

World Energy Outlook 2012



Workshop on **Golden Rules** *for* **Unconventional Gas Prospects**

Warsaw, Poland, 7 March 2012



IEA workshop on
GOLDEN RULES FOR UNCONVENTIONAL GAS PROSPECTS
Warsaw, Poland, Wednesday 7 March 2012
Hosted by Polish Ministry of Economy and
co-hosted by Mexican Ministry of Energy

BACKGROUND

The **World Energy Outlook**, the IEA's flagship publication, presents a rigorous analytical framework for energy industry and policy makers by providing updated comprehensive energy projections by fuel, sector, region and scenario. Following on from last year's special report "Are we entering a golden age of gas?", this year's *World Energy Outlook* will provide on 29 May 2012 a special report with an in-depth analysis of the prospects for unconventional natural gas in light of its environmental impact.

The shale gas boom in the United States has had major impacts on the energy markets by triggering a surge of interest around the globe in improving security of supply through exploitation of unconventional gas resources. As an example, North America could even become a significant exporter of natural gas, and recent developments in light tight oil may offer the region the potential to be self-sufficient for oil. However such prospects have been accompanied by growing concerns about the environmental effects of the exploitation of unconventional resources: land use, water scarcity, pollution of water supplies and greenhouse gas emissions are increasingly being scrutinized. At the same time, best practices are being proposed for the mitigation of the environmental impact and the successful implementation of these practices requires a combination of good regulation, operational competence and development and adoption of some new technologies. But will this affect the economics of production?

The special early excerpt of the 2012 edition of the *World Energy Outlook* will examine the prospects for unconventional gas in light of its environmental impact. The aim of the workshop organized by the IEA and hosted by the Polish Ministry of Economy and co-hosted by the Mexican Ministry of Energy is to seek insights and information from high-level experts in industry, policymaking and from other relevant stakeholders in various parts of the world on:

- What are the environmental risks associated with unconventional gas and other related energy resources?
- How can they be mitigated, and what are the costs involved?
- What role will regulatory policies play?
- What will be the role of unconventional gas in the world's future energy system, and how will it depend on environmental policies?

Apart from the opening sessions that will be open to the press, the meeting will be informal in nature and will be held under the Chatham House Rule, according to which *participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed*. Each session will be introduced by one or two invited renowned experts/policy makers, after which there will be roundtable discussions.

ORGANISER

International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 28 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. To find out more about the IEA please visit <http://www.iea.org/>

World Energy Outlook (WEO), the IEA's annual flagship publication, is an authoritative source of energy market analysis and projections, providing critical analytical insights into trends in energy demand and supply and what they mean for energy security, environmental protection and economic development. The WEO projections are used by the public and private sector as a framework on which they can base their policy-making, planning and investment decisions and to identify what needs to be done to arrive at a supportable and sustainable energy future. To find out more about the WEO please visit <http://www.worldenergyoutlook.org/>

HOST

Poland's Ministry of Economy is in charge of energy policy, including energy security, and it also supports Poland's Ministry of Environment in carrying out its climate policies and tasks under the UNFCCC. The key policy document in Poland is "Energy Policy of Poland until 2030" prepared by the Ministry of Economy and adopted by the government in November 2009. The main objective of the energy policy document is to enhance Poland's energy security by observing the principle of sustainable development. The key directions of Polish energy policy are (a) to improve energy efficiency, (b) to enhance security of fuel and energy supplies, (c) to diversify the electricity generation structure by introducing nuclear energy, (d) to develop the use of renewable energy sources, including biofuels, (e) to develop competitive fuel and energy markets, and (f) to reduce the environmental impact of the power industry. To find out more about Poland's Ministry of Economy please visit <http://www.mg.gov.pl/>

CO-HOST

Mexico's Ministry of Energy (SENER) holds the mission of conducting the energy policy of Mexico within the existing national framework in order to guarantee the supply of competitive, reliable, high quality, affordable and environmentally sustainable energy to foster national development. Its vision entails a wide-spread access to affordable energy services by the Mexican population; with public and private international level companies, operating within an adequate legal and regulatory framework. SENER advocates a substantial increase in energy efficiency and supports research and technological development. It also promotes the use of alternative sources of energy, while taking into account the security of supply. To find out more about Mexico's Ministry of Energy please visit <http://www.sener.gob.mx/>

