

President's Message

It is a great honor to serve as IAEE President for 2015. The job has been made easier by the efforts of many past Presidents, to whom I am most grateful. The Association is also in a good position as a result of the exemplary efforts of many other dedicated volunteers including past and current members of the IAEE Council, regional affiliate councils, and conference committees, and journal editors, referees, and authors of our journal articles. The extraordinary devotion of our Executive Director and the AMS staff in Cleveland will make my job a lot easier. There is no doubt that managing the IAEE's affairs is much more than a job for Dave and his staff, and we appreciate all that they do.

Our association continues to grow in strength and membership. In 2014, we had successful conferences in New York, Beijing, and Rome. The New York and Rome conferences attracted large numbers of participants and featured many interesting sessions and speakers. The Beijing conference was also a great success, extending the Association's brand to a new and important region, and we look forward to hosting further activities in China under the IAEE brand in the coming years.

The reputation of our publications and conferences is integral to our success. Maintaining their quality needs to remain a core concern of our conference organizers, editors, referees, and article authors. In the latter regard, we encourage members to submit their best articles for publication in our journals.

Speaking as an academic, a significant differentiating characteristic of the IAEE is the strong involvement of individuals from industry and government. Energy economics is an applied discipline, and the best research in the field addresses issues about which practitioners care. The reward system in academia is biased in favor of research that advances methods of analysis. That is probably appropriate, for if academics did not advance the analytical methods and tools, who else would? The emphasis on methods also explains why so many researchers beginning their careers are keen to display their prowess in using, or improving upon, the latest analytical techniques. Ultimately, however, the primary task of energy economists is to say something useful about energy markets and energy policy. There is no better way for researchers and students to gain an appreciation for the burning issues of the day than to attend one of our conferences and listen to what energy economists from government and industry are keen to discuss.

At the same time, energy economists working in government and industry can obtain value from interacting with academics and students. Governments or firms usually are looking for the best solution to a problem that can be obtained within strict time and resource budget constraints. More in-depth analysis using more sophisticated techniques might provide a better solution, but such analyses often are impractical when advice or answers to a question are needed quickly. Some issues of interest to industry economists might also be of general concern to the industry as a whole, and the public good nature of such research does not make it attractive for any one firm to pursue. Meta-analyses that present an overview of the results from many different studies, or compare and contrast the effects of different policies or actions in different countries, can also be valuable to practitioners, but may require more time than is available before an answer is required. Finally, academics with tenure ought to be able to speak frankly about any issue of importance to the industry. More objective analyses are valuable even if the consequence is reduced support for a position or policy that a decision-maker favors on

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other grounds.

Our student members provide another important point of contact between the academic, industry, and government sectors represented in the IAEE. Many students working in energy economics are interested in industry or government careers. The chance to meet prospective employers is of great value to them. On the other side of the market, students who are well-trained in basic economic and econometric analytical tools can be valuable employees in industry and government.

In order for the dialog between our different members to be as productive as possible, we need to ensure they are speaking a common language. This is one reason I strongly support the recent innovation to require authors of articles accepted for publication in the Energy Journal to provide a non-technical Executive Summary of their paper. As the memo to authors notes, "While this may entail some additional work for authors, it will accelerate the propagation and visibility of your ideas and allow non-technical readers to appreciate the value of the research."

In closing, I would like to remind you of the great conferences we have planned for 2015. First, we have the 5th ALADEE Conference to be held in Medellin, Columbia from March 16-18. The theme is "Energy Outlook in Latin America and the Caribbean: Challenges, Constraints and Opportunities." This will be followed by the International Conference in Antalya, Turkey on May 24-27. The conference theme is "Economic, Environmental, Technological and Security Challenges for Energy." Finally, Pittsburgh will host the North American conference from October 25-28 under the theme "The Dynamic Energy Landscape." These conferences will provide great opportunities for you to catch up with friends, interact with new members, try out your new ideas or present your newest research findings, and provide constructive feedback to other members regarding their research and ideas. I hope to see you at as many of these conferences as possible.

Peter Hartley

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Want to show you are a member of IAEE? IAEE has several merchandise items that carry our logo. You'll find polo shirts and button down no-iron shirts for both men and women featuring the IAEE logo. The logo is also available on a baseball style cap, bumper sticker, ties, computer mouse pad, window cling and key chain. Visit <http://www.iaee.org/en/inside/merch.aspx> and view our new online store!

With your smart device,
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International
Association
for Energy
Economics

IAEE Mission Statement

The International Association for Energy Economics is an independent, non-profit, global membership organisation for business, government, academic and other professionals concerned with energy and related issues in the international community. We advance the knowledge, understanding and application of economics across all aspects of energy and foster communication amongst energy concerned professionals.

We facilitate:

- Worldwide information flow and exchange of ideas on energy issues
- High quality research
- Development and education of students and energy professionals

We accomplish this through:

- Providing leading edge publications and electronic media
- Organizing international and regional conferences
- Building networks of energy concerned professionals

Editor's Notes

We've been most pleased with the response to our request for papers on the geopolitics of oil and natural gas. In fact, the response has been sufficient that we'll devote two issues to the subject. So, we'll continue the subject in the Spring issue of the Forum. For now, read on for some very interesting papers.

[Paul Tempest](#), who has followed the energy scene for many decades, provides his personal observations on how the underlying patterns of international energy trade and investment have changed over the last decade or so. By examining these changes carefully, he notes that it is possible to spot some of the high probabilities for the next ten to twenty years. Page 9.

[Fereidun Fesharaki](#), long-time student of the oil industry and especially the mid-east, discusses the silver lining of the decline in oil prices. Page 15.

[Mamdouh Salameh](#) notes that there is no doubt that oil is a leading cause of war. Between 1941 and 2014, at least ten wars have been fought over oil. At present, there are at least five major conflicts that could potentially flare up over oil and gas resources in the next three decades. As long as oil holds a central place in the global economy, oil conflicts will not be far behind. Page 17.

[Seyed GholamHosein Hassantash](#) likens the current Saudi Arabian stance on oil prices to their position in the mid-1980s and suggests there may be more to their current stance than meets the eye. Page 21.

[Thomas Tunstall](#) notes that shale oil and gas production are having a profound impact on global markets. While initially confined to the U.S., other countries can be expected to tap their own resources using unconventional techniques. He reports primarily on the opportunities in Mexico and consequently for the U.S. Page 25.

[Gal Hochman](#) and [David Zilberman](#) write that the Organization of Petroleum Exporting Countries (OPEC) is a cartel-of-nations, not firms, that subsidizes local fuel consumption yet aspires for high international oil prices. The introduction of biofuels and shale oil contributes to a reduction in oil prices, as well the shrinking of OPEC's market share, thus threatening OPEC's ability to maintain this pricing arrangement and putting at risk the political stability of OPEC countries. Page 27.

[Isabella Ruble](#) provides an overview of projected EU natural gas import dependency, the current state of EU-Russia gas market relations and a brief analysis of Eastern Mediterranean Offshore Natural Gas Discoveries to determine whether these can provide the EU with a viable option for diversifying its natural gas supply sources. Page 31.

[Abbas Ghandi](#) and [C.-Y. Cynthia Lin](#) examine whether resource nationalism is on the rise by reviewing the energy strategy and oil and natural gas fiscal systems of eight major oil or natural gas producing countries that have either adopted a variation of a service contract or have shown interest in this framework over the period 1990 to 2014. They show that the evidence for a rise in resource nationalism in these eight countries is mixed. Page 35.

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Newsletter Disclaimer

IAEE is a 501(c)(6) corporation and neither takes any position on any political issue nor endorses any candidates, parties, or public policy proposals. IAEE officers, staff, and members may not represent that any policy position is supported by the IAEE nor claim to represent the IAEE in advocating any political objective. However, issues involving energy policy inherently involve questions of energy economics. Economic analysis of energy topics provides critical input to energy policy decisions. IAEE encourages its members to consider and explore the policy implications of their work as a means of maximizing the value of their work. IAEE is therefore pleased to offer its members a neutral and wholly non-partisan forum in its conferences and web-sites for its members to analyze such policy implications and to engage in dialogue about them, including advocacy by members of certain policies or positions, provided that such members do so with full respect of IAEE's need to maintain its own strict political neutrality. Any policy endorsed or advocated in any IAEE conference, document, publication, or web-site posting should therefore be understood to be the position of its individual author or authors, and not that of the IAEE nor its members as a group. Authors are requested to include in an speech or writing advocating a policy position a statement that it represents the author's own views and not necessarily those of the IAEE or any other members. Any member who willfully violates IAEE's political neutrality may be censured or removed from membership.



World Natural Gas Markets and Trade: A Multi-Modeling Perspective

Edited by Hillard G. Huntington and Eric Smith

This special issue is an important outgrowth of the Stanford University Energy Modeling Forum (EMF) 23 working group. The volume explores nascent modeling efforts to represent international natural gas markets and trade for improving the understanding of key policy and investment decisions. Although formal modeling is not required to describe the growth of liquefied natural gas or the role of spot markets, decision makers can gain powerful insights from these frameworks.

Following the editor's introductory and overview chapter, the volume includes 12 technical papers by participants in the EMF study. Seven chapters provide unique perspectives on the regional price, volumes and trade estimates from individual modeling frameworks. These systems include competitive models of world natural gas markets as well as strategic models of European markets with market power. The remaining five chapters cover important topics discussed by the working group during the study.

The range of issues is comprehensive and intriguing: trans-Atlantic price convergence, the linking of oil and gas prices through future gas-to-liquid (GTL) capacity additions, the critical role of Middle Eastern natural gas supplies, the extraordinary potential for Russia supplies if key constraints can be overcome, potential collusive behavior by Russian and Middle East exporters, the dynamics of transportation and storage capacity adjustments in response to market power opportunities, European markets reliance upon Russian natural gas exports, the interrelationship between resource constraints and market power, reserve appreciation in known North American fields, and improving insights and decisions through use of quantitative models.

Order online at: <http://www.iaee.org/en/publications/specialorder.aspx>
ISSN Number 0195-6574

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38TH IAAE INTERNATIONAL CONFERENCE

ECONOMIC, ENVIRONMENTAL, TECHNOLOGICAL AND SECURITY CHALLENGES FOR ENERGY
MAY 25-27, 2015 | GLORIA GOLF RESORT | ANTALYA, TURKEY

CONFERENCE OVERVIEW



It is my great pleasure to announce the 38th IAAE International Conference and invite you to a beautiful resort in Belek, Antalya. Turkey's unique location straddling the continents of Europe and Asia at the ultimate crossroads of the world's largest oil & gas deposits in the Middle East and consumption centers in Europe, offers an exclusive hub for the exchange of research, policy, practice and ideas to overcome global energy challenges.

The conference program is being prepared by an International Program Committee (IPC) with outstanding prominent members so as to ensure that critical issues of vital concern and importance to governments and industries are presented, considered and discussed from all perspectives. In this context, many exiting plenary and dual plenary sessions on key current energy issues, featuring internationally established speakers and lively discussions, will be organized.

With its informal social functions, the conference will provide a unique opportunity for networking and enhancing communication amongst energy concerned professionals from business, government, academia and other circles worldwide. The rich social program will include unique arrangements like pre-conference tournaments and a beach party on the Mediterranean shore.

I and my colleagues, an experienced and enthusiastic team of outstanding prominent energy professionals in Turkey, are determined to make this conference a professionally most enriching and socially most memorable event – as we did in Istanbul in 2008. Please visit our website for all details and latest updates about the conference.

On behalf of the organizing committee I wish you all a very warm welcome to Antalya and an exciting conference at a time when spring leads into summer.


Gürkan Kumbaroğlu
 General Conference Chair

Topics to be Addressed in Concurrent Sessions

- Carbon trading and taxation • Intelligent grids and demand response
- Climate change and energy industry • Investment issues in liberalized markets
- Coal in CO₂-constrained world • Low carbon energy economics
- Consumer and self-generation • Market power issues
- Design of energy markets • Oil and gas transportation and pipelines
- Distributed generation issues • Oil and gas reserves and production
- Electricity prices and uncertainties • Promotion of renewable energy
- Energy access and poverty • Prospects of CCS and CCU technologies
- Energy consumer behavior • Prospects for nuclear power
- Energy efficiency challenges • Alternative transportation fuels and vehicles
- Energy policy under 2030 emissions target • Power and gas trade under volatile prices
- Energy finance • Regulation and regulation uncertainties
- Energy markets and regulation • Renewable energy technologies and markets
- Geopolitics of oil and natural gas • Resilience of complex energy systems
- Green energy and economic growth • Role of new energy services
- Hydropower issues • Security of supply issues
- Integration of intermittent power sources • Unconventional oil and gas
- Economics and prospects of clean energy technologies • Risk and quality management issues in the energy sector



Zero Emission Conference

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ENERJİ EKONOMİSİ DERNEĞİ
 TURKISH ASSOCIATION for ENERGY ECONOMICS



CONFERENCE OVERVIEW



Massive transformations in how and where energy is produced and consumed are drastically changing our energy economy. This dynamic energy landscape is challenging government and industry decision makers to formulate a clear path forward. Policy and investment decisions need to balance the use of natural resources with impacts on the environment and local economies. One answer is to stimulate innovative technologies to enable access to increasing supplies of energy as well as more efficient consumption. But doing this requires appropriate policies, incentives and mandates, something that challenges even the most well informed policy makers.

The conference will bring together business, government, academic and other professionals to explore these themes through a series of plenary, concurrent, and poster sessions. Speakers will address current issues and offer ideas for improved technical, commercial, and policies covering all facets of energy development and use. The conference also will provide networking opportunities for participants through informal receptions, breaks between sessions, public outreach, and student recruitment. There also will be offsite tours to provide a direct and close-up perspective on the region's dynamic energy landscape.

The 2015 conference will be held in Pittsburgh, Pennsylvania, one of the main centers of American energy. The region around Pittsburgh contains a rich history of energy, with the discovery of the Coal Hill seam in 1762, the commercialization of the Drake Oil Well in 1859, and the formation of Westinghouse Electric Company in 1886. Today, the Pittsburgh area is a U.S. leader in energy development. The region is ranked 25th for the number of employees in energy-related industries. Among other things, it is the center of one of the most active natural gas plays in North America, the Marcellus Shale, and is the locus of the first U.S. nuclear power plants being built in over 30 years. Over the past three decades, Pittsburgh has had a remarkable environmental evolution and has been repeatedly named one of America's most livable cities. The Pittsburgh region is fortunate to support a diverse mix of energy activities including nuclear, coal, natural gas, and renewables. The region is home to a host of energy businesses, research facilities, industry groups, and world-class colleges and universities, many of which have active energy centered policy and academic programs. Finally, more than \$1 billion per year in government-funded research flows through the region's academic, corporate and government energy research centers, assuring that new ideas and new technologies constantly emerge.

TOPICS TO BE ADDRESSED INCLUDE:

The general topics below are indicative of the types of subject matter to be considered at the conference. A more detailed listing of topics and subtopics can be found at: www.usaee.org/usaee2015/topics.html

- Energy Demand and Economic Growth
- Energy Supply and Economic Growth
- Financial and Energy Markets
- Energy and the Environment
- Non-fossil Fuel Energy: Renewables & Nuclear
- International Energy Markets
- Energy Efficiency and Storage
- Energy Research and Development
- Political Economy
- Public Understanding of and Attitudes towards Energy
- Other topics of interest include new oil and gas projects, transportation fuels and vehicles, generation, transmission and distribution issues in electricity markets, etc.

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33RD USAEE/IAEE NORTH AMERICAN CONFERENCE CALL FOR ABSTRACTS

We are pleased to announce the Call for Abstracts for the 33rd USAEE/IAEE North American Conference, *The Dynamic Energy Landscape*, to be held October 25-28, 2015, at the Wyndham Grand Hotel, Pittsburgh, PA, USA.



The deadline for receipt of abstracts for both the Concurrent Sessions and the Student Poster Session is Thursday, **May 21, 2015**.

CONCURRENT SESSIONS

There are two categories of concurrent sessions: 1) Academic research on energy economics, and 2) practical case studies involving applied energy economics or commentary on current energy-related issues. This latter category aims to encourage participation not only from industry but also from the financial, analyst and media/commentator communities. In either instance, papers should be based on completed or near-completed work that has not been previously presented at or published by USAEE/IAEE or elsewhere. Presentations are intended to facilitate the sharing of both academic and professional experiences and lessons learned. It is unacceptable for a presentation to overtly advertise or promote proprietary products and/or services. Those who wish to distribute promotional literature and/or have exhibit space at the Conference are cordially invited to take advantage of sponsorship opportunities www.usaee.org/usaee2015/sponsors.html. Those interested in organizing a concurrent session should propose a topic and possible speakers to Mina Dioun, Concurrent Session Chair (mdioun@diounenergy.com). Please note that all speakers in organized concurrent sessions must pay speaker registration fees and submit abstracts.

