the potential risks to supply if are not supported either by alternative options or compensated for by adequate mechanisms of risk mitigation.

Better guaranteeing the availability of energy might be to minimize the supply chain, taking into consideration the asymmetry between the global character of energy demand and the concentration of conventional energy resources in a limited number of sovereign national states).

One example of such a policy would be encouraging distributed generation combined with fuel diversity. In an era of terrorist activity, distributed generation has an important role to play for essential facilities in the developed world (for example airports, the stock exchange, hospitals). In a developing country environment, distributed generation is – at the very least - an important step on the road towards a 24-7 grid supply.

Assuming the existence of an established infrastructure, a longer supply chain, often cross-border, is inevitable in most situations. In the move toward a global energy market and increasing cross-border energy supplies, countries become more interdependent on each other. Given these conditions, a policy for security of supply should address the following:

1. Integrity of the supply chain

Physical delivery of energy supplies is the ultimate measure of energy security since continued service of end-use demand is the goal of an energy security policy. The more global the supply chain becomes, the more difficult it may be to monitor and directly protect. However, a global energy market abets the search for the diversification that contributes to energy security. Diversification is multi-dimensional: as increasingly diverse fuel mix, quantity of suppliers, alternate routes and markets, well-crafted contractual and business (corporate) structures and a combination of pricing mechanisms.

2. Diversity of supply

Referring to oil, Winston Churchill defined security as diversity of supply. Today, diversity of supply must reasonably include diversity of technology sources with renewable energy playing an increasingly important role. The geopolitical dimension to diversity of supply is crucial. Cross border interdependence increasingly relies on the management of risk through contracts and international law. The ability to enforce contracts is critical in order to attract investment in new energy infrastructure – irrespective of security of supply considerations. Cross -border energy flows need to reflect a balance of interests of all players in the energy value chain, including the political and defense considerations of the involved nation states.

3. Affordability

Secure energy must also be affordable for a nation's economic development. Prices need to be cost reflective and entrepreneurs and conventional investors must be able to earn their cost of capital. Regardless of the regulatory processes at work in a country, pricing mechanisms require high levels of transparency in order to elicit confidence. Pricing mechanisms might be different in different energy markets, reflecting different stages of their development and the political culture in state or region.

4. Consumer Behavior

While price signals are the most influential factor in end-user behavior, education on the environment implications of energy production and use and the economic value of efficient energy utilization can help imbed a long term energy security ethic.

5. Locally Available Resources

Available energy resources vary from country to country – so an appropriate energy security policy must properly reflect the resources that are locally available. This means using what you have within the bounds of economic reasonableness. Examples abound: geothermal in Iceland; wave energy in Ireland; hydro in Norway and Canada.

It is worth bearing in mind that resources can include financial capacity – China has been working strategically to improve its energy security in recent years by buying energy as well as other natural commodity assets. Lately, Chinese companies have engaged in <hostile> takeovers of foreign companies that control such assets. It remains to be seen whether this Chinese strategy will prove economical as well as successful in achieving energy security.



Bordeaux Energy Colloquium

7th Edition
Fall—2008