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AGENDA

TUESDAY 6 MARCH

19:30-21:30 Reception hosted by Ambassador of Mexico to Poland, Mr. Ricardo VILLANUEVA-HALLAL

WEDNESDAY 7 MARCH

08:00 Registration begins

08:45 Family photo

09:00 Opening remarks by government

- Welcome by Mr. Waldemar PAWLAK, **Polish Deputy Prime Minister and Minister of Economy**
- Mr. Piotr WOŹNIAK, **Chief National Geologist and Polish Deputy Minister of Environment**
- Mr. Mario GABRIEL, **Mexican Undersecretary of Hydrocarbons**
- Dr. Fatih BIROL, **Chief Economist, IEA**
- Her Excellency Jean DUNN, **Ambassador of Australia to Poland**
- Mr. Robert CEKUTA, **Principal Deputy Assistant Secretary, Department of State, United States**

10:00 Opening remarks by industry

- Mr. Wim THOMAS, **Chief Energy Advisor, Shell, Netherlands**
- Mr. Carlos MORALES, **Director General, PEMEX Exploration & Production, Mexico**
- Mr. Kyel HODENFIELD, **Vice President Unconventional Resources, Schlumberger, France**
- Mr. Tristan ASPRAY, **Exploration Operations Manager for Europe & Greenland, Exxon Mobil, United Kingdom**

World Energy Outlook 2012 scope of workshop

- Dr. Fatih BIROL, **Chief Economist, IEA**

10:45 Coffee break

11:00 Session 1: Environmental issues, mitigation and economics

- Chair: Mr. John GALE, **General Manager, IEA Greenhouse Gas R&D Programme, United Kingdom**
- Brief remarks: Mr. Clay BRETCHES, **Lead author of Prudent Development report, National Petroleum Council, United States**

- Brief remarks: Mr. Mark BROWNSTEIN, Chief Counsel of Energy Program, **Environmental Defense Fund**, United States

- Open discussion

12:45 Buffet lunch **hosted by Polish Ministry of Economy**

13:45 Session 2: What role for regulation and industry best practices?

- Chair: Mr. David GOLDWYN, President, **Goldwyn Global Strategies**, United States
- Brief remarks: Mr. Ben JARVIS, Senior Manager of Coal Seam Gas Regulation, **Department of Resources, Energy and Tourism**, Australia
- Brief remarks: Ms. Amy EMMERT, Policy Advisor, **American Petroleum Institute**, United States
- Brief remarks: Mr. Christopher SMITH, Deputy Assistant Secretary, **Department of Energy**, United States
- Open discussion

15:15 Coffee break

15:30 Session 3: What role for unconventional gas in future world energy supply?

- Chair: Mr. Mel YDREOS, Chair of Task Force on Geopolitics and Natural Gas, **International Gas Union**
- Brief remarks: Ms. Xiaoli LIU, Deputy Director of Energy Economics and Development Strategy Center, **Energy Research Institute of National Development and Reform Commission**, China
- Brief remarks: Mr. Anil Kumar JAIN, Special Commissioner, **Government of Madhya Pradesh**, India
- Open discussion

17:00 Summary and participants suggestions for *WEO-2012* special early report

- Dr. Fatih BIROL, Chief Economist, **IEA**

20:00-23:00 Dinner reception **hosted by Polish Oil & Gas Company (PGNiG)**

THURSDAY 8 MARCH

Unconventional gas site visit **hosted by Polish Oil & Gas Company (PGNiG)**



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AGENDA SPEAKERS

Opening remarks by government

Welcome by Mr. Waldemar PAWLAK, **Polish Deputy Prime Minister and Minister of Economy**

On 16 November 2007 appointed a Vice-Prime Minister and the Minister of Economy by the Prime Minister. Graduated from the Faculty of Automotive and Construction Machinery Engineering of the Warsaw University of Technology. Prime Minister in 1992 and from 1993 to 1995. Since January 2005 Chairman of the Polish People's Party, also led the Party from 1991 to 1997. Since 1989 Member of the Parliament. From 2001 to 2005 President of the Board of the Warsaw Commodities Exchange. Since April 1992 President of the Voluntary Fire Brigades Union. Since 1984 has been running a 17 hectare agricultural farm in Kamionka near Pacyna.