Concurrent Session Abstract Format

Authors wishing to make concurrent session presentations must submit an abstract that briefly describes the research or case study to be presented.

The abstract must be no more than two pages in length and must include the following sections:

- Overview of the topic including its background and potential significance
- Methodology: how the matter was addressed, what techniques were used
- Results: Key and ancillary findings
- Conclusions: Lessons learned, implications, next steps
- References (if any)

Please visit www.usaee.org/USAEE2015/PaperAbstractTemplate.doc to download an abstract template. All abstracts must conform to the format structure outlined in the template. Abstracts must be submitted online by visiting www.usaee.org/USAEE2015/submissions.aspx. Abstracts submitted by e-mail or in hard copy will not be processed.

Student Poster Session

The Student Poster Session is designed to enable students to present their current research or case studies directly to interested conference delegates in a specially designed open networking environment. Abstracts for the poster session must be submitted by the regular abstract deadline and must be relevant to the conference theme. The abstract format for the Poster Session is identical to that for papers; please visit www.usaee.org/USAEE2015/PaperAbstractTemplate.doc to download an abstract template. Such an abstract should clearly

indicate that it is intended for the Student Poster Session – alternatively that the author has no preference between a poster or regular concurrent session presentation. Abstracts must be submitted online by visiting www.usaee.org/USAEE2015/submissions.aspx. Abstracts submitted by e-mail or in hard copy will not be processed. Poster presenters whose abstracts are accepted should submit a final version of the poster electronically (in pdf format) by August 21, 2015, for publication in the online conference proceedings. Posters for actual presentation at the conference must be brought directly to the conference venue on the day of presentation and must be in either ANSI E size (34 in. x 44 in.) or ISO A0 size (841mm x 1189mm) in portrait or landscape format.

Presenter Attendance at the Conference

At least one author of an accepted paper or poster must pay the registration fees and attend the conference to present the paper or poster. The corresponding author submitting the abstract must provide complete contact details—mailing address, phone, fax, e-mail, etc. Authors will be notified by July 7, 2015, of the status of their presentation or poster. Authors whose abstracts are accepted will have until August 21, 2015, to submit their final papers or posters for publication in the online conference proceedings. While multiple submissions by individuals or groups of authors are welcome, the abstract selection process will seek to ensure as broad participation as possible: each author may present only one paper or one poster in the conference. No author should submit more than one abstract as its single author. If multiple submissions are accepted, then a different author will be required to pay the registration fee and present each paper or poster. Otherwise, authors will be contacted and asked to drop one or more paper(s) or poster(s) for presentation.

STUDENTS

In addition to the above opportunities, students may submit a paper for consideration in the Dennis J. O'Brien USAEE/IAEE Best Student Paper Award Competition (cash prizes plus waiver of conference registration fees). The paper submission has different requirements and a different deadline. The deadline for submitting a paper for the Student Paper Awards is June 23, 2015. Visit www.usaee.org/usaee2015/bestpapers.html for full details.

Students are especially encouraged to participate in the Student Poster Session. Posters and their presentations will be judged by an academic panel and a single cash prize of \$1,000 will be awarded to the student with the best poster and presentation. For more details including the judging criteria visit www.usaee.org/usaee2015/postersession.html

Students may also inquire about scholarships covering conference registration fees. Please visit www.usaee.org/usaee2015/scholarships.html for full details.

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NIGERIAN ASSOCIATION FOR
ENERGY ECONOMICS

8th NAAEE/IAEE International Conference

Date: April 26th – 28th, 2015
Venue: International Conference Centre (ICC),
University of Ibadan, Nigeria

FUTURE ENERGY OPTIONS: POLICY FORMULATION ASSESSMENT AND IMPLEMENTATION

CALL FOR PAPERS

The energy industry globally is witnessing rapid changes. The combined factors of technology, economics, policy, and climate change are influencing demand and supply factors that will eventually determine the energy options available to consumers in the future. In 1865, Williams Stanley Jevons, widely regarded as the Founder of Mineral Economics, famously said that “coal, in truth, stands not beside but above all other commodities.” The world has since moved beyond coal to oil, nuclear energy to natural gas and currently there are several new energy technologies waiting in the wings to replace carbon-based energy carriers.

Highly endowed carbon-rich countries in the developing world must start to take notice of the developments and transformations that are taking place in the global energy markets. How would these new energy options potentially impact a typical developing country's development options and strategies? How can the presence of these competing energy sources be harnessed to promote energy access, energy efficiency and economic developments in African countries and other developing parts of the world? In what ways can developing countries adopt and adapt the new energy technologies? What policy and institutional frameworks should be put in place to facilitate easy adoption of the new energy technologies? These are important issues that should start to engage the interests of academia, entrepreneurs and policy makers in developing countries.

Adopting and diffusing the new energy options across the various segments of the economy will involve a combination of measures: appropriate technology options, economics, regulations and institutional frameworks, as well as social, cultural and political changes. The 2015 Conference will provide a platform to examine the emerging new energy landscapes, review their potentials and prospects in emerging countries, discuss success case studies from other parts of the world, examine implications on existing energy in use in these countries and, consider technological, economic, legal and institutional options and responses available to the developing countries.

The outcome of the Conference will help African leaders and policy makers, the academia and entrepreneurs to key in into the energy of tomorrow. This is critical for long term sustainable development of the continent, within the context of the global economy. The 2015 Conference will focus on these and related issues.

The Conference will hold at the International Conference Center, University of Ibadan, Ibadan, South-West Nigeria. University of Ibadan is the oldest university in Nigeria. We expect that the 2-day Conference will be attended by senior industry practitioners, academia and senior policy makers in state and federal governments. Participants will be exposed to both theoretical and practical expositions on various issues around the topic. The conference will allow network opportunities among key industry players, researchers and government officials.

CONCURRENT SESSION ABSTRACT FORMAT

Authors wishing to make concurrent session presentations must submit an abstract that briefly describes the research or case study to be presented. The abstract must be no more than two pages in length and must include the following sections:

- Overview of the topic including its background and potential significance,
- Methodology: how the matter was addressed, what techniques were used,
- Results: Key and ancillary findings,
- Conclusions: Lessons learned, implications, next steps, and
- References (if any)

PRESENTER ATTENDANCE AT THE CONFERENCE

At least one author of an accepted paper must pay the registration fees and attend the conference to present the paper. The corresponding author submitting the abstract must provide complete contact details—mailing address, phone, fax, e-mail, etc.

The deadline for receipt of abstracts is December 31st 2014.

Authors of successful abstracts will be notified by January 20th, 2015.

Authors whose abstracts are accepted will have until March 31st, 2015 to submit full papers.

While multiple submissions by individuals or groups of authors are welcome, the abstract selection process will seek to ensure as broad participation as possible: each author may present only one paper. No author should submit more than one abstract as its single author.

TOPICS TO BE ADDRESSED INCLUDE:

The general topics below are indicative of the types of subject matter to be considered at the conference.

- Appropriate technological options
- Financial and Energy Markets
- Energy and the Environment
- Non-fossil Fuel Energy: Renewables & Nuclear
- International Energy Markets
- Energy Efficiency
- Energy Research and Development
- Political Economy of Energy
- Public Understanding of and Attitudes towards Energy
- Climate Change and the Energy Industry
- Energy Pricing, Investment and Financing
- Clean Energy Technologies
- Renewable Energy Technologies and Infrastructure
- Legal Issues in Energy Infrastructure Development
- Public Private Partnerships in Energy
- Local Content and Technology
- Energy Infrastructure Development and Risk Sharing

Please send your abstract to

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The Gathering Storm - The New Geo-politics of Energy

By Paul Tempest*

No one on this planet knows, of course, what the future will bring and those who claim to know are all either fools, self-appointed bigots, weirdos, political manipulators (some well-meaning), or outright liars. Clever economists and other soothsayers come in two categories. First, a few really valuable people who know that they do **not** know and second, a larger number who do **not** know that they do **not** know. For the rest of us, more humble, toiling in the field of energy economics, it is more a patient search through the numbers (and views of the key states, alliances and personalities involved) in search of an optimum balance of cost and long-term benefit against a tumultuous background of volatile markets, constantly improving new technology and political surprise.

In ensuring adequate energy worldwide to meet the needs of a growing global population and uncertain climate, we are talking not about the two decades ahead, but the next fifty years at least. Investment today, for example, in exploration, production, processing, transportation and distribution of hydrocarbons will, in all probability, continue to provide the bulk of those energy needs. This is no small matter. Investment in energy has to be financed, mobilised and sustained on a continuing and expanding basis; it is highly dependent on the efficient application of new technology worldwide and the rapid replacement of all that is old, inefficient and obsolete. Above all, it depends on a high level of international co-operation and shared goodwill and a global consensus that such efforts are essential for sustainable global prosperity and, indeed ultimately, for human survival.

The Gathering Storm

According to our informal Windsor Energy Group index of global goodwill, the geo-political obstacles to international trade and development have again begun to multiply alarmingly. There may be some serious trouble ahead.

In Europe the dangers of being denied, or even threatened temporarily by a denial of, oil and gas imports from Russia already colour the anxieties of the 28 members of the European Union with the fear of a widespread slowdown in manufacturing industry and economic activity. If investment plans continue to be put on hold and Western sanctions begin to bite more deeply, Russian responses will sharpen. China will probably be drawn into the confrontation and will be affected by it. Among the smaller and weaker EU members in the East, there may be panic if electricity outages, freezing homes and schools and short-ages of transportation fuels begin cumulatively to sap confidence. Some of the most exposed and weaker EU members may then seek to conclude their own new Russian supply contracts with all the escalation of import cost, increased debt and erosion of trade competitiveness implied. As well as having to accept some new political strings, many other parts of the Euro-zone may well experience economic dislocation, political uncertainty and possibly social turbulence that, if unchecked, might become acute. Much will turn on whether the remarkable unity and expansion achieved by the European Community so far can be underpinned, strengthened and defended.

Another bundle of new geo-political obstacles can be traced to the bilateral energy and financial relations of Russia and China concerning the new West-East linkage of large, brand-new long-distance oil and gas pipelines supplying Russian oil and gas to the Chinese heartland. While China can provide hard currency settlement for the Russian oil and gas supplied, there is likely to be little or no problem. Yet if Chinese infrastructure costs and global investment commitments begin to outrun the Chinese Government's export revenue and available currency reserves, there may be procrastination and confrontation ahead with China searching desperately for cheaper and more secure supply and Russia suffering from a slowdown of this hydrocarbon stream and reduced inflow of capital caused by a progressive collapse of orderly and regular settlement of these bilateral accounts.

Along Russia's southern borders, we can expect a process of tightening Russian influence and control with the present military intervention in Ukraine and the Crimea providing a severe warning and example to the other former Soviet Union states if they step too far outside the guidelines set by Moscow. This seems to suggest to me that the competing oil and gas projects of these former Soviet Union states to pipe their own oil and gas directly to China and Europe may not be as simple as they originally envisaged.

Along the North African coast, the Arab Spring of 2011 appears to have run its dismal course with planned new energy investment greatly inhibited by renewed uncertainty in Libya, Egypt and further afield as in the Sudan. This confused tur-

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moil seems to be in danger of spreading further in Africa rather than diminishing.

For Russia, the difficulties of government in Iraq and a chaotic and complex civil war in Syria have raised high hopes in the Kremlin and excitement among the Russian populace of realising the Czarist centuries-old dream – that of eventually securing safe Russian access to a warm-water port, preferably in the Gulf – a new highway protected by Russian arms and expertise to the prime source of global energy exports. Meanwhile, Iran continues to pour arms and other support into Syria and Iraq and already exercises a significant level of control over parts of Southern Iraq.

A Fundamental Shift in Energy Import Dependency

Much will turn on the response of the United States to these new challenges from Russia and Iran. Within the energy sector, there are new realities to be faced. The continuing shift of Arabian Gulf exports of oil and gas from Western markets to China, Korea, Japan and some other South-East Asia states, already heavily dependent on hydrocarbon imports, has been accompanied by a fundamental reversal of trend in domestic hydrocarbon production in the United States. The shale surprise of the last five to ten years has transformed the United States from being a lead energy importer to become a much more significant exporter of U.S. coal and to become the global leader in shale development and, displacing Saudi Arabia, in the production of oil and gas liquids. The new assumption that the strengthening energy independence in the United States will persist for a long time is bound to have profound impacts on U.S. industry and on U.S. foreign policy worldwide. In the longer-term I think (and hope) that a strengthened, less energy import dependent United States could help it to re-focus its essential leadership role in applied science and the swift commercialisation of new technology.

All in all, this litany of temporary current misery is prompting the international oil and gas industry to pull in its horns and the international investor to review much more rigorously the sharp rise in political risk. Increased insurance rates and tightening banking prudence are already bringing increased costs of these services together with greater reluctance to lend without elaborate government guarantees.

New Challenges and Opportunities

Now let us try to look on the bright side.

- **Resources of Hydrocarbon**

All those who try to tell us, for whatever reason, that global hydrocarbon resources are being exhausted and assure us that weird and wonderful windmills, landscapes of very hot glass, mega-sized tide-mills and other paraphernalia will meet all our energy needs all the time within the near future are talking poppycock. Table 1 demonstrates how primary energy consumption in non-OECD countries now exceeds by a significant margin that in the OECD states. The gap will continue to widen. Yet, as demonstrated in Table 2 the bulk of proven reserves of oil, coal and gas (now including shales) remain within a quite small group of states, who control the international markets and have a strong hand in setting global energy prices. If they continue discreetly to set price parameters acceptable to the global community, this may be no bad thing. If they become divided by pandering to national interest, the chances of the global economy weathering the storm will be diminished.

There is a strong probability that proven global reserves of oil, gas and coal will continue to rise and remain highly cost-competitive. So we may well have adequate resources to address the risk of rising global energy poverty while preventing another global conflict for resources. We do need, however, to maintain the necessary momentum of investment, security of supply, efficient global markets downstream as well as a continuing whittling down of costs through much new technology. Provided we can eliminate the environmental damage caused by this enhanced production and a more equitable sharing of global energy, we will have very little to worry about. The need to achieve a stable global understanding of these objectives and widespread co-operation, as, for example, to protect the vital energy trade routes is a prerequisite. For this we will need a new institutional framework to replace the outworn and now flawed global supervisory systems of the past seventy years.

- **Climate Change**

On 1st November 2014, the United Nations issued its strongest warning so far of the dire consequences of continuing climate change and the need to curb the most pollutant uses of fossil energy. Rising sea-levels and urban air and water pollution were identified as major problems. The global processing of energy at locations close to the sea-shore pose particular problems for the nuclear power industry, and for the import and export terminals of oil and coal. The liquefaction

Table 1

PRIMARY ENERGY CONSUMPTION 2013
Share of global total (12730.4 million tonnes oil equivalent)

OIL	33%	ASIA PACIFIC	41%	CHINA	23%
COAL	30%	EUROPE/EURASIA	23%	USA	18%
GAS	24%	NORTH AMERICA	22%	RUSSIA	6%
HYDRO	7%	MIDDLE EAST	6%	INDIA	5%
NUCLEAR	4%	S/CENTRAL AMERICA	5%	JAPAN	4%
RENEWABLES	2%	AFRICA	3%	REST	44%

Primary Energy Consumption by non-OECD (56.5%) now exceeds OECD states (43.5%).

GLOBAL OIL CONSUMPTION 2013
Share of global total (4185.1 million tonnes)

REGIONS		LEAD STATES	
ASIA PACIFIC	34%	USA	20%
NORTH AMERICA	25%	CHINA	13%
EUROPE/EURASIA	21%	RUSSIA	4%
MIDDLE EAST	9%	GERMANY	3%
S./CENTRAL AMERICA	7%	CANADA	3%
AFRICA	4%	REST	57%

Asia Pacific plus North America and Europe/Eurasia account for 80% of total Global Oil Consumption.
USA leads with 20%. Russia lags with 4%.

