

# IAEE Energy Forum

Singapore Issue 2017

International Association for Energy Economics

ISSN 1944-3188

## IAEE

WWW.IAEE.ORG

INTERNATIONAL  
ASSOCIATION for  
ENERGY ECONOMICS



### CONTENTS

- 1 President's Message
- 8 *Opening Remarks to the 40th IAEE Conference by Minister Masagos Zulkifli*
- 10 Summary of Plenary Sessions
- 13 Buffer vs. Speculation: A Review on the Role of Crude Oil Inventory
- 15 Enhanced Oil Recovery (EOR) as a Stepping Stone to Carbon Capture and Sequestration (CCS)
- 17 The Technical and Economic Viability of Producing Marginal Oil Fields in the Niger-Delta Using Water Injection
- 21 Experience Curve for Natural Gas Production by Hydraulic Fracturing
- 26 Too Big to Fail in the Electricity Sector  
contents continued on page 2

Editor: David L. Williams

## President's Message

Dear Members:

A few weeks ago, IAEE hosted its 40th International Conference in Singapore with the theme *Meeting the Energy Demands of Emerging Economies: Implications for Energy and Environmental Markets*. It was a remarkable event, and I thank the host country, the local authorities, our sponsors, all the people who were involved in the organization of the event, the organizing and international committees, and the host institutions, the National University of Singapore, and the Energy Studies Institute.

For four days, the conference congregated a large audience from across the world to discuss key current and future energy challenges. In its 9 keynote and plenary sessions, and 67 concurrent sessions, the dialogue was diverse; for example, from the understanding of the challenges of energy access for those who have been left behind, to understanding how technology and market trends are reshaping the energy scene, and to the needed energy to feed economic growth.

Despite the deep reduction in the number of people who live in poverty worldwide, today we still have 1.06 billion people who are without access to electricity and 3.04 billion who rely on solid fuels and kerosene for cooking and heating. And, in recent years, we have seen that the increase in the number of people without energy is not increasing as needed if we want to eradicate energy poverty as has been committed to in the UN SE4ALL initiative. We have seen that the resources that come from FDA are not enough to close the gap between where we are today, and what is needed to eliminate the problem of energy access by 2030. Our challenges are not restricted to the problems of energy access. By 2040 energy demand is expected to increase by almost 50% according to EIA projections, where more than 80% of this increase will take place in the emerging economies. How the emerging economies will satisfy their energy needs will have important impacts on the demand for resources and by the energy markets. The efficient use of world energy resources will be essential, and that requires well-functioning local and global energy markets which enable the large investments that are required and that properly account for the environmental and social impacts of the different energy sources. The deployment of energy infrastructure, new technologies and business models, will be important drivers to unlock new energy sources and to satisfy the economy's energy needs.

In Singapore, we have had a great debate on all these issues, where it was clear the need for stable business environments and a proper return on investments to mobilize private resource are key, where increasingly this is taking place in a setting of growing environmental and social constraints, and where innovation and disruption of



(continued on page 2)

**President's Message** (continued from page 1)

new technologies and business models have become the new normal of energy markets.

We look forward to having you at our coming 41st IAEE International Conference, *Security of Supply, Sustainability and Affordability: Assessing the Trade-offs of Energy Policy*, that will take place on June 10-13, 2018, in Groningen, The Netherlands.

**Ricardo Raineri Bernain**

**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.*

**Contents** (continued from page 1)

- 29 Smart Demand Side Management: Storing Energy or Storing Consumption: It's Not the Same
- 31 Exploring Interaction Effects of Climate Policies: A Model Analysis of the Power Market
- 33 Policy Effectiveness Assessment of China's Optimal Adaptation and Mitigation
- 35 Social Awareness, Consumer Lifestyles, and Household Carbon Emissions in China
- 38 The Evolution of the Energy Security Concept and APEX Energy Cooperation
- 41 Strategic Interaction Via Derivatives: on the use of swaps in electricity markets
- 43 Mapping Residential Thermal Comfort Gap at Very High Resolution Spatial Scale: Implications for Energy Policy Design
- 46 Is "Being Green" Rewarded in the Market? An Empirical Investigation of Decarbonization Risk and Stock Returns
- 49 Potential for Renewable Energy's Application for Heating in the Industrial Sector – A Case Study of Selected APEC Economies
- 51 Decarbonizing the Indian Energy System until 2050; An Application of the Open Source Energy Modeling System OSeMOSYS
- 53 Consumer's Attitude Towards Investments in Residential Energy-Efficient Appliances: How End-User Choices Contribute to Change Future Energy Systems

**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're delighted to bring this special issue of the *Energy Forum* to our members. It is a report on the 40th International Conference held in Singapore this past June. We're especially pleased to have Past President Einar Hope as our guest editor again. As he did with the Bergen Special issue a year ago, he has again presented a fine cross section of the papers given at Singapore. See his note below.

Threaded throughout the issue you will find reports and interviews covering a variety of subjects covered at the conference, including an overview of the conference, an interview with the general manager of the very special venue at which the conference was held, the welcoming address, interviews with a number of our past presidents who were on hand and other interesting snippets from the conference; but first a note from Einar.

**DLW**

Once again I have had the pleasure and privilege, at the request of IAEE Executive Director and *Energy Forum* Editor, David Williams, of selecting and editing papers presented at the 40th IAEE International Conference in Singapore 18 – 21 June 2017, and co-editing a Special Issue of the *Energy Forum* of the Conference event.

For this Special Issue of the *Energy Forum* we ended up with 16 selected articles from the presented conference papers. In the selection process I have had an eye to the IAEE Specialization Codes with regard to topics, the majority of articles selected from the Codes with the largest number of submissions. I have also put some emphasis on the geographical dispersion of topics and authors. At the Singapore conference there was a fairly large number of submission of papers from Asian countries, which is to some extent reflected in the selection. However, once again I have to make the same reservation as with earlier selection of papers for EF Special Issues that I edited: It is impossible to make a representative selection from among the around 350 papers that were presented at the conference.

Invited authors were asked to write a summary version of their papers on the standard Energy Forum format, limited to approximately 1500 words, taking account of the space for tables and/or figures that might be included. I would like to thank all the authors for their willingness and extra effort to prepare an article for this *Energy Forum* issue and for pleasant cooperation in the editing process.

I would also like to thank my colleague at the Norwegian School of Economics (NHH), Olga Pushkash, who was actively involved in the administrative team of the Singapore conference and, in addition, had a special task of contributing to the Special Issue with reports from the professional and social "life" of the conference, together with team of selected contributors. And last but not least, I would like to thank the unbeatable Williams team, David Jr. and Sr. for efficient and pleasant cooperation in the editing process of this SI of the Energy Forum.



**Einar Hope**