Mr. Piotr WOŹNIAK, **Chief National Geologist and Polish Deputy Minister of Environment**

From July 2000 to March 2002 was Vice-President for Trade and Restructuring in the Polish Oil and Gas Mining SA (PGNiG SA), where he was responsible for transforming the Company into a group company, a restructuring of the portfolio of import contracts. From 2002 to 2006, councilor of the City of Warsaw as Vice President of Economic Development and Infrastructure. 31th October 2005 he was appointed minister of the economy. The exercise of the function ended November 16th, 2007. In 2010 was elected as a chairman of the Agency for the Cooperation of Energy Regulators (ACER). Graduated the Faculty of Geology at the University of Warsaw (1980).

Mr. Mario GABRIEL, **Mexican Undersecretary of Hydrocarbons**

POSITIONS OCCUPIED IN THE MEXICAN GOVERNMENT: Director General for Development Banks; Director General for Revenue Policy and International Fiscal Affairs; Chief of Staff to the Finance Minister; President of the National Commission for the Retirement Savings System (CONSAR), and since December 8th 2006, Under Minister for Hydrocarbons. EDUCATION: Graduated from ITAM (Instituto Tecnológico Autónomo de México) with a B.A. in Economics (Suma Cum Laude). Having completed undergraduate studies, went on to complete a Master's Degree in Economics at the University of California, Los Angeles, where he also continued PhD studies, specializing in international trade, public finance, and industrial organization.

Dr. Fatih BIROL, Chief Economist, IEA

As the Chief Economist of the International Energy Agency, has the responsibility for the organisation's economic analysis of energy and climate change policy. Oversees the annual World Energy Outlook which is the flagship publication of the IEA and is recognised as the most authoritative source for energy analysis and projections. Also the founder and chair of the IEA Energy Business Council which brings together leaders of some of the world's largest energy companies and policymakers to seek solutions to global energy challenges. Has been named by Forbes Magazine among the most powerful people in terms of influence on the world's energy scene. Is a member of the UN Secretary-General's 'High-level Group on Sustainable Energy for All' and the Chairman of the World Economic Forum's (Davos) Energy Advisory Board. Prior to joining the IEA in 1995, worked for six years at the Organisation of the Petroleum Exporting Countries (OPEC) in Vienna.

Her Excellency Jean DUNN, Ambassador of Australia to Poland

Over the past decade has held the following posts: Ambassador to Poland and the Czech Republic; Ambassador to Lebanon; Assistant Secretary, Agriculture and Food Branch, Department of Foreign Affairs and Trade; Ambassador to Turkey; Minister, Australian Embassy in the Republic of Korea; Deputy Head, Australia-Singapore Free Trade Agreement Task Force; Department of Foreign Affairs and Trade. Holds a Bachelor of Arts with Honours in Japanese language and politics from Monash University.

Mr. Robert CEKUTA, Principal Deputy Assistant Secretary, Department of State, United States

The Energy Resources Bureau's Principal Deputy Assistant Secretary and working to ensure U.S. global energy security, also has direct oversight over the Bureau's work on transparency and access to energy. Comes to the Bureau having most recently been Deputy Assistant Secretary for Energy, Sanctions, and Commodities in the State Department's Bureau for Energy and Business Affairs. A graduate of Georgetown University and holds Masters Degrees from the Thunderbird School of Global Management and the National War College.

Opening remarks by industry

Mr. Wim THOMAS, Chief Energy Advisor, Shell, Netherlands

Chief Energy Advisor in Shell and heading the Energy Analyses Team in Shell's Global Scenario Group, which is part of the Corporate Strategy Department. Leads a team responsible for worldwide energy analyses and long-term global energy scenarios, and advises Shell companies on a wide range of energy issues, including global supply and demand, regulations, energy policy, markets, pricing and industry structure. Has been with the Shell group of companies for some 28 years, with prior positions in drilling operations, subsurface reservoir management, and commercial and regulatory affairs in gas. A UK member to the World Petroleum Council and advises the World Energy Council's energy scenario workstream. Was chairman of the British Institute of Energy Economics in 2005. Holds a postgraduate degree in Maritime Technology, Delft University, The Netherlands.