GLOBAL GAS CONSUMPTION 2013
Share of global total (3020.4 million tonnes oil equivalent)

REGIONS		LEAD STATES	
EUROPE/EURASIA	32%	USA	22%
NORTH AMERICA	28%	CHINA	5%
ASIA PACIFIC	19%	IRAN	5%
MIDDLE EAST	13%	JAPAN	4%
S/CENTRAL AMERICA	5%	CANADA	3%
AFRICA	4%	REST	61%

Europe/Eurasia plus North America and Asia Pacific account for 80% of total Global Gas Consumption. USA leads with 22%. Middle East has 13% and rising.
Non-OECD has 52%, OECD 48%

GLOBAL COAL CONSUMPTION 2013
Share of global total (3826.7 million tonnes oil equivalent)

REGIONS		LEAD STATES	
ASIA PACIFIC	71%	CHINA	51%
NORTH AMERICA	13%	USA	12%
EUROPE/EURASIA	13%	RUSSIA	2%
AFRICA	3%	GERMANY	2%
S/CENTRAL AMERICA	1%	REST	33%

Asia Pacific consumes 71% of total coal consumption. China consumes more than half the total
Non-OECD consumes 72%; OECD 28%

Source: BP Statistical Review of World Energy, published June 2014

Table 2

PROVED OIL, GAS and COAL RESERVES end-2013

PROVED OIL RESERVES end-2013

Share of global total (1687.9 thousand million tonnes)

REGIONS		LEAD STATES	
MIDDLE EAST	48%	VENEZUELA	18%
S/CENTRAL AMERICA	20%	SAUDI ARABIA	16%
NORTH AMERICA	14%	CANADA	10%
EUROPE/EURASIA	9%	IRAN	9%
AFRICA	8%	IRAQ	9%
ASIA PACIFIC	3%	KUWAIT	6%

Middle East has almost half the total. Venezuela plus Saudi Arabia have 34%

Oil reserves have risen steadily: increasing 62% since end-1993

PROVED GAS RESERVES end-2013

Share of global total 2013 (185.2 trillion cubic metres)

REGIONS		LEAD STATES	
MIDDLE EAST	43%	IRAN	18%
EUROPE/EURASIA	31%	RUSSIA	18%
ASIA PACIFIC	8%	QATAR	13%
AFRICA	8%	USA	5%
NORTH AMERICA	6%	VENEZUELA	3%
S/CENTRAL AMERICA	4%	REST	43%

Middle East leads with 43%. Iran and Russia with Qatar account for half the total. Total gas reserves have risen by 57% since 1993 and are rising fast with new shale and other discoveries. Non-OECD have 90%; OECD 10%.

PROVED COAL RESERVES end-2013

Share of global total 2013 (891,531 million tonnes)

REGIONS		LEAD STATES	
EUROPE/EURASIA	35%	USA	27%
ASIA PACIFIC	32%	RUSSIA	18%
NORTH AMERICA	29%	CHINA	13%
MIDDLE EAST + AFRICA	4%	INDIA	7%
S/CENTRAL AMERICA	2%	GERMANY	5%

USA (27%) together with Russia and China account for almost 60% of the total. Non-OECD states have 56.8% of the total, OECD states 43.2%. Former Soviet Union 25.6% and European Union 6.3%

Source: BP Statistical Review of World Energy, June 2014

and re-gasifying of natural gas have come under much closer scrutiny, while the safe storage of nuclear waste remains under review. The lesson of the past century is that the energy industries do find solutions to these problems, particularly when prompted by local disasters.

- **Alternative Energy**

Alternative energy will have a valuable but small and costly part to play in the evolving global energy mix giving significant opportunities particularly in those states lacking domestic resources, nuclear power or hydroelectricity potential. The Achilles heel of alternative energy lies in its unpredictable intermittency, high capital and maintenance cost and dependence on rising government subsidies.

- **The Nuclear Dilemma**

The proliferation of nuclear and chemical weapons has cast a heavy shadow over the growth of nuclear power. There have been other developments which could not have been foreseen ten years ago. The recent decisions of the Japanese government and those of Germany to scale down their nuclear generation capacity have had profound and costly impacts on the performance of their economies.

- **Extremism and Terrorism**

We should not be too despondent about any apparently insoluble absence of geo-political alignment or about threats from spreading extremism and terrorism. For the oil and gas industries there is now a very pressing problem. How do you protect your workers and staff in very isolated and vulnerable locations?

The three global leaders, USA, China and Russia share much common ground in combating global and regional terrorism. With goodwill, solutions will be found to resolve their current conflicts of interest and, hopefully, the process of increasing consensus will be the foundation for continuing economic prosperity and greatly enhanced protection of individuals and vulnerable minorities.

- **The Role of the National Energy Companies**

The need to protect the national interest lies behind the development of many of the leading national energy companies. Many have gone on to develop extensive interests overseas and to acquire a capability to absorb new technology and to establish new markets. Problems arise for the smaller national companies which struggle to compete against the giants in the global market for external finance, the latest equipment, skills and technology and the management of their own often highly complex development projects.

- **The Role of the Multinationals**

Generally speaking, the multinational oil and gas companies are in good shape, well-run, supported by excellent global service companies and able to perform a dynamic role in the global economy. Their accumulated skills and experience are absolutely essential for a favourable economic outcome over the next fifty years.

- **Hybrid Development**

The continued success of the best examples of co-operation between multinationals and national oil companies will provide an efficient model for replication widely worldwide.

Changes in Global Energy Trade and Investment

To summarise: my argument so far is that the global demand for energy looks like accelerating faster than population growth as expectations of betterment fed by vastly improved telecommunications and enhanced personal access are experienced worldwide. We may need to plan for a doubling of global energy demand within fifty years, even possibly by 2050. By then we will need a whole bundle of new technology – advances in chemical energy, much more efficient energy use, nuclear fusion, breakthroughs in cheaper electricity transmission, geo-thermal, solar or whatever. Today, at least we know we have the resources to bridge the gap by expanding hydrocarbon output massively. This will require much enhanced consensus worldwide on the need for this expansion whatever increased efficiencies of energy use can meanwhile be achieved. Such an expansion requires continuity of investment and sustainability in environmental terms in a much more peaceful political environment.

Human Energy-Keep Calm but Care

Rather than go on too long about global generalities and uncertainties, I have also collected some notes and impressions based on the global, regional and national energy issues I have been involved in over the past fifty years. The UK Official Secrets Act as well as security declarations in the Bank of England, HM Treasury, Shell International, British Gas, the World Bank and World Petroleum Council

inhibit me, of course, from disclosing anything that might be considered secret or confidential, including the names of those involved, but throughout all this time I kept a private notebook of those muddles and mistakes and obstacles that we encountered. Jotting them down provided a sort of therapy for the frustration, irritation and delay that they had caused. These notes also built up a useful reminder of how those obstacles were often overcome by innovative surprises, new alliances and sensitive re-thinking of the fundamental long-term interest of all the parties involved or affected. Only well-directed human energy can resolve our future trials.

After the Storm Comes the Peace

In 1954-1956 I spent my two years of National Service in the Royal Engineers where the inculcation of basic military training at Mons Officer Cadet School at Aldershot, UK proved of inestimable value later in life in the Bank of England and with Shell and elsewhere. I have long since lost my copy of the Queen's Regulations and other documentation, but fifteen of the basic points of an infantry attack were burned into my soul like a firebrand at age 18 and remain fresh in my mind to this day. They will serve here as a template for my final thoughts on the future of energy on this planet.

- **The Ultimate Objective** – What are we trying to achieve over the long-term?
- **The Immediate Objective** – What do we have to achieve now?
- **Resources** – Are they available, replenishable, cost-effective and ready to hand?
- **Intelligence** – Do we know precisely what we are up against?
- **Obstacles** – How do we eliminate the main obstacles?
- **Surprise** – How can we find answers and strike targets in new ways from new angles?
- **Superior Technology and Skills** – What are our greatest strengths?
- **Searching for Comparative Weakness** – Which gaps can we remedy?
- **Effective Communication and Coordination** – Can all units communicate well with an overall strategy and command centre?
- **Simple Orders** – Can all units understand their instructions and their specific role?
- **Concentration of Fire** - How can the impact of well-timed coordinated action be enhanced?
- **Reinforcement Options** – Where do we turn for more support?
- **Securing the Ground** – Do we have a good plan for defending the area taken?
- **Follow-up** – Unforeseen casualties? Other unforeseen consequences?
- **Contingency Planning** – What to do if resistance is stronger than expected?

I have one other point. I was not a particularly gifted soldier. Indeed I still remember the remarks expressed early each morning on the parade ground by our Regimental Sergeant Major pointing out rather loudly that my performance of the Regimental Slow March could be likened to that of a pregnant duck. He was on the right track. His job was to sharpen up our performance and in this he was remarkably successful. But from him and others much later in life I learned another lesson:

- **Do We Really Need to Resort to Military Solutions?** – What are the alternatives? We are already well beyond the point where regional military intervention can add to global security. The need today for effective co-operation is paramount. The age of political, military and economic imperialism has passed. Can we secure our long-term objectives by other means: more positive, sensitive and appropriate diplomacy, a stronger case for a better sharing of resources, a building-up of goodwill through better, more-purpose-orientated institutions yielding strong economic and political dividends of global value?

The Good News About Lower Oil Prices!

By Fereidun Fesharaki*

While many fear low oil prices and worry about its negative impacts, we must also consider its positive attributes.

High oil prices at US\$100/bbl or higher makes everything in the energy space work! Both good projects and bad projects—from expensive non-conventional oil to exotic energies to expensive LNG projects.

The last few years, when oil prices hovered between US\$100 to \$110/bbl, it gave the market a false sense of security that this was the long-term oil price. It was not the norm, it was an aberration! Many bad decisions were made on the basis of high oil prices. OPEC countries increased subsidies and gave away huge chunks of money. IOCs engaged in expensive acquisitions, especially in non-conventional oil/gas. Contractors gold-plated their work and jacked up prices. Even energy consultants did not have to add value. If they had an upstream service, they could bill whatever they wanted. The shale frenzy in the United States added to the gold rush. Costs escalated and people acted as if there was no tomorrow.

Just like losing weight can improve your health, lower oil prices can make you more efficient and productive. It can bring back rational decision making based on sound economics, not just depending on high oil prices to make projects profitable.

Lower oil prices will have a positive impact on certain oil-producing countries. The larger oil producers—Venezuela, Nigeria, Algeria, and Iran—will certainly suffer, but even they can reduce their subsidies and be more efficient. In the Middle East, lower oil prices to say, US\$60-80/bbl are manageable. Indeed, they can be very positive. Subsidies have distorted the long-term supply and demand in these countries so much it harms their economies. Indeed, the subsidies have changed the demand pattern so dramatically that it is difficult to fix the problem. Many inefficient industries based on natural gas have been set up. They should have never been built if there were a rational pricing system in place, but now they will insist on continuing to receive subsidies indefinitely because otherwise they will go bankrupt.

Smuggling has become rampant. Oil is smuggled from one subsidized country to another less subsidized country. No one is brave enough to tackle the root cause of the problem because with high oil prices, the governments feel they have to give back to the population a portion of the revenues through subsidies.

The demand growth for oil in the Gulf countries in 2014 is greater than the incremental growth in China—all because of subsidized prices. Huge refineries are being built in the Gulf with justification that this is for supplying the domestic market, even if in reality it will eventually be an export refinery. This presupposes the subsidies continue forever! Many Middle East oil producers have become gas importers because gas prices are so low. Some burn large volumes of crude oil because gas supplies are not sufficient. Saudi Arabia's oil demand surpasses Iran's, although Iran has several times the population. The curse of high oil prices has made rational decision making more and more difficult.

Amongst the positive attributes of lower oil prices and tighter budgets, a few are listed below:

- A push for partial removal of subsidies. Full removal is still a long way away.
- No need for large new refineries. Indeed lower subsidies and higher domestic prices will result in lower absolute demand and much lower future growth. This means that many of the so-called domestic refineries will become export refineries. There will be no need for new refineries with the label of “strategic investment” under a low oil price regime.
- No more uneconomic and inefficient energy-using industries will be built.
- Wasteful mega-projects will slowly disappear.
- Budgets will be rationalized based on lower prices with far less waste and inefficiency.
- Lower oil prices will make the governments far more accountable to the people.
- Need for financing and loans from outside will subject projects to better international scrutiny.
- Reduction in unnecessary and wasteful job creation with little or sometimes negative impact on the economy.
- Reduction in massive military expenditures.

Historically, the best decisions in the Middle East have been made at the time of lower oil prices.

Amongst the private companies, especially those in the upstream oil business, with heavy investments in unconventional oil/ gas, and expensive LNG projects, the sense of reality sets in. Where LNG is concerned, the key question becomes “can you develop and deliver LNG to the market at US\$11-12/mmBtu?” If you

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cannot, then, you need to step back, rethink the project, and perhaps postpone or cancel it. The old concept of whatever I spend is ok with high oil prices is no longer valid. This may postpone or cancel some projects, but it cleanses the system from irrational and uneconomic behavior.

How long do we need to see low oil prices to change direction? The price of oil has moved to the US\$80/bbl range for some time to come. It may well end up in the US\$55-65/bbl range for a year or two, but US\$80/bbl is still a long-term floor. The difference between US\$100/bbl and US\$80/bbl is quite substantial for decision making.

The world will be a better place with lower oil prices. No oil producer will ever prefer lower prices to higher prices, but lower prices will do everyone a good service. They bring common sense back to the decision-making process!



Letters to the Editors

The Economics of Energy & Environmental Policy (EEEEP) is a journal focused on the policy implications of the economic factors affecting and affected by policy decisions in these critical and overlapping fields. The purpose is to provide analysis which will stimulate constructive dialogue and thereby encourage improved policy.

In that light, and in response to suggestions from readers, the Editors are pleased to announce that, beginning with the March 2015 issue, EEEEEP will add a section of "Letters to the Editors." Readers are invited to submit letters of not more than two pages (i.e., not more than 1000 words) concisely and impersonally reacting to articles appearing in EEEEEP. Letters submitted will be judged for publication on the basis of brevity, clarity, and strength of argument, and the Editors reserve the right to edit them further to those ends. In some cases, they may be forwarded to the original article's author(s) for a response to be published at the same time. Anonymous letters will not be considered.

Letters responding to articles appearing in prior issues of EEEEEP should be mailed to Jean Michel Glachant, Editor, Economics of Energy & Environmental Policy, Florence School of Regulation, Via delle Fontanelle 19, San Domenico di Fiesole, 50014, Italy or sent by email to jean-michel.glachant@eui.eu. After the next issue, letters should only respond to articles from the immediate prior issue.

Oil Wars

By Mamdouh G. Salameh*

The 20th century was truly the century of oil whilst the 21st century could be that of peak oil and the resulting oil wars. No other commodity has been so intimately intertwined with national strategies and global politics and power as oil. The close connection between oil and conflict derives from its vital importance to the economy and military power of nations, its irregular geographical distribution and peak oil.

In the Cold War years, the battle for the control of oil resources between international oil companies and developing countries was a major incentive and inspiration behind the great drama of de-colonization and emergent nationalism.

Yet oil has also proved that it can be a blessing for some and a curse for others. Since its discovery, it has bedevilled the Middle East and the world at large with conflicts and wars.¹

However, with dwindling global oil reserves and fast-rising oil demand, the economics and geopolitics of oil suggest that there could be more oil wars in coming years.

Oil Is a Leading Cause of War

There is no doubt that oil is a leading cause of war. Oil fuels international conflict through four distinct mechanisms: (1) resource wars, in which states try to acquire oil reserves by force; (2) the externalization of civil wars in oil-producing states (Libya, for an example); (3) conflicts triggered by the prospect of oil-market domination, such as the United States' war with Iraq over Kuwait in 1991; and (4) clashes over control of oil transit routes such as shipping lanes and pipelines (closure of the Strait of Hormuz, for example). These mechanisms can contribute to conflict individually or in combination.²

Geopolitics in a World of Dwindling Energy Supplies

Resource wars have been fought since the dawn of history, but today the competition is entering a new phase.³ Nations need increasing amounts of energy and materials to produce economic growth, but—as we have seen, the costs of supplying new increments of energy and materials are increasing. In many cases all that remains are lower-quality resources that have high extraction costs. Meanwhile the struggle for the control of resources is re-aligning political power balances throughout the world.

The United States maintains a globe-spanning network of over 800 military bases that formerly represented tokens of security to regimes throughout the world but that now increasingly only provoke resentment among the locals. This enormous military machine is becoming too expensive for the United States to maintain. Indeed, the nation's budget deficit largely stems from its trillion-dollar-per-year.⁴

The European Union, traditionally allied with the U.S., is increasingly mapping its priorities independently—partly because of increased energy dependence on Russia, and partly because of economic rivalries and currency conflicts with America.

China is the rising power of the 21st century with a surging military and lots of cash with which to buy access to resources (oil, coal, minerals, and farmland) around the planet. Its emergence as an economic superpower and competition with the United States over dwindling oil reserves could potentially lead to conflict in coming years.

Japan, with the world's third-largest economy, is wary of China and increasingly uncertain of its protector, the U.S. The country is tentatively rebuilding its military so as to be able to defend its interests independently. Disputes with China over oil and gas deposits in the South China Sea are likely to worsen, as Japan has almost no domestic fossil fuel resources and needs secure access to supplies.

Russia is a resource powerhouse. It vies with China and the U.S. for control of Caspian and Central Asian energy and mineral wealth through alliances with former Soviet states. It tends to strike tentative deals with China to counter American interests, but ultimately Beijing may be as much of a rival as Washington. Moscow uses its gas exports as a bargaining chip for influence in Europe.

The Middle East maintains a vast oil wealth, but is characterized by extreme economic inequality, high population growth rates, political instability, and the need for importation of non-energy resources (including food and water). The revolutions and protests in Tunisia, Egypt, Libya, Bahrain, and Yemen in early 2011 were interpreted by many observers as a refusal by common people to tolerate sharply rising food, water, and energy prices. As economic conditions worsen, many more nations could become destabilized.

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Oil Wars in Recent History

Prior to the 1990 Gulf War, the American energy company Halliburton's president and later U.S. vice president, Dick Cheney revealed, "We're there because that part of the world controls the world supply of oil, and whoever controls the supply of oil would have a stranglehold on the world economy."

Between 1941 and 2014, at least ten wars have been fought over oil with many potential ones that could happen during the next three decades of the 21st century.

1-Nazi Germany's Invasion of the Soviet Union (June 1941)

One of Hitler's most important strategic objectives in the invasion of the Soviet Union on June 22, 1941 was the capture of the oilfields in the Caucasus.⁵

Desperate for fuel, Germany entered North Africa and Russia in 1941 to reach the Middle East oilfields and Baku oilfields in the Caspian. German War Production Minister, Albert Speer, conceded in his post war interrogation that oil "was a prime motive" for these invasions.

2-The Attack on Pearl Harbor & U.S. Entry into World War II (1941)

Oil was central to Japan's decision to attack Pearl Harbor thus bringing the United States into World War II.

History might conclude that the Japanese attack on Pearl Harbor might have been provoked by the oil embargo imposed by the United States on Japan on July 25, 1941 as a result of Japanese military aggression in Asia. Increasingly worried about a cut-off of oil supplies from the United States, Tokyo instituted a policy to try to eliminate dependence on U.S. oil supplies. In 1940-1941, it was energy security that led Japan to occupy the Dutch East Indies and take control of its oilfields. Indeed, the U.S. oil embargo was the pivotal factor leading Japan to attack Pearl Harbor, bringing the United States into World War II.⁶

3-The Biafra – Nigeria Oil War (1967)

Oil was a major issue in the Nigerian civil war that lasted for 24 months and led to the death of 2 million innocent Nigerians. Biafra sits on huge oilfields. Approximately 30% of these fields lie in Nigeria with the remaining 70% in Biafra.

4-The 1973 Arab-Israeli War

While oil was not directly the cause of the 1973 Arab-Israeli War, using the oil weapon was a central part of the planning for the war.

On October 17, 1973, eleven days into the Arab Israeli War of the 6th of October, the Arab oil-producing countries wielded the oil weapon and imposed an oil embargo against the United States and other countries friendly to Israel. The embargo led to a quadrupling of crude oil prices and precipitated a severe recession, which adversely affected the economies of the industrialized nations.⁷

5-The Iran-Iraq War (1980-1988)

The real factor behind the Iran-Iraq war was a simmering rivalry between these two oil-producing nations underpinned by each one's aspiration for strategic primacy in the gulf region and supremacy inside OPEC. The war was a precursor for the invasion in Kuwait and the first Gulf War.

6-The Iraq-Kuwait War (1990)

The invasion of Kuwait in 1990 was triggered by a dispute with Iraq over the Rumaila oilfield, which straddles the border between the two countries.

There were several reasons for the Iraqi move, including Iraq's inability to pay more than \$80 bn that had been borrowed to finance the Iran-Iraq war and Kuwaiti overproduction of oil which kept revenues down for Iraq.

7-The War on Iraq (2003)

The U.S. invasion of Iraq in 2003 was undoubtedly about oil. This was the 21st century's first oil war. The prize was Iraq's spectacular oil wealth estimated at 330 billion barrels of proven, semi-proven and probable oil reserves.⁸ Even Alan Greenspan, the former chairman of the U.S. Federal Reserve System for seventeen years, agrees that the Iraq war was largely about oil.⁹

The war cost the U.S. economy an estimated \$6.65 trillion in running costs and also in oil price differences. It also cost the global economy (including the U.S.) some \$14.13 trillion and was instrumental in precipitating the 2008 global financial and economic crisis.¹⁰ It is estimated that the Iraq war may have increased energy costs worldwide by a staggering \$6 trillion.¹¹

8-The Sudan Oil War

When Sudan was divided in 2011, most of the oilfields wound up in the south, while the only pipeline capable of transporting the South's oil to international markets (and thus generating revenue) remained in the hands of the northerners. They had been demanding exceptionally high "transit fees" -- \$32-\$36 per barrel compared to the common rate of \$1 per barrel -- for the privilege of bringing the South's oil to market. When the southerners refused to accept such rates, the northerners confiscated money they had already collected from the South's oil exports, its only significant source of funds. In response, the southerners stopped producing oil altogether and launched their military action against the north. The situation remains explosive.

9-Syria's Civil War

Some would say the civil war and the massacres of civilians in Syria since 2011 are being exploited for narrow geopolitical competition to control Mideast oil and gas pipelines.¹²

Whatever the case, few recall that U.S. agitation against Syria began long before the civil war with the main objective of weakening Iranian influence across the Middle East.

9- The War on Libya in 2011

And while the war on Libya was portrayed as a humanitarian effort by the U.S. and NATO to protect civilians, it might be viewed as an effort to get better terms for their oil companies.

After the lifting of sanctions in 2003, Western oil companies flocked to Libya with high expectations; they have been disappointed by the results. The Libyan government granted operating licenses to foreign companies that left the Libyan state-run National Oil Corporation of Libya (NOC) with 90% of the extracted oil.¹³

10- The Annexation of the Crimea

The annexation of the Crimea signals to the world that oil and natural gas are once again being used as a weapon of war.

Russia's intrusion into the Ukraine in February 2014 has been prompted by energy and geopolitical factors. The energy factor is that 50% of Russia's gas and oil supplies to the European Union (EU), amounting to 30% of its needs, are piped through the Ukraine. Moreover, revenues from these supplies are extremely important for the Russian economy. The geopolitical factor is to prevent the Ukraine from joining the EU and eventually NATO.¹⁴

Potential Future Oil Wars

At present, there are at least five conflicts that could potentially flare up over oil and gas resources in the next three decades of the twenty-first century.

1-Conflict over Iran's Nuclear Programme

Oil is at the heart of Iran's nuclear programme. Iran needs nuclear energy to replace the crude oil and natural gas currently being used to generate electricity, thus allowing more oil and gas to be exported. Without nuclear power, Iran could be relegated to the ranks of small exporters as early as 2015 with catastrophic implications for its economy and also the price of oil.¹⁵

Neither sanctions nor threat of war against Iran will force it to relinquish its nuclear programme. If attacked, Iran could plunge the world in the biggest oil crisis in its history by blocking or mining the Strait of Hormuz through which 17 mbd (20% of oil traded worldwide) pass every day. This could push the price of oil to \$150-\$200 a barrel thus sending the global economy back into recession.

2-Oil War between the United States & China?

Though a terrifying possibility, a potential war between China and the U.S. could be triggered by a race to secure a share of dwindling oil reserves or over Taiwan or the disputed Islands in the South China Sea claimed by both China and Japan with the U.S. coming to the aid of Japan.

In such a conflict, the United States would try to starve China of oil by blocking any supplies from the Middle East passing through the Strait of Hormuz or Malacca.

3-Conflict between Iraq and Kurdistan

Oil is raising the stakes and the tensions between Iraq and the Kurdistan Regional Government (KRG) in Iraqi Kurdistan.

Long before the toppling of Saddam Hussein's regime, the Kurds had been angling for independence. Baghdad currently disputes KRG control over Iraq's northern oilfields. Iraq considers a Kurdish declaration of independence as part of a plot to dismember Iraq.

4-War between the UK & Argentina over Falkland Islands Oil Reserves

Any future war between the UK and Argentina could be over the Falklands Islands' potential oil & gas reserves. In 2010, the two countries fell out when the British began drilling for oil off the coast of the Islands.

5-Tensions over the Disputed South China Sea's Islands

The ongoing territorial disputes in the South China Sea are really about oil. China has been involved in territorial disputes with Japan and Taiwan over the Senkaku islands, and with Vietnam over the Spratly islands off the coast of Vietnam.

Growing tensions between Japan and China over the Senkaku islands could escalate into armed conflict and could potentially bring the United States into it.

Conclusions

There is no doubt that oil is a leading cause of war. Between 1941 and 2014, at least ten wars have been fought over oil. At present, there are at least five major conflicts that could potentially flare up over oil and gas resources in the next three decades. The most dangerous among them are a war over Iran's nuclear programme and a conflict between China and the United States that has the potential to escalate to war over dwindling oil resources or over Taiwan or even over the disputed Islands in the South China Sea claimed by both China and Japan with the U.S. coming to the defence of Japan.

As the two largest consumers of oil worldwide, the United States and China share common interests in avoiding disruption to global energy supplies and ensuring political stability in key oil-producing regions. Cooperation between the two oil titans on these issues could reduce the possibility of conflict.

However, as long as oil continues to hold central place in the global economy, oil wars will not be far behind. This is the price humanity pays for their quest for the riches and power that oil represents.

Footnotes

- ¹ Mamdouh G Salameh, *Oil Crises, Historical Perspective*, Encyclopedia of Energy, Volume 4, 2004, p. 634.
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- ³ Richard Heinberg, *Resource Wars in a World of Dwindling Energy Supplies*, Post Carbon, June 20, 2011.
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- ⁵ *Ibid.*, pp. 638-639.
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- ⁸ Mamdouh G Salameh, *Over a Barrel*, Joseph D. Raidy Printing Press, Beirut, Lebanon, June, 2004, p. 191.
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- ¹¹ *The Independent* on Sunday, 27 May, 2008 (an interview with Dr Mamdouh G Salameh).
- ¹² Nafez Ahmad, *Syria Intervention Plan Fuelled by oil Interests not Chemical Weapons*, Earthsight hosted by the Guardian.
- ¹³ Manlio Dinucci, *The Invasion of Libya: Behind the U.S.-NATO Attack are Strategies of Economic Warfare*, Global Research, May 1, 2011.
- ¹⁴ These were my comments on an article by Prof. John Yoo entitled: *Russia: A Great Power No More*, which was published by the American Enterprise Institute on 10 March, 2014.
- ¹⁵ Mamdouh G Salameh, *Oil & Iran's Nuclear Programme* (a USAEE Working Paper Series, No: 09-036, 29 December, 2009).

Naimi in Yamani's Attire; Are Authorities in Riyadh Witless or Lying?

By Seyed GholamHosein Hassantash*

History is being repeated. Twenty some years ago, Zaki Yamani, the veteran, former oil minister of Saudi Arabia, suddenly awoke to OPEC's need of *Market Share*, and now Ali Al-Naimi is waking up to the same need!

As a result of the policies adopted by the major consumers of crude oil, i.e., the industrialized countries, which stemmed from the 'oil price shock' of 1973, demand for OPEC oil started to decline from 1980.

The rise in the price of oil had made its production in the non-OPEC regions of the world economic, and hence huge investments had been made for that purpose. If OPEC had reduced the price of oil from 1975, such investments would not have been possible and the Organization would have retained its *Market Share*. But apparently only in 1986 did Yamani come to the realization that the high price of oil had provoked investments in 'energy efficiency', in 'other sources of energy' and in 'non-OPEC oil'. But by then it was too late; all those investments had already taken place.

It has to be remembered that from 1980 to 1986, it was Saudi Arabia that had reduced its crude oil production more than any other OPEC member and had thus opened the way for non-OPEC oil. This means that Saudi politicians were either foolish or *Market Share* was just an excuse and they were lying!

Later on however, it was revealed that Yamani and other Saudis were not all that dumb and retarded and *Market Share* was just a cover for a CIA-Saudi conspiracy to cause the fall of oil price so as to achieve a three-fold strategy: to force Iran to accept the UN Security Council Resolution to end the war with Iraq, to expedite the downfall of the Soviet Union and to put pressure on Colonel Gadhafi of Libya, who was fiercely anti-Western.

Al-Naimi has followed in the exact footsteps of Yamani. Seven or eight years have passed since huge investments were made in the shale oil and gas of the U.S. and in the Canadian oil sands. Right now, when the needed technology for the purpose is adequately developed and the required infrastructures are all in place, Al-Naimi suddenly remembers, at the 166th Meeting of the Conference of OPEC (held around the end of November 2014), that oil prices of over \$100 per barrel have made its production from those sources economic?!?

While Saudi Arabia has all these years constantly claimed that it has 1.5-2 million barrels per day (mbpd) of excess production capacity, the market has now proved that a mere 1-1.5 mbpd of surplus oil can reduce its price by 30-40%. That means Saudi Arabia could have just used 1 mbpd of that excess production to cause oil prices to fall and make those investments in shale and other unconventional sources of oil and gas unviable.

Therefore, it can be deduced that either there is yet another conspiracy to reduce the price of oil or the authorities in Riyadh are even more dimwitted than those of Yamani's period, especially when they have the experience of the past at their disposal, too. Or, it can at least be concluded that the Saudis were lying about the existence of their excess oil production capacity.

The past records show that the rulers of Saudi Arabia have always defended and looked after the interests and the energy policies of the West, particularly that of the U.S., and to that end they are even more Catholic than the Pope!

On the other hand, the U.S. policy of 'energy self-sufficiency' is a strategy that is supported by both the Democrats and the Republicans, and the dominance of the latter over the Congress will not hinder the continuation of production from those unconventional sources of energy.

Thus, it is very unlikely that Saudi Arabia would be bold enough to simultaneously take on Russia, the U.S. and eight other OPEC members who support the high price of oil, especially when the Middle East is in turmoil. That means the Saudis policy of *Market Share* is probably again a cover for a new conspiracy, chiefly against Russia.

Or, perhaps the crucial point is that the final production cost of shale oil has already been sufficiently reduced and the fall of oil prices does not harm continuation of its production, but can accomplish other tasks as well.

*Seyed GholamHosein Hassantash has held various positions in the National Iranian Oil Company (NIOC) including, Director General of the Ministerial Office of the Oil Ministry, NIOC board member and Manager of the Administrative Affairs Department and Advisor to the Oil Minister on Economic Affairs. He was President of the Institute for International Energy Studies from 1997 to 2002.

5th Latin America Energy Economics Meeting Medellín, Colombia 2015

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**"Energy Outlook in Latin America and The Caribbean:
Challenges, Constraints and Opportunities
Date: March 15,16,17 &18**

Medellín, Colombia
15 – 18 March, 2014
Intercontinental Medellín Hotel
www.5elaee.aladee.org
info@iaee2015.org

Conference Overview

The V ELAEE will take place in Medellín on March 15, 16, 17 and 18, 2015; and will feature first level world-speakers, notable business and political leaders, academics, consultants and analysts that simultaneously will alternate discussions and debates about the aforementioned and related topics. The conference will provide opportunities to delegates that include encounters among energy professionals and specialists during receptions and session breaks.

Medellín

Medellín is the capital of Antioquia, an active and progressing state; it boasts the title of being the second most important Colombian city, after Bogotá's first place as the country's capital, and it's considered a commercial, industrial, and technological development epicenter in the country.

With an outstanding leadership in the financial, banking, service, politics, arts, culture, communications, fashion, and entertainment sectors, the city has achieved an outstanding role in Latin America and has become a growth axis, not just continent-wide, but also worldwide, as well.