Mr. Carlos MORALES, Director General, **PEMEX Exploration & Production**, Mexico

Petroleum Engineer from the Universidad Nacional Autonoma de Mexico with a Masters in Science in Petroleum Engineering from Stanford University and the specialization in Project Management and Evaluation at the University of Harvard. Held various senior positions at PEMEX, currently Director General of PEMEX Exploration & Production.

Mr. Kyel HODENFIELD, Vice President Unconventional Resources, **Schlumberger**, France

With over 25 years of industry experience, currently is Vice President of Unconventional Resources for Schlumberger. Based in Paris, is responsible for the R&D strategy, operational support, and marketing of Schlumberger services for shale gas and liquids, coalbed methane, and tight gas. Previously, managed the Reservoir Sampling and Analysis division of Schlumberger Testing Services, where he worked to integrate and expand the acquisitions of Oilphase, DBR, and TerraTek. Began career with Schlumberger in 1985 as a Wireline field engineer. Holds Bachelor of Science degrees in Petroleum Engineering and Geological Engineering from the University of North Dakota.

Mr. Tristan ASPRAY, Exploration Operations Manager for Europe & Greenland, **Exxon Mobil**, United Kingdom

Educated in England, receiving a Bachelors Degree in Geological Sciences from Cambridge University in 1992 and a Masters Degree in Basin Evolution and Dynamics from London University in 1993. Joined Esso Exploration and Production UK Limited in 1994 as a Petroleum Geologist, working on Central North Sea fields. In subsequent assignments has worked on exploration and development projects in the Gulf of Mexico, Egypt, Vietnam and Russia. In 2008 became an Upstream Advisor to ExxonMobil's Management Committee in Dallas, Texas. Was then seconded into XTO Energy, a major producer of unconventional gas in the United States which was acquired by ExxonMobil in 2010. Assumed his current role of Europe Exploration Operations Manager in September this year, and is based in Leatherhead, in the UK.

Session 1: Environmental issues, mitigation and economics

Chair: Mr. John GALE, General Manager, **IEA Greenhouse Gas R&D Programme**, United Kingdom

Has been associated with the energy industry for some 30 years. Spent 18 years with The British Coal Corporation undertaking work on advanced coal fired power generation options. Then spent 7 years working as an environmental consultant with IMC Group Ltd. This work took him to China, India, South Africa, Bulgaria, Russia and Romania undertaking studies on improving the efficiency and reducing the environmental impact of coal use in both industry and the power sector. Joined the IEAGHG in 1999 and managed the Programmes activities on Non-CO2 greenhouse gases, greenhouse gas abatement in energy intensive industries and geological storage of CO2 before becoming General Manager in 2008. As General Manager is responsible to the IEAGHG Executive Committee for ensuring the programmes

activities are operated in accordance with legal requirement and IEAGHG's technical work programme is delivered to time and budget.

Brief remarks: Mr. Clay BRETCHES, Lead author of *Prudent Development* report, **National Petroleum Council**, United States

Has more than 20 years of experience in the oil and natural gas industry. Began career in 1988 serving in drilling and operations engineering roles with ARCO Oil and Gas Company before moving to the marketing side of the business with Vastar Resources in 1995. Came to Anadarko in 2000 holding positions of increased responsibility within the marketing and minerals departments and led the group from 2007-2010. Currently serves as vice president, Exploration and Production (E&P) Business Services & Minerals and is responsible for overseeing the company's land, technology, supply chain management, and EHS functions, as well as its hard minerals properties that include non-operated joint ventures and royalty arrangements in several coal, trona and industrial mineral mines located in the Rocky Mountains where Anadarko owns most of its fee mineral rights. Holds a Bachelor of Science degree in Petroleum Engineering from Texas A&M University and an MBA degree from the University of Texas.