Speakers

- Peter Hartley – IAEE President
- Hugo Altomonte (ECLAC)
- Gürkan Kumbaroğlu - IAEE
- Jean-Michel Glachant – European University Institute, Florence
- Hernán Carlino -Fundación Torcuato di Tella
- Felipe Dias – ALADEE
- Helder Queiroz Pinto Jr. - National Agency of Petroleum, Natural Gas and Biofuels
- Víctor Rodríguez Padilla – Universidad Nacional Autónoma de México
- Marisa León – ALADEE president
- Georg Erdmann – Technische Universität Berlin
- Rubén Chaer – UTE (Uruguay)
- Sylvie D'Apote - Gas Energy, Managing Partner (Brasil)
- Edmar d'Almeida – GEIE – UFRJ
- Roberto Brandt
- Gerardo Rabinovich – ALADEE
- Isabelle Rousseau – El Colegio de México
- Fernando Navajas – FIEL (Argentina)
- Astrid Martínez – Fedesarrollo (Colombia)
- Perry Sioshansi
- Gabriel Anandarajah- UCL Energy Institute
- David Newbery – University of Cambridge – IAEE
- Ricardo Ranieri – World Bank
- Alberto Levy – Inter American Development Bank
- Victor Hugo Ventura – ECLAC
- Raúl Kieffer – President Bolivian Chamber of Hydrocarbons and Energy – President of 6ELAEE – 2017

Social Events

Gala Dinner

This special dinner will be held at Jardín Botánico, on Monday, March 16. For more information about Jardín Botánico, visit www.botanicomedellin.org



Welcome Cocktail

This cocktail will be held on Sunday March 15 at night. More details will be available on our website www.5elaee.aladee.org



Student Happy Hour

This event will be held on Sunday March 15 and will integrate the students that will attend the 5th ELAEE. More details will be available on our website www.5elaee.aladee.org



Registration Fees

	Until 15 Feb/2015	Until 16 March/2015
Speaker/Expositor - Member of IAEE	USD 380	USD 430
Speaker/Expositor - Non member of IAEE	USD 480	USD 530
Member of IAEE	USD 400	USD 480
Non member of IAEE	USD 500	USD 580
Full time students - Members of IAEE	USD 300	USD 350
Full time students - Non members of IAEE	USD 350	USD 400
Guest (meal/social functions only; no meeting sessions)	USD 250	USD 350
General Conference Sponsorship	USD 400	USD 450

Contact Information

For the latest updates about the conference,

- Official website: www.5elaee.aladee.org
- Official Twitter account: @5ELAEE
- Official Facebook Page: IAEE15
- e-mail: info@iaee2015.org

Invited



The European Commission proposal on energy and climate 2030: An Economic Analysis

On the 16th of September of last year, the Spanish Association for Energy Economics (AEEE) held a workshop entitled *The European Commission proposal on energy and climate 2030: An Economic Analysis*. This was in collaboration with the Club Español de la Energía (Enerclub) and sponsored by CEPSA and KPMG and took place at the headquarters of Ramón Areces Foundation, Madrid.

The workshop was very timely since a European Commission Proposal for the 2030 energy and climate change framework is currently under discussion. The decisions on this will affect EU energy policy and Member States' regulation. They will also constitute the foundation of the EU position on the pursuit of the global agreement on climate change that is expected in 2015 in Paris. With the new framework on the table, the workshop aimed to consider the following questions: Is the proposal ambitious enough? What are the most appropriate instruments? Is the agenda on climate change compatible with industrial competitiveness?

The opening session featured the Minister of Agriculture, Food, and Environment, Isabel García Tejerina. The Minister emphasized the proposal for this new European framework for 2030 will contribute importantly to addressing climate change. She also remarked that it would require the EU to move forward in energy interconnections in order to achieve targets on emissions, renewable energy and efficiency.

Christian Egenhofer (Centre for European Policy Studies) noted, first, the large differences in the context in which the 2020 targets were set, and those existing today, pointing out that Europe is now much more heterogeneous, which may hinder solving problems. Among his conclusions, he stressed the importance of considering economic competitiveness in the new measures package and the need for more independent economic analysis.

Assessment of the 2030 EU proposal provided different views, namely, it is:

- not overly ambitious;
- balanced but existing imbalances should be corrected (e.g., the price charged for electricity is not directly related to supply);
- consistent with the 2020 objectives and trying to keep the momentum, with more emphasis on competitiveness;
- justified in terms of health, combating climate change and security of supply.

At the same time, some aspects that are missing in the proposal were noted, e.g., the need for:

- more objective and complete economic studies;
- specification of objectives and how they have to be carried out;
- definition of Governance system.



It was also emphasized that the debate is clearly conditioned by the current economic crisis and the Russia-Ukraine conflict, which are giving more importance to competitiveness and security of supply than in previous moments.

The need to evaluate the different instruments and their interactions was stressed. As was the importance of using, where possible, market instruments focused on the price of CO₂ as the main economic signals to guide investments. In this regard, it is crucial to see just how the European emission allowances market is reformed by the Commission. Other mentioned instruments, because of their relevance, were the harmonization of energy and environmental taxes. With regard to sectors not included in the

ETS, the need to allow a high degree of flexibility to achieve goals and to have tools that enable creation of new business models was noted.

Furthermore, the importance of finding a balance between technological neutrality and support for certain technologies was emphasized. Although the outlook is uncertain, the outlook is also encouraging because of new technologies that could enable the change to an energy model much more focused on the customer. In addition, investors are not only seeking security but also sectors with great potential involving different technologies (electric vehicles, batteries, energy efficiency, etc.). Finally, concerns were expressed about the growth of energy poverty, a subject that, at least explicitly, has not been taken into account in the proposal from the Commission.

Beyond U.S. Shale: Unconventional Oil and Gas Opportunities in Mexico and Beyond

By Thomas Tunstall*

Shale oil and gas production, which has been made possible by the use of unconventional extraction techniques, are having a profound impact on global markets. After several years of denying the long-term potential, OPEC now recognizes the impact of shale oil and gas production in the United States and is taking steps to stem the spread of the development of unconventional techniques to other countries. To what extent OPEC can succeed in this endeavor remains to be seen.

Shale oil and gas production are underway in earnest in several geographies in the United States that include the Bakken in North Dakota, the Marcellus in the Northeast U.S., the Eagle Ford in South Texas and the Permian Basin in West Texas. With energy reform in Mexico progressing steadily, activity in South and West Texas is expected to migrate to Mexico in the coming years.

South Texas has seen extraordinary economic activity as a result of the Eagle Ford's shale. Yet it is interesting to note that while the Eagle Ford formation continues well into Mexico near Monterrey and over to the east along the Gulf Coast, production activity literally stops at the border at the Rio Grande. In the Eagle Ford, approximately 9000 wells have been completed to-date. In Mexico by contrast, there have been only a handful of test wells developed.

In fact, while there are shale oil and gas deposits located all over the world, the only country in which significant production is taking place is the United States, much of it in South and West Texas. While other countries are looking at tapping into their own shale oil and gas reserves the way Mexico is, the bulk of the expertise required to do so will almost certainly have to come from the U.S. So the prospect for shale oil and gas exploration and production in Mexico (and other countries) represents an export opportunity for U.S. companies that have pioneered the unconventional techniques in use now.

It is difficult to understate the impact that unconventional shale oil and gas production in the U.S. is having on global markets. The U.S. now produces more oil than it imports for the first time in over 25 years. Texas produces more crude oil than it has since 1981 (over 30 years - as far back as Energy Information Administration records go). This unexpected increase in production is largely the result of increased shale production coming from South and West Texas in the Eagle Ford and Permian Basins.

Mexico is poised to experience a similar transformation, some 76 years after its oil industry was nationalized. In the intervening years, the state-owned oil company monopoly PEMEX has had exclusive rights to explore and produce oil in the country. Unfortunately, around 2004, oil production in Mexico peaked at around 3.4 million barrels per day, and has been declining steadily since then. In fact, if current trends continue unabated, Mexico would likely become a net importer of oil in a few years.

Mexico already imports refined products and natural gas from the United States. In 2013, for example, Mexico imported over 650 billion cubic feet of natural gas from the U.S., up from 333 billion cubic feet in 2010. A recently announced natural gas pipeline projects will transport additional supplies to Mexico in future years. All of this while Mexico sits on top an estimated 545 trillion cubic feet of natural gas reserves.

As a result of these trends, the Mexican Government amended its constitution last year in order to begin the process of reforming its energy sector. This reform will enable private companies to bid on blocks and operate in Mexico in 2015 without the necessity of partnering with PEMEX.

The Eagle Ford production activity in Texas is well-established, with annual well completions now averaging over 3000 per year. Oil and condensate (ultra-light crude oil) daily production is in excess of 1.5 million barrels per day in the Eagle Ford alone. Texas production clocks in at nearly 3.2 million barrels per day as of August 2014. The question on the table has become whether Mexico can replicate that activity on its side of the border. Several issues remain to be addressed first.

The infrastructure in northern Mexico, where much of the prospective shale oil and gas deposits are believed to be located, is not as well developed as in Texas. Pipelines, roads and rail have served to facilitate the production process by enabling raw materials and capital equipment to be brought into South Texas, as well to ensure storage, transportation and refining activities (midstream and downstream).

In Mexico, rail infrastructure tends to run north-south, so logistics operations from the country's eastern ports will present a challenge. Interestingly, this may present opportunities for the Rio Grande Valley in extreme South Texas, which has not participated in the shale oil and gas boom so far. The population centers and ports in the Rio Grande Valley should be in a good position to provide workers and services to

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the reformed Mexican energy sector.

In the near term, there may be a shortage of suitably skilled engineers, geologists and other experts because the high level of activity in the U.S. currently limits supply. Over the longer term, that expertise can be expected to be exported to Mexico, which will provide positive balance of trade benefits to the U.S.

Security issues in Mexico will certainly have to be addressed. Due to the ongoing drug violence in Mexico, particularly in the border areas, the Mexican federal government and the northern states of Coahuila, Nueva León, and Tamaulipas will have to address security concerns. This will create growth opportunities in the security industry in Mexico as well.

Businesses and producers in the United States, particularly in Texas are in a prime position to take advantage of the shale boom in Mexico because of their proximity just across the Rio Grande. As energy reform in Mexico continues, there will clearly be opportunities on both sides of the border to benefit in a way not seen for 20 years, since 1994 when the North American Free Trade Alliance (NAFTA) went into effect.

IAEE/Affiliate Master Calendar of Events

(Note: All conferences are presented in English unless otherwise noted)

Date	Event, Event Title and Language	Location	Supporting Organization(s)	Contact
2015				
March 15-18	5th ELAEE Conference <i>Energy Outlook in Latin America and Caribbean: Challenges, Constraints and Opportunities</i>	Medellin, Colombia	ALADEE/IAEE	Isaac Dyer idyner@yahoo.com
April 26-28	8th NAEI/IAEE International Conference <i>Future Energy Options: Assessment, Formulation and Implementation</i>	Ibadan, Nigeria	NAEE/IAEE	Adeola Adenikinju adeolaadenikinju@yahoo.com
May 24-27	38th IAEE International Conference <i>Energy Security, Technology and Sustainability Challenges Across the Globe</i>	Antalya, Turkey	TRAEE/IAEE	Gurkan Kumbaroglu gurkank@boun.edu.tr
October 25-28	33rd USAEE/IAEE North American Conference <i>The Dynamic Energy Landscape</i>	Pittsburgh, PA, USA	3RAEE/USAEE	David Williams usaee@usaee.org
2016				
February 14-17	5th IAEE Asian Conference <i>Meeting Asia's Energy Challenges</i>	Perth, Australia	OAEE/IAEE	Peter Hartley hartley@rice.edu
February 18-19	9th NAEI/IAEE International Conference <i>Theme to be Announced</i>	Abuja, Nigeria	NAEE NAEI/IAEE	Adeola Adenikinju adeolaadenikinju@yahoo.com
March 12-15	1st IAEE MENA Conference <i>Theme to be Announced</i>	El Gouna, Egypt	GEE/IAEE	Georg Erdmann georg.erdmann@tu-berlin.de
June 19-22	39th IAEE International Conference <i>Energy: Expectations and Uncertainty Challenges for Analysis, Decisions and Policy</i>	Bergen, Norway	NAEE	Olvar Bergland olvar.bergland@umb.no
September 21-22	11th BIEE Academic Conference <i>Theme to be Announced</i>	Oxford, UK	BIEE	BIEE Administration conference@biee.org
October 23-26	34th USAEE/IAEE North American Conference <i>Implications of North American Energy Self-Sufficiency:</i>	Tulsa, OK, USA	USAEE	David Williams usaee@usaee.org
2017				
June 18-21	40th IAEE International Conference <i>Meeting the Energy Demands of Emerging Economic Powers: Implications for Energy And Environmental Markets</i>	Singapore	OAEE/IAEE	Tony Owen esiado@nus.edu.sg

Shale Oil and Biofuels: Implications for Oil Prices and the Political Instability of OPEC as a Cartel-of-Nations

By Gal Hochman and David Zilberman*

After the global recession of 2008/2009, oil prices recovered (Figure 1), biofuels reached the blend wall,¹ and U.S. crude oil production boomed. Since 2009, U.S. crude oil imports have declined by

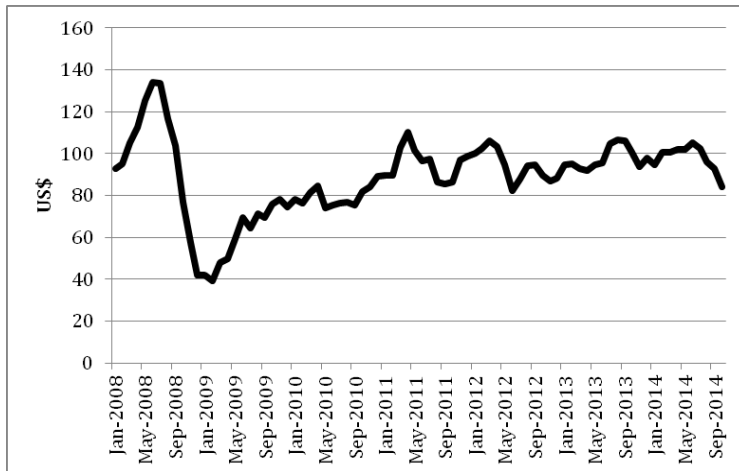


Figure 1. Cushing, Oklahoma, Oil Future Contract 1 Prices.

Source: U.S. Energy Information Administration data, retrieved from <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RCLC1&f=M>

nations that supported high oil prices. That enabled the ruling party in OPEC countries to “bribe” the local population into compliance with this policy by providing cheap fuel, as well as subsidizing food and health services.

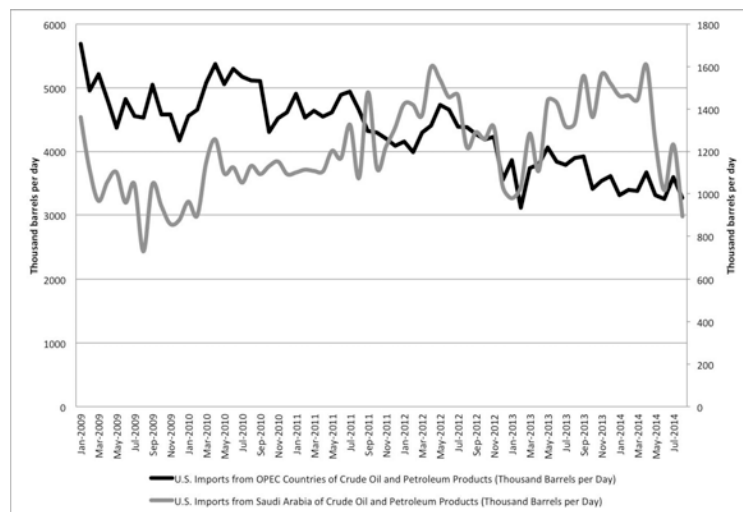


Figure 2. U.S. Imports of Crude Oil and Petroleum Products from OPEC.

Source: U.S. Energy Information Administration data, retrieved from http://www.eia.gov/dnav/pet/pet_move_impqus_a2_nus_ep00_im0_mbbldp_m.htm

OPEC as a Cartel-of-Nations

OPEC was created as a permanent intergovernmental organization at the Baghdad Conference on September 10–14, 1960, by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. Since its inception, OPEC countries have responded to changes in the international oil markets, sometimes successfully, but other times with less success. The importance of OPEC to international oil markets is a ques-

tion. After the global recession of 2008/2009, oil prices recovered (Figure 1), biofuels reached the blend wall,¹ and U.S. crude oil production boomed. Since 2009, U.S. crude oil imports have declined by 17.69%² and the Organization of Petroleum Exporting Countries’ (OPEC’s) market share has shrunk significantly (Figure 2) even though we are in a period of high international oil prices. Recently, in response to the continuous erosion of its market share, Saudi Arabia increased its production, resulting in a sharp decline in the price of crude oil, with the West Texas Intermediate price falling to \$74.61 US per barrel on November 18, 2014.³

This chain of events may signify a change in the stable regime of oil pricing. Initially, OPEC operated as a cartel-of-

However, the introduction of shale oil and biofuels reduced U.S. dependence on imports of crude oil substantially, resulting in a significant decline in imports from OPEC countries (Figure 2). Recently, imports of crude oil from Saudi Arabia have declined from 1,607 barrels a day in April 2014 to 894 in August 2014, a 45% drop. What are the implications of such changes to the international oil markets?

The cartel-of-nations concept provides a useful framework for better understanding OPEC’s response to expansion of the fuel supply within the U.S. and its implications for the international oil markets.

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tion of significant interest and thus has resulted in a large body of literature (e.g., Smith, 2009).

OPEC is a cartel-of-nations, not firms, that aims to affect international oil prices. While a cartel-of-firms is a monopoly that maximizes industry profits, a cartel-of-nations model assumes that OPEC countries, as a group of countries, aim to maximize the benefits of oil production and export, as well as domestic consumption of oil. The implications are that market power in the international oil markets is a key determinant of OPEC countries' fuel pricing behavior. This cartel-of-nations framework is expanding the international trade literature on optimal export and import taxes (Bhagwati et al., 1998; Stern, 1989). This framework suggests that we should observe a wedge between the price of oil in exporting nations and its price in importing nations. It also predicts that the more inelastic the import demand curve, and thus the larger the country's market power in the international markets, the larger the wedge between the domestic and international price (which is consistent with the trade literature; see Bhagwati et al., 1998, and references therein). To this end, during the last two decades, OPEC countries have produced roughly 40% to 50% of the volume of trade in oil, and prices of fuel in OPEC countries have on average been much lower than in most of the world. In 2010, fuel prices at the pump in OPEC countries were an average of 39¢ U.S. per liter lower than in oil-importing countries (GIZ, 2011).

The cartel-of-nations model suggests that OPEC's response to the introduction of alternatives to its oil (e.g., shale oil) is fundamental to understanding the effect of the introduction of substitutes for conventional oil in the U.S. The cartel-of-nations model explains that expansion of the non-OPEC oil supply reduces global prices but by less than predicted by other theories (i.e., competitive model, standard cartel theory). For example, while using 2007 data and comparing competitive and standard cartel models to the cartel-of-nations model, Hochman et al. (2011) showed that the introduction of biofuels resulted in the competitive model overestimating the price effect by 9% to 26% and the cartel-of-firms model overestimating the price effect by 4% to 17%. Under the cartel-of-nations model, OPEC responds to the introduction of alternatives by increasing domestic consumption. However, maintaining this behavior depends on OPEC maintaining its market share in the international oil markets.

Implications of the Recent Changes in Global Oil Supply

OPEC needs money to finance its domestic fuel consumption subsidies. Individual OPEC countries need a sufficiently high international oil price; otherwise, these countries might run deficits. The U.S. Energy Information Administration Country Analysis Briefs in 2007 suggested that Saudi Arabia is heavily dependent on oil and petroleum-related industries. In 2005, oil export revenues were around 90% of total Saudi export earnings (EIA, 2007a). Dependence on oil-export revenues among OPEC countries, however, is not limited to Saudi Arabia. Oil and gas export revenues accounted for more than three-quarters of Venezuela's export revenues in 2005 (EIA, 2007b). In 2006, up to 98% of Algeria's exports (by value) came from oil and natural gas (EIA, 2008). The domestic fossil industry and the revenues it generates are, therefore, key to economic growth and development in OPEC countries.

Because OPEC countries depend heavily on oil-export revenues, they are vulnerable to increases in the oil supply and its alternatives in the rest of the world. To this end, the recent increase in global crude oil production has come at a time when expectations of growth in global oil consumption are decreasing, which has resulted in looser international oil markets (EIA, 2014). An increase in the supply of alternatives has resulted in a decline in the demand for oil exports from OPEC and thus less oil-export revenues to subsidize domestic fuel, food, and health services in OPEC countries. However, the introduction of alternatives has also resulted in a decline in OPEC market share in international oil markets and in OPEC countries facing a more elastic import demand curve. A more elastic import demand curve lowers OPEC's economic benefits from subsidizing domestic fuel consumption (recall that the cartel-of-nations model predicts that the optimal fuel subsidy is inversely related to the import demand elasticity; that is, maximizing economic benefit suggests that a more elastic import demand curve results in a lower fuel subsidy to the domestic fuel-consuming population).

The substantial reduction of oil-export revenues for OPEC countries, as well as the decline of their market share in international oil markets, has resulted in OPEC responding to the significant increase in supply with an increase of its own exports, an effort driven by OPEC countries' desire to preserve their market share.

A key factor that is likely contributing to the OPEC response is that the U.S. oil industry is also constrained and price drops may render production of shale oil economically inviable. While some research has placed the breakeven price at above \$90 US, recent developments have suggested that declines in oil prices have different impacts on different regions/companies (see <http://online.wsj.com/articles/energy-boom-can-withstand-steeper-oil-price-drop-1414627471>). According to an article published

in Bloomberg on October 17, 2014,⁴ although some regions will feel the pinch at \$80 U.S., most will still be profitable. Furthermore, much of the Eagle Ford play would be profitable even at \$50 U.S.

Concluding Remarks

The outcome of the aforementioned changes will be determined in the international oil markets, and this may result in a paradigm shift. The outcome will be the product of the difference between the breakeven price of OPEC budgetary needs and the breakeven price of production in the Bakken and Niobrara Basins in the U.S. Sluggish demand for oil only furthers the economic turmoil in the oil and gas industry.

OPEC's internal demand for oil-export revenues is fundamental to understanding OPEC's pricing behavior. International oil prices, as well as OPEC's share in these markets, are key to understanding the dynamics of the international oil markets and OPEC's role in these markets. The cartel-of-nations model is essential to a regime that subsidizes domestic fuel, as well as food and health services, and finances these expenses with oil export revenues, thus buying the local population's compliance with this policy and achieving political stability.

Footnotes

¹ The blend wall refers to the maximum amount of ethanol blenders are permitted to blend with petroleum-based fuel. Currently, it is set at 10% of the gasoline consumption.

² Retrieved from http://www.eia.gov/beta/petroleum/imports/browser/#/?chartindexed=1&v=l&vs=PET_IMPORTS.WORLD-US-ALL.A

³ Crude oil, light-sweet, Cushing, Oklahoma, contract 1 – Retrieved from http://www.eia.gov/dnav/pet/pet_pri_fut_s1_d.htm

⁴ Retrieved from <http://www.bloomberg.com/news/2014-10-17/oil-is-cheap-but-not-so-cheap-that-americans-won-t-profit-from-it.html>

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Richard Lewis Gordon

June 19, 1934 – December 1, 2014

It is with a deep sense of sadness those of us who knew Richard Lewis Gordon learned of his passing. We at *The Energy Journal* are especially indebted to him. Richard (or Dick, as he was affectionately known), was a member of the Board of Editors since the Journal's inception in 1980. The inaugural issue of the Journal contains his paper entitled "Coal Policy and Energy Economics". Richard served as Book Review Editor from 1984 to 2011, an astonishing 27 years. A voracious reader with a vigilant and critical eye, Richard would excavate the assumptions underlying the reasoning, laying bare their strengths and weaknesses.

Richard completed his undergraduate studies at Dartmouth, Magna Cum Laude, with highest distinction in Economics. He was then accepted to MIT where he graduated with a Ph.D. in 1960. His thesis, entitled "Coal Pricing and the Energy Problem in the European Community" presaged future changes in the European coal industry. In the 1970's, Richard vigorously opposed government intervention in energy markets, a position he was proud to point out, was later vindicated.

Over the course of an academic career spanning fifty-four years, Richard authored eleven books and monographs, over 90 major papers and as many shorter pieces. His academic home during most of this time was Pennsylvania State University where he taught courses in energy and resource economics, industrial organization and international trade. Upon retirement from Penn State in 1996, Richard became Adjunct Scholar to the Cato Institute where he served for the remainder of his years.

Richard's intellectual contributions were not to be limited to the academic realm. On numerous occasions he was invited to advise on energy related matters by various agencies including the U.S. Federal Energy Administration, the National Research Council, the Federal Trade Commission, and the U.S. Department of Energy, to name a few.

Over the course of his career, Richard received many awards and commendations, including from the American Institute of Mining, Metallurgical, and Petroleum Engineers (1981), Pennsylvania State University (1989), the Government of Venezuela (1989) and the International Association for Energy Economics (1992 and 2008). In 1990, Pennsylvania State University awarded him the MICASU University Endowed Fellowship in Mineral Economics which he held until his retirement in 1996.

In the words of one of his graduate students, "Dick worked, lived, and breathed economics. He loved economics. Economic principles guided every viewpoint that he espoused, every argument he made."

Richard's contribution to *The Energy Journal* was remarkable not only in terms of its span but more importantly in the quality of the product that resulted from his labors. For this, the Journal is heavily indebted. Dick's wit, thoughtful insights and incisive critiques will be profoundly missed, as will his eloquence.

The Editors
The Energy Journal

EU Energy Security Through Supply Diversification: Do Natural Gas Reserves in the Eastern Mediterranean Present A Viable Option?

By Isabella Ruble*

Despite the increase in worldwide recoverable conventional and unconventional reserves of natural gas (currently estimated at 6,600 tcf), and the ensuing changes in market structure, as well as the increasing role played by the LNG trade, this market remains predominantly regional. Therefore, geopolitical considerations are of great importance.

Over the past decade security of energy supply and diversification of supply sources for natural gas have consistently been the highest priorities of EU energy policy. Additionally, the EU has set ambitious targets in the area of climate change and energy conservation.

The EU's primary energy supply is projected to decrease throughout the period 2010-2050, yet the share of natural gas stays constant at 24%, the share of renewables increases while the shares of oil and solids are expected to decrease (EC, 2013). The decrease in primary energy production will exceed the decrease in supply, mainly because of declining domestic reserves and the low probability of Europe significantly developing its unconventional resources (EC, 2013). While the final demand for energy is expected to decrease as well throughout the period 2010-2050, net imports and import dependence for natural gas and oil are expected to increase (EC, 2013).

According to IEA projections the EU's high dependence on oil and gas imports, currently representing respectively 80% and 60% of 'total primary energy consumption', are expected to further increase to 90% and 80% by 2035 (EC, 2014). Similarly, the EU's expenditures on fossil fuel imports are expected to rise by 50% by 2030 reaching 600 billion Euro in constant 2010 prices (EC, 2013). Furthermore, low oil prices will lead to increased import dependence on natural gas (Bilgin, 2011).

The EU relies on only four countries for around 90% of its natural gas and LNG imports, Russia, Norway, Algeria and Qatar. An effort for diversification led to imports from Nigeria and Libya (see Table 1).

The EU's efforts to improve security of supply of natural gas have focused on the establishment of pipelines that avoid transit through countries that have frequent disputes with Russia, and increased integration of the EU's internal energy market in order to facilitate inner EU gas flows, and the diversification of supply sources to reduce its dependency on Russia in particular (Bilgin, 2011).

This article highlights some of the difficulties pertaining to the diversification of the EU's natural gas supply sources. The first part analyzes the EU's increasingly intricate relationship with Russia as a dominant natural gas supplier to its market. The second part analyzes the potential that the newly discovered offshore natural gas discoveries in the Eastern Mediterranean Levant basin bear for EU supply diversification.

Russia's Dominant Position in the EU Natural Gas Market

Russia's reputation as a reliable supplier has increasingly been shattered over the past decade. The EU's success in its endeavor to diversify natural gas suppliers has been limited and the existing infrastructure that has developed over a period of 50 years is certainly partly to blame. Russia is eager to hold on to its dominant position in the EU as traditionally this allowed for fetching higher prices than other countries such as China or India were willing to pay.

The Russian economy is highly dependent on natural gas sales to the EU, its oil and gas sector account for 30% of GDP (Shadrina, 2014). Through its political influence on some of its neighbors, and Gazprom's strategic investments in Europe and other regions bordering the EU (such as the Caspian, Middle East and North Africa), Russia aims at maintaining its EU market share. The changes in the global gas market structure, and the emergence of the U.S. as a net gas exporter have reduced global demand pressures for LNG and are not conducive to Russian dominance in this market. Furthermore, regulatory pressures highlight the differences in market structure evolution and institutions between Russia and the EU, in the former government intervention and concentration in the energy sector has increased whereas the EU is aiming for a more competitive market within its borders (Shadrina, 2014). Price pressures forced Gazprom to revisit its pricing formula with the EU and the trend is moving away from contracts based solely on oil-indexed prices to including a larger spot market component. As a conse-

Trading Partner	Value (Share %)	Net mass (Share %)
Russia	41%	39%
Norway	32%	34%
Algeria	14%	13%
Qatar	7%	7%
Libya	2%	2%
Nigeria	2%	2%

Table 1. EU 28, Natural Gas & LNG Imports 2013

Source: Eurostat, 2014

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quence, Russia has also started to diversify its export markets. Maturing fields in Western Russia led to planned developments of the fields in its East and this will make exporting to countries like China, Japan and South Korea more attractive (Shadrina, 2014). The 'Power of Siberia' pipeline, which is financed by Russia and China will deliver 38 bcm of natural gas a year to China starting in 2019 (Shadrina, 2014).

The recent war in the Ukraine has highlighted again the EU's strong dependency on Russian gas and its vulnerability to supply interruptions. In 2013 the EU imported 162.7 bcm of natural gas from Russia, of which 85 bcm transited through the Ukraine; this transit amount corresponds to 15% of EU total gas demand (Gazprom, 2014). This example shows Russia's use of market power to interfere in European foreign policy. Previous disputes with the Ukraine and Belarus, mainly because of large unpaid gas bills to Russia, led to supply interruptions for several EU countries in 2006 & 2009.

The Ukrainian conflict however emerged as a result of an attempt by the Ukraine to enter into a trade agreement with the EU instead of opting for closer trade ties with Russia in the fall of 2013. As the government withdrew from its plan this led to nationwide protests and a change of government. In response to Russia's annexation of the Crimea the EU and U.S. imposed sanctions on Russia. In December 2013 the price of gas and Ukrainian debt were reduced. After the change in government, however, Russia started a gradual upward revision of its gas price to Ukraine, reaching 485 USD per 1000 cum. Furthermore, in June 2014 Russia stopped its gas deliveries to Ukraine because of unpaid gas bills of 5.3 billion USD, and in September Russia reduced its gas supplies to the EU, in an attempt to increase its pressure against the sanctions. EU mediation and guarantees allowed reaching an agreement between the Ukraine and Russia in October 2014. Ukrainian transit capacities are limited during the winter months, so low stocks in the Ukraine can potentially have significant effects on EU supply security. Russia will resume deliveries to the Ukraine against an advance payment of 378 USD per 1000 cum in 2014 (BBC, 2014).

Do the Offshore Natural Gas Discoveries in the Eastern Mediterranean Levant Basin Present an Opportunity for EU Supply Diversification?

The Eastern Mediterranean Levant Basin is shared by Cyprus, Israel, the Palestinian Territories, Lebanon and Syria and accounts for 140.2 trillion cubic feet (tcf) of natural gas reserves out of which only 18.2 tcf are proved reserves to date. Despite this amount of natural gas being minimal when viewed through a global lens, the implications for the wider region could be substantial. To put this in perspective yearly imports for the EU-27 amount to roughly 11 tcf. If estimated reserves were to become proved the Levant Basin could, therefore, potentially supply the entirety of EU-27 imports for over 12 years. There is, however, substantial uncertainty not only about the amount of natural gas that will ultimately be available, but also, and perhaps more importantly, about the ability of these countries to successfully manage their energy sector. International companies only have the required level of expertise in offshore exploration and production, and to guarantee commercial viability in addition to technical and economic factors, the final market for the gas has to be agreed on ex-ante. In principle countries can either export natural gas via pipelines or in liquefied form (LNG). Piped gas is generally cheaper, but requires long-term commitments. LNG provides the seller with more flexibility but is more costly. Disputes between

nations and the political instability in the region are two major challenges for countries of the Levant to export their gas successfully and for the EU to benefit from these new discoveries.