Brief remarks: Mr. Mark BROWNSTEIN, Chief Counsel of Energy Program, **Environmental Defense Fund**, United States

Specializes in utility-related issues, including electric grid development, wholesale and retail electric market design, and power plant siting and finance. Leads EDF's team on natural gas and coal. Is a member of New York State's High Volume Hydraulic Fracturing Advisory Committee. Prior to joining Environmental Defense Fund, was Director of Enterprise Strategy for Public Service Enterprise Group (PSEG), one of the nation's largest electric and gas utility holding companies, where he worked directly with PSEG's executive team to develop and implement corporate business strategy. Over nearly ten year career with PSEG, served the PSEG in a variety of environmental management roles, including Director of Environmental Strategy and Policy. Currently serves as an Adjunct Professor in Energy Policy at Columbia University's School of International and Public Affairs (SIPA).

Session 2: What role for regulation and industry best practices?

Chair: Mr. David GOLDWYN, President, **Goldwyn Global Strategies**, United States

President of Goldwyn Global Strategies, LLC, an international energy advisory consultancy. Serves as a Nonresident Senior Fellow at the Brookings Institution. Is concurrently Of Counsel to Sutherland, Asbill and Brennan, a law firm advising clients world wide in energy and other areas of practice. Served as the U.S. State Department's Special Envoy and Coordinator for International Energy Affairs from 2009-2011, reporting directly to Secretary of State Hillary Clinton, where conceived and developed the Global Shale Gas Initiative, the Energy Governance and Capacity Initiative, led ministerial level energy dialogues with Angola, Canada, China, India, Iraq, Mexico, Nigeria and Brazil, and co-chaired a regional biofuels initiative with Brazil. Prior to appointment, served the U.S. Government as Assistant Secretary of Energy for International Affairs (1999-2001), Counselor to the Secretary of Energy (1998-1999); national security deputy to U.S. Ambassador to the United Nations Bill Richardson (1997- 1998); Chief of Staff to the Under Secretary of State for

Political Affairs (1993-1997) and an Attorney-Adviser in the Office of the Legal Adviser at the State Department (1991-1992).

Brief remarks: Mr. Ben JARVIS, Senior Manager of Coal Seam Gas Regulation, **Department of Resources, Energy and Tourism**, Australia

Holds Bachelors degrees in Arts and Law from the University of Adelaide, South Australia, and a Master of Laws from the University of Frankfurt, Germany. Following three years working in competition and commercial law for a legal firm in Frankfurt, joined the Australian Government. Has nearly ten years' experience in energy and mining policy, focussing on areas including energy market reform, gas network regulation, foreign investment policy, minerals production and trade and sustainable mining practices. Currently working in the Department that is leading the development between the Australian federal and state governments of a national harmonised framework for coal seam gas regulation.

Brief remarks: Ms. Amy EMMERT, Policy Advisor, **American Petroleum Institute**, United States

Focuses on general issues surrounding shale gas development and production, as well as the greenhouse gas emissions arising out of unconventional wells. Began her career working on international climate change issues for the Organization for Economic Development (OECD) and International Energy Agency (IEA) in Paris. Then earned a J.D. from Notre Dame Law School and spent several years practicing corporate law before returning to policy work.

Brief remarks: Mr. Christopher SMITH, Deputy Assistant Secretary, **Department of Energy**, United States

Is responsible for administering domestic and international oil and gas programs, including research and development, policy analysis, and natural gas import and export licensing. The Oil and Natural Gas Office leads the Department of Energy's LNG program which involves the analysis of safety and other technical issues. Prior to appointment in October of 2009, served in managerial and analytical positions of increasing responsibility in the private sector. Most recently he spent eleven years with two major international oil companies focused primarily on upstream business development and LNG trading, including three years negotiating production and transportation agreements in Bogotá, Colombia. Holds a bachelor's degree in Engineering Management from the United States Military Academy at West Point and an MBA from Cambridge University.

Session 3: What role for unconventional gas in future world energy supply?

Chair: Mr. Mel YDREOS, Chair of Task Force on Geopolitics and Natural Gas, **International Gas Union**

Is vice president of government and aboriginal affairs for Union Gas Limited. In his role, leads the company's government, municipal and aboriginal affairs activities. In addition, is accountable for the management of Union's revenue cycle through