Prior to the discoveries in the Eastern Mediterranean Sea, Israel, Cyprus and Lebanon were importing nearly 100% of the energy consumed domestically, hence these discoveries have the potential not only to make these countries energy self sufficient but possibly to transform the region into an energy hub.

The biggest challenges for the Levantine countries will be to create the necessary institutional and foreign policy conditions that will allow for successful sector management and efficient

exploitation of these resources. So far the countries with stronger institutions have fared better.

Cyprus and Israel are the most advanced of the Levant countries when it comes to offshore exploration and production process.

Israel has the longest history of energy sector development. Its petroleum law was created in 1952 and drilling started in 1953 (Ministry of National Infrastructures, Energy and Water Resources, 2014). In 1999 the first substantial offshore discoveries were made and this allowed Israel to start its transition from nearly 100% import dependency to becoming an energy producer. The Tamar and Dalit fields are currently supplying a large share of natural gas for electricity production (EIA, 2014). By 2017 produc-

Country	Natural gas reserves		Oil reserves	
	Estimated	Proved	Estimated	Proved
Cyprus	7 tcf		3 bb	
Israel	33.42 tcf	10.1 tcf	610 mb	11.5 mb
Lebanon	25 – 96 tcf		865 mb	
Syria	--	8.5 tcf	6.9 bb	2.5 bb
Levant Basin	122 tcf	18.6 tcf	1.7 bb	2.5 bb

Table 2. Natural Gas and Oil Reserves in the Levant Basin

Source: Adapted from EIA, 2013

tion is projected to increase to 144 bcf of LNG yearly.

Estimates for Cyprus' offshore Aphrodite field range from 4.1 to 96 tcf. Following two licensing rounds in 2007 and 2012, two European companies have won the bids, Total (French) and ENI (Italy). Exploration started at the end of 2014.

Lebanon's current estimates of offshore natural gas wealth range between 25 and 96 tcf. Over the past decade great progress in the establishment of the institutional structure of this new sector was made. The Lebanese Petroleum Authority was created in 2010 and an offshore Petroleum Resource Law was developed and adopted in 2012. The first licensing round for offshore exploration & production was launched in May 2013. The dire internal political situation, with a caretaker government ruling for nearly a whole year from March 2013 until February 2014 led to repeated extensions of the bidding process as two necessary decrees for its completion are still missing (Ruble, 2014). If proved reserves tend towards the higher end of the currently estimated reserves, Lebanon could potentially export large amounts of natural gas as its domestic consumption needs for the next 20+ years could be satisfied with 12-15 tcf.

Syria is rich in fossil fuels (see Table 2); and before the Syrian war started in 2011 Syrian oil exports went predominantly to Europe, accounting for 70% of its export revenues. Natural gas was mainly used domestically in oil and electricity production. The weak institutional framework of the energy sector has, however, kept investors at bay. The war in Syria led to nearly a total destruction of its infrastructure, yet despite the ongoing conflict Russia's Gazprom secured a deal for offshore exploration along the northern coast.

If a large share of currently estimated reserves become proved reserves, then the domestic energy consumption needs of Israel, Cyprus and Lebanon can be satisfied with a fraction of available resources and large amounts will be available for exports. The major obstacle for countries to export or for the EU to benefit from these resources on its borders is the regional security situation and the disputes between the Levant nations.

The war in Syria and the Arab Uprisings have plunged the Middle East into a state of turmoil. Additionally, there are longstanding disagreements about maritime borders in the Eastern Mediterranean that are largely the result of past wars and conflicts. Cyprus signed an EEZ agreement with Lebanon in 2007 and Israel in 2011. While Cyprus has ratified its agreement with Lebanon, Lebanon has not done so: instead the Lebanese government has submitted a unilateral proposition for redefining its maritime border with Israel to the UN in 2010. The proposed maritime boundary overlaps with offshore areas claimed by Israel and bears the potential for renewed conflict between the countries. While Lebanon lags behind with its exploration and production endeavors, Israel has abstained from issuing exploration licenses for the concerned blocks (Ruble, 2014).

Aside from Lebanon and Israel, Turkey may also play an important role in Cypriot energy endeavors. In 1974 Turkey established the Republic of Northern Cyprus claiming some of the blocks within the Cypriot EEZ. In the fall of 2014 the announcement by Turkey to carry out a seismic survey off the coast of Cyprus led the latter to leave the ongoing peace negotiation. In retaliation for Turkey's violation of Cyprus' EEZ the latter opposes Turkey's accession to the EU. Clearly, as exploration is progressing tensions are mounting in the fight for resources.

Conclusion

There are two major consequences from these disputes. Firstly, Turkey is a major natural gas transit hub with access to the EU natural gas network. If Cyprus or Israel could access the Turkish pipeline system exports to the EU could be achieved at reasonable cost. The dispute between Cyprus and Turkey precludes this option. Similarly, Israeli cooperation with Cyprus will prevent Israel's gas from accessing the EU via Turkey. Secondly, Lebanese relations with Turkey have remained strong before the onset of the Syrian war in 2011 the potential for future Lebanese exports to access the EU natural gas market via onshore pipelines through Syria constituted a viable option. The Syrian segment of the AGP only had a small stretch to be completed in order to join the Turkish network. However, this is no longer an option as a result of the current situation in Syria. An offshore pipeline from Lebanon through Syrian high waters to Turkey would be an alternative and another option would be LNG terminals. Cyprus was exploring the possibility to cooperate with Israel for a LNG terminal. Another option for Israeli and Cypriot exports considered was a pipeline from Cyprus to mainland Greece. Provided that offshore Levantine natural gas reserves turn out to be sufficiently abundant the geopolitical situation in the region still bears a lot of uncertainty in terms of security of supply. In one form or another these reserves should, however, be considered as an additional option for EU natural gas supply diversification and can in the longer term possibly even lead to further energy market cooperation and integration.

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We look forward to your participation in these new initiatives.

Is Resource Nationalism on the Rise? Evidence from Service Contracts in Eight Countries

By Abbas Ghandi and C.-Y. Cynthia Lin*

Introduction

Resource nationalism is the tendency of people and governments to assert control over natural resources located on their territory. There is a debate over whether resource nationalism is on the rise as a result of the general belief about the increasing global scarcity of oil and natural gas prior to the recent shale gas and tight oil development in the U.S., as increasing scarcity may cause some governments to hold on to their ownership or control over their fossil fuel resources for strategic and economic reasons.

This article assesses whether resource nationalism is on the rise by reviewing the energy strategy and oil and natural gas fiscal systems of eight major oil or natural gas producing countries that have either adopted a variation of a service contract or have shown interest in this framework as an alternative to production sharing contracts over the period 1990 to 2014.

Like a production sharing contract, an oil or natural gas service contract is a long-term contractual framework that is used by some host governments to acquire the international oil companies' expertise and capital without having to hand over the field and production ownership rights to them. However, in contrast to production sharing contracts, in a service contract the IOCs agree to a pre-determined return in lieu for sharing profit oil. In addition to the IOC's method of compensation, service contracts and production sharing contracts could also differ in four other major categories: field ownership rights, produced crude ownership rights, field's operatorship, and the degree of risk that each side bears.

Our review suggests that heightened sovereignty concerns could be an important factor explaining the interest in service contracts in these eight countries. Resource nationalism may, therefore, be on the rise for those countries that are interested in service contracts due to sovereignty concerns. However, as we discuss below, the evidence for such a rise in resource nationalism in these eight countries is mixed.

We categorize the eight countries reviewed in to two groups: those for which evidence supports a rise in resource nationalism, and those for which evidence does not support such a rise. In particular, the first group includes those countries whose current status of cooperation with international oil companies lends support to a rise in resource nationalism. These countries include Venezuela, Kuwait, Iraq, Bolivia, Ecuador and Turkmenistan. The second group of countries consists of those that have shown evidence against resource nationalism even though they too have service contracts. These countries are Iran and Mexico. In what follows, we briefly describe our reasons for the above categorization.

Evidence for a Rise in Resource Nationalism

Countries whose current status of cooperation with international oil companies lends support to a rise in resource nationalism include Venezuela, Kuwait, Iraq, Bolivia, Ecuador and Turkmenistan.

Even in these countries where evidence supports a rise in resource nationalism, there might also be some evidence against the rise of resource nationalism at least for a short period of time. For example, Venezuela adopted a variation of service-type contract, known as operational service agreements, in 1991. Among the three rounds of auctions for this framework, the third round's allocation of produced crude entitlement in accordance with the IOCs' internal rate of return in the project is indeed a sign of a move towards more openness to IOCs in the countries' upstream sector (Manzano & Monaldi, 2010). However, we consider Venezuela among the countries with strong evidence of resource nationalism rise because in 2006-2007 it forced the conversion of the IOCs' operational service agreements into "mixed enterprises" with majority stakes for the Venezuela's state-owned oil company *Petróleos de Venezuela, SA* (Manzano & Monaldi, 2010). This situation might be lessening in coming years due to the country's economic hardship, which has affected the performance of the IOCs in the mixed enterprises (Mogollon, 2014).

Kuwait has also shown some movement towards letting more IOCs in the country through introducing different versions of service-type contracts since the early 1990s (Middle East Economic Digest, 2010). In particular, the country's 1999 "operating service contract" (Stevens, 2008) and 2010 "enhanced technical service agreement" (Business Monitor International, 2011) could be seen as important steps away from resource nationalism. However, because of the long lasting dispute (Stevens, 2008) over the terms of the contracts between differ-

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ent segments of the government and also the investigation (Energy Compass, 2014) of the enhanced technical service agreement, we categorize Kuwait under the countries with resource nationalism on the rise. In fact, the government's recent decision (Strouse, 2013) to sign oilfield service contracts with service companies as opposed to service-type contracts with international oil companies reinforces such categorization.

Bolivia has also shown strong resource nationalism in recent years after a period of more openness to IOCs in its upstream sector. In particular, the renationalization of the oil industry in 2006 (Vargas, 2007), which was accompanied by a forced conversion of the countries' existing contracts to "operation contracts" as a variation of the service-type contractual framework, puts Bolivia under the group of countries with rising resource nationalism. Still, it is worth mentioning that even though Bolivia held a bidding round in 2012 under the new "operation contracts" introduced in 2006, the government has also shown signs of providing more incentives to the IOCs by designing more flexible contracts based on the area of exploration and on the potential reserve discoveries in addition to providing fast cost recoveries for the IOCs (Vargas, 2007).

Ecuador also started the process of converting the IOC's upstream contracts to service contracts in 2007 (Business News Americas, 2011b) with an agreed-upon flat fee cost recovery scheme for the IOCs. Therefore, we consider this move as a sign towards the rise of resource nationalism in Ecuador. The government has not shown any sign of lessening this trend yet by awarding incremental production contracts, as a new variation of service contract, on two mature fields in 2012 (Canada Stockwatch, 2012). In addition, the government has started a new exploration-based licensing round through the introduced service contract framework (Kerr, 2012c).

Turkmenistan is another example of the countries with the rise of resource nationalism as reflected in their effort to adopt service-type contracts. The Turkmen government has insisted on using a service-type contractual framework for the countries' onshore natural gas fields even though the Turkmen 2008 hydrocarbon law allows pursuing other frameworks such as concessions, production sharing contracts, and oilfield service contracts (International Comparative Legal Guide Series). Turkmenistan has yet to show some flexibility even after the departure of some IOCs from the country in 2013 (Roberts, 2013).

Iraq has also used three different versions of service-type contracts since 2009, which include producing field technical service contracts; production and development technical service contracts; and a service-type framework for exploration (Ghandi & Lin, 2014). Awarding contracts to IOCs in a country with limited presence of international oil companies for many years until 2009 could be seen as a sign of more openness in the countries upstream. However, since the government chose service-type contracts over other frameworks that the Iraqi Constitution had allowed for, we consider Iraq's decision to use service-type contracts as evidence of a rise in resource nationalism.

Evidence Against a Rise in Resource Nationalism

Not all countries with service-type contracts experienced a rise in resource nationalism. In particular, there is evidence against a rise in resource nationalism in Mexico and Iran even though these countries have relied on service-type contracts for many years.

In Mexico, after many years of reliance on oilfield service contracts, since 2001 (Soto, 2005), the country has started using multiple service contracts on non-associated natural gas fields (Kerr, 2009). Mexico's move from oilfield-service contracts to multiple service contracts and incentive-based multiple service contracts since 2009 (Dow Jones International News, 2009) might not be enough evidence against the rise of resource nationalism in Mexico. However, the continuance of this policy into 2012 (Business News Americas, 2012) and also the 2013 energy reform law that allows four contractual frameworks including service contracts, production sharing contracts, profit-sharing contracts and licenses (Kerr, 2013b) are evidence against a rise in resource nationalism.

Iran, one of the pioneer countries in awarding service-type contracts since 1995 (Alikhani, 2000), should be considered on the top of the list of the countries with a rise of resource nationalism. However, since the 2013 unprecedented election of Hassan Rouhani as the new president, the country is experiencing a full front effort to ease international pressures over its nuclear program and also to shake up the country's stagnated economy. As part of the effort, the new administration has opened up dialogues with the Western IOCs and has signaled that it is ready to offer more lucrative deals than its former buy-back service contracts (1995-2009). In particular, Iran is getting ready to officially introduce its new joint-venture contracts called Iran Petroleum Contracts (IPC) in November 2014. Iran's new IPC has four risk-based tiers that allow the government to provide additional incentives to the IOCs that take on more risky projects. For example, IOCs could gain 60% more through the highest tier for more risky

projects than through the lowest tier. Iran's main objective is to increase the country's production potential to higher than 5 million barrels per day by 2018 with a particular attention to technology transfer and reservoir management. The government has also made it clear that they most welcome Western oil companies and in particular Shell, BP, Total and Exxon Mobil for their superiority in technology and reservoir management. These efforts serve as evidence against a rise in resource nationalism in Iran (Energy Intelligence Finance, 2014).

Conclusion

In this article, we examine the evidence for a rise in resource nationalism from the perspective of eight countries with oil and natural gas service contracts. We find that the evidence suggest a mixed trend in the rise of resource nationalism. While six out of the eight countries show evidence of a rise in resource nationalism, at least two countries, Iran and Mexico, have shown clear evidence against a rise in resource nationalism. Thus, while resource nationalism may be on the rise in some countries, it is not on the rise in all countries, and may even be declining in some.

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SCENES FROM THE 14TH IAAE
EUROPEAN ENERGY CONFERENCE
OCTOBER 14-31, 2014





The Evolving World of Energy Economics: Report from the 14th IAEE European Conference

A comparison of the papers presented at the IAEE European Conferences of Venice (2012) and Rome (2014) indicates, in a strict sense, the evolution of the interests and the priorities of the European energy economists but also in a broader way the changes of the world energy situation.

In order to make such a comparison we have considered for both Conferences all the contributed papers approved in the peer review for presentation in the concurrent sessions; the overall numbers are pretty similar (80 concurrent sessions both in Venice and in Rome; 304 papers presented in Venice versus 374 in Rome.)

First of all, a very general impression concerns the decreasing role of technological issues in the discussion. The original break-down of the subject matters in these IAEE European Conferences followed closely a classification by technology (e.g., fossil fuel vs. renewable energy, PV vs. wind, silicon vs. multi-junction etc.) and then considered the instruments (incentives, regulations, etc.) necessary to open the way to the desired technologies. The classification by technology has widely disappeared, replaced by a more holistic approach or by a classification by type of instrument. This shift away from a technology approach is, in our opinion, positive, in that it diversifies the IAEE Conferences from other events where the technological approach is more in order, and it corresponds more closely to the approach generally followed by energy economists.

There is, of course, the awareness that fossil fuels dominate the energy market, and they will continue to do so in the next two or three decades. However, the single most relevant change in the last years at the world level has been the rapid and widely unforeseen role taken up by unconventional fossil fuels, shale oil and gas in particular. These new developments have widely changed some of the tenets on security of supply and on competitive markets, with huge consequences on the import dependence of the United States in particular, on the verge of turning from net energy importer to net exporter. Who reasonably expected this new development to be adequately reflected in the agenda of the Rome meeting may remain unappeased. Apart from the overall increase in unconventional hydrocarbon resources duly taken into account in world-wide scenarios, such as those developed by international agencies and multinational corporations, very few papers dealt with the specific role of these new energy sources in Europe. Pessimism about their perspectives? Or realism about the more fragile environmental conditions and even more the widespread public opposition met in the first approaches and evidenced specifically for instance in France and in Poland? Whichever the reasons, for the time being, the prevailing attitude seems to be one of wait-and-see.

Geopolitics of course remains of great importance and of increasing difficulty. The attention is now shifting to the MENA (Middle East and North Africa) countries, to the Caspian region, to some Central Africa situations. Even the old-time concept of “rogue countries” is more blurred (think of Iran or Syria) and finer distinctions become essential (in listening in to some of the very instructive lectures delivered at the Rome conference one wonders whether a degree in theology is more relevant to procure oil and gas than one in geology!)

Within fossil fuels, oil is losing some of its centrality with an increasingly role of natural gas no longer regarded as subordinate to oil but as a source of primary interest. Gas prices are less linked to oil prices, and tend to obey their own rules. Market analyses (mostly following classical economic approaches but some employing novel methods) continue to be carried out at various scales. Liquefied natural gas (LNG) is now part of the picture, including its direct utilisation in final energy uses for some applications.

The position of coal is somewhat ambiguous. The necessity of reducing greenhouse gas (GHG) emissions is taken very seriously by all European countries, the most common response being the substitution of some GTCC power plants for coal plants. However, the two larger energy consumers in the EU, Germany and the UK, also envisage a greater role for coal, coupled with carbon capture and storage (CCS). However, the evolution of the CCS technology in Europe, as appeared in the Rome meeting (as already before, in the Venice meeting, one concurrent session devoted to CCS in each) does not seem to respect the roadmap which would be required to make this solution widely available and not prohibitively expensive by 2025-2030. The set of demonstrations that was considered necessary for such a solution appears to lag behind and for several options not to have moved the first step. One might suspect that where coal-based electricity production is really going to proceed on a very large scale, i.e., in the emerging economies like China, India or Indonesia, there appears to be no special hurry to introduce CCS, while the market for efficient and clean (except for CO₂) power plants is extremely attractive.

Further declining appears the interest for nuclear power (eight papers in Venice, only two in Rome). Huge delays and increasing prices affect the few nuclear power stations whose construction is still planned or on-going in Europe (not counting Russia). Here, too, some potential for new nuclear power is seen in emerging economies and even in developing countries. But this potential market does not seem to be overly advertised in our events, possibly in response to negative public attitudes or in connection with proliferation preoccupations.

Renewable energy sources (RES) for electricity production, seen in their systems aspects, provided the single most important subject of discussion for the Rome meeting, much beyond their impact in the Venice event. This perhaps requires some words of comment. The main question, not yet fully answered at the time of the Venice conference was – is it possible to have a sizeable and consistent share of electricity produced in a country starting from RES and in particular from non-programmable energy sources, such as solar or wind? Now we have an answer, it is possible and it has been done. It is expensive, it may not be desirable and it certainly is not easy: nevertheless it can be done and it has been done. Even recent studies concluded that it would not be feasible to use (partly) unpredictable RES in excess of 10%; while field experience has shown much higher shares (20% or even more) and cases have been reported of large-scale systems being fed for some consistent time by RES only. No technological breakthrough is required, but an intelligent combination of reinforcement of transmission and distribution lines, some electricity storage (or storage of other forms of energy), a “smart” management of distributed electricity production and consumption (the “prosumers”). A consistent share of the papers presented tried to explain the results that have been obtained, many others explored possible ways of further improvement.

As we anticipated at the beginning of these notes, one should not expect from the Rome papers a comparison of different RES technologies or even more finely distinctions of different solutions for each kind of RES.

Relatively less interest was expressed in the subject addressed by the papers concerning thermal applications of RES. Even if heat production by solar collectors or by burning biomass is in many cases closer to economic competition than electricity production (or just because of that?), these applications appear less trendy or appealing.

Energy efficiency in industry and in buildings was explored in a number of papers. As was the case for the energy supply, and as we discussed at the beginning, less attention was devoted to the different technologies for energy saving, and more to the instruments employed, such as comparisons of the results obtained by regulatory instruments vis-à-vis incentives, tax reductions, etc. Adequate, client-friendly financial instruments are indicated as priorities in industrial and buildings energy saving; training and adequate infrastructures are receiving due attention. As indicated by the EC directives, public buildings are seen as an occasion for testing, demonstration and show-casing of demand-side management interventions. Much of this activity can be found in the initiatives stemming from the “Covenant of Mayors”, the engagement of several thousand cities in a number of co-ordinated energy saving projects dating back to Agenda 21, but just now fully flourishing. One of the positive results of this initiative is that systems aspects are often taken into consideration in projects that span beyond energy aspects alone.

We have not mentioned so far energy uses in transportation. This sector of final energy utilisation would in our opinion deserve more attention than it has received until now in our Conferences, if one considers that in Europe transport accounts for about 30% of energy consumption, that this sector is often the only one in which energy use is increasing, and that transport is not flexible in terms of primary energy utilisation, relying today nearly entirely on oil products. The Rome Conference included three concurrent sessions devoted to energy in transport, two dealing with increasing fuel economy in transport and how to deal with CO₂ limits, the other with electric and hybrid vehicles. It is interesting to note that the aspect of main interest concerning electric vehicles was the role that charging batteries could have on electricity demand, creating an important opportunity for energy storage and of flexibility in the electricity demand side: a most interesting consideration, but somewhat marginal in terms of transport. The substitution of new fuels for petroleum derivatives, or the development of new transport systems for passengers and/or goods remain mostly under- or non-explored.

The investigation of the links between energy availability, energy prices and economic development is a subject which is punctually revisited at each major energy economics conference and this was the case also for the Rome meeting. However, interesting as the new points of view may be, there seems to be a gap between theoretical considerations and the reality of the economic crisis. In the Venice Conference more attention was paid to understanding what happened and what was needed to face up to the economic crisis, while in the Rome Conference there is not a specific consideration on this issue. It seems that we have now accepted that the current economic framework is the starting point. This also

means that there is little hope of returning to the previous economic path. The “transition to a green economy” of which the new energy paradigm should be a fundamental building block remains mostly as an inviting catchword with little content so far. In addition, what has emerged during the IAEE conferences was that the limitations deriving from climate change considerations are fully taken into account in the national policies. In fact, if the link between energy and economy is known, in the recent years the increasing importance of climate policy and how the climate challenge influences (constraints) the economic and energy policies are underlined. The Venice conference had included 7 sessions dedicated to the climate change with 28 papers while the Rome Conference, again with 7 sessions, featured 34 papers. More concrete is the investigation on the access to energy in developing countries (a subject only skirted in our European conference) or on energy poverty, which is present in many sectors of industrialised countries and was discussed in a session in Rome.

Ugo Farinelli and Cecilia Camporeale



Craig Morris, Editor of *Renewable International* and the blog - *Energy Transition* receives 2014 IAEE Journalism Award. Past President Mine Yucel looks on.

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Calendar

19-20 January 2015, Platts 5th Annual Middle Distillates Conference 2015 at Hilton Antwerp, Groenplaats 32, Antwerpen, 2000, Belgium. Contact: Simon, Kears, Platts, 20 Canada Square, 12th Floor, Canary Wharf, London, E14 5LH, United Kingdom. Phone: +44 (0) 20 7176 6273, Email: conf_registrations@platts.com, URL: <http://atnd.it/17190-0>.

21-22 January 2015, 9th Annual Public Participation for Transmission Projects at San Diego Marriott La Jolla, 4240 La Jolla Village Drive, La Jolla, 92037, USA. Contact: Danielle, Duignan, EUCI, 4601 DTC Blvd, Ste. 800, Denver, CO, 80237, USA. Phone: +1 303-770-8800, Email: dduignan@euci.com, URL: <http://atnd.it/17571-0>.

22-23 January 2015, Platts 8th Annual European Oil Storage Conference at Hilton Amsterdam Hotel, Apollolaan 138, Amsterdam, 1077 BG, Netherlands. Contact: Platts, Platts, Platts, 2 Penn Plaza, 25th Floor, New York, New York, 10001, USA. Phone: 020 7176 6300, Email: conf_registrations@platts.com, URL: <http://atnd.it/17675-0>.

22-23 January 2015, Underground Transmission at Courtyard by Marriott Charleston Historic District, 125 Calhoun St, Charleston, SC 29401, USA. Contact: Danielle, Duignan, EUCI, USA. Phone: +1 303-770-8800, Email: dduignan@euci.com, URL: <http://atnd.it/17574-0>.

22-22 January 2015, 2015 National Power & Electricity Summit at Carton House Hotel, Maynooth, Kildare, Ireland. Contact: Greg Carew, iQuest, Rathgreedan, Edenderry, Offaly, Ireland. Phone: 353469772399, Email: greg.carew@iquest.ie, URL: <http://atnd.it/17941-0>.

25-27 January 2015, 3 Day MBA in Floating LNG at United Kingdom. Contact: +44 2076087072, 3 Day MBA in Floating LNG, Jasmina Jakimova, Terrapinn HQ, 10-11 Charterhouse Square, London, Greater Britain, EC1M 6EH, United Kingdom. Phone: +44 2076087072, Email: rebecca.sloan@terrapinn.com, URL: <http://atnd.it/14998-0>.

26-27 January 2015, 13th Annual Utility Billing and Payment Transformation at Millennium Knickerbocker Hotel, 163 E Walton Pl, Chicago, 60611, USA. Contact: Danielle Duignan, EUCI, 0. Email: dduignan@euci.com, URL: <http://atnd.it/17576-0>.

26-27 January 2015, Gas Insulated Substations Best Practices at Hyatt Regency Orange County, 11999 Harbor Blvd, Anaheim, 92840, United States. Contact: Danielle, Duignan, EUCI, 4601 DTC Blvd, Ste. 800, Denver, Colorado, 80237, USA. Phone: +1 303-770-8800, Email: dduignan@euci.com, URL: <http://atnd.it/17579-0>.

26-27 January 2015, Net Metering 2.0 and Utility Solar Rates at Hyatt Regency Orange County, 11999 Harbor Blv, Garden Grove, 92840, USA. Contact: Danielle Duignan, EUCI, 4601 DTC Blvd, Ste. 800, Denver, 80237, USA. Phone: 13037708800, Email: dduignan@euci.com, URL: <http://atnd.it/17578-0>.

26-28 January 2015, LNG Bunkering Summit at IQPC, 129 Wilton Road, London SW1V 1JZ, United Kingdom. Contact: Oil & Gas IQ, Enquiries Team, IQPC, 129 Wilton Road, London, SW1V 1JZ, United Kingdom. Phone: 44 (0) 207 036 1300, Email: enquire@oilandgasiq.com, URL: <http://atnd.it/16934-0>.

26-28 January 2015, LNG Bunkering Summit at Park Plaza Amsterdam Airport, Melbournestraat 1, Amsterdam, 1175 RM, Netherlands. Contact: Oil, & Gas IQ, Oil & Gas IQ, 129 Wilton Road, London, SW1V 1JZ, United Kingdom. Phone: 0207 036 1300, Email: enquire@oilandgasiq.com, URL: <http://atnd.it/16934-0>.

27-29 January 2015, Oil and Gas Intellectual Property Summit at IQPC, 129 Wilton Road, London SW1V 1JZ, United Kingdom. Contact: Will, Robinson, Oil and Gas IQ, United Kingdom. Phone: 44 (0) 20-7036-1300, Email: enquire@oilandgasiq.com, URL: <http://atnd.it/15935-0>.

27-29 January 2015, Argus Americas Crude Summit 2015 at Hilton Americas, 1600 Lamar Street, Houston, 77010, United States. Contact: Umer Qureshi, Argus Media, 175 St John Street, Argus House, London, EC1V 4LW, USA. Phone: 17134007827, Email: usconferences@argusmedia.com, URL: <http://atnd.it/18150-0>. **27-28 January 2015, 6th Nuclear Power Asia 2015** at Hilton Hotel, 3 Jalan Stesen Sentral, Kuala Lumpur, 50470, Malaysia. Contact: Marj, Cuijpers, Clarion Events, Bedford House, 69-79 Fulham High St, London, SW6 3JW, United Kingdom. Phone: +65 6590 3970, Email: marj@clarionevents.asia, URL: <http://atnd.it/14484-0>.

28-29 January 2015, 3rd Annual International Nuclear Decommissioning Summit at Steigenberger Hotel, Los-Angeles-Platz 1, Berlin, 10789, Germany. Contact: IQPC Germany, IQPC Germany, Friedrichstrasse 94, Berlin, Germany. Fax: +49 (0) 30 20 91 32 10, Email: info@iqpc.de, URL: <http://atnd.it/15375-0>.

02-04 February 2015, Shutdown & Turnaround for Efficient Plants 2015 (STEP 2015) at Shangri-La Resort, Muscat, 100, Oman. Contact: Serah Ben, 0. Email: sben@hciex.com, URL: <http://atnd.it/18013-0>.

02-03 February 2015, III Funseam International Business Symposium: "Markets and Sustainability for a Competitive Energy Sector" at Parc Científic de Barcelona. Baldiri Reixac 4-8. Auditorium. Barcelona - Spain. Contact: Déborah Pugach, Assistant Director, Funseam, Parc Científic de Barcelona. c/Baldiri Reixac 4 Torre I, Piso 7, Barcelona, Barcelona, 08028, Spain. Phone: +34 93 403 37 66, Email: assistant@funseam.com, URL: <http://www.funseam.com/>.

02-03 February 2015, Argus DeWitt Olefins Conference 2015 at Carlton Hotel, 76 Bras Basah Road, Singapore 189558, Singapore. Contact: Josephine, Pulvera, Argus Media Singapore Group, Singapore. Phone: +65 6496 9932, Email: asiaconferences@argusmedia.com, URL: <http://atnd.it/18169-0>.

03-03 February 2015, III INTERNATIONAL ACADEMIC SYMPOSIUM "ENERGY MARKETS AND SUSTAINABILITY" at Parc Científic de Barcelona. Baldiri Reixac 4-8. Auditorium. Barcelona - Spain. Contact: Elisa Trujillo-Baute, Coordinator, University of Warwick and Chair of Energy Sustainability Universitat de Barcelona, IEB, Universitat de Barcelona - Facultat d'Economia i Empresa. c/ Tinent Coronel Valenzuela, 1-11, Barcelona, Barcelona, 08034, Spain. Phone: +34 93 403 46 46, Email: ieb@ub.edu, URL: <http://www.ieb.ub.edu>.

03-04 February 2015, 17th Annual E and P Information and Data Management at Marriott Regents Park Hotel, 128 King Henry's Road, London, NW3 3ST, UK. Contact: Julia, Rotar, SMI Group, Harling House, 47-51 Great Suffolk Street, SE1 0BS, United Kingdom. Phone: +44 20 7827 6000, Email: jrotar@smi-online.co.uk, URL: <http://atnd.it/15755-0>.

03-04 February 2015, O&M and Lifecycle Management for CCGT Power Plants at Al Murooj Rotana Hotel, Al Saffa Street, Dubai, United Arab Emirates. Contact: Luba Jersova, T.A. Cook Conferences, 46 The Priory Queensway, 4th Floor, McLaren Building, Birmingham, B4 7LR, United Kingdom. Phone: 01212003810, Email: ljersova@tacook.com, URL: <http://atnd.it/16746-3>.

04-05 February 2015, Wind Risk Management and Mitigation at etc. venues Victoria, One Drummond Gate, Pimlico, London, SW1V 2QQ, United Kingdom. Contact: Alice, Taylor, Windpower Monthly, London, United Kingdom. Phone: +44 (0)20 8267 4011, Email: events@windpowermonthly.com, URL: <http://atnd.it/17782-0>.



IAEE ENERGY FORUM

Volume 24, First Quarter, 2015

The *IAEE Energy Forum* is published quarterly in February, May, August and November, by the Energy Economics Education Foundation for the IAEE membership. Items for publication and editorial inquiries should be addressed to the Editor at 28790 Chagrin Boulevard, Suite 350, Cleveland, OH 44122 USA. Phone: 216-464-5365; Fax: 216-464-2737. Deadline for copy is the 1st of March, June, September and December. The Association assumes no responsibility for the content of articles contained herein. Articles represent the views of authors and not necessarily those of the Association.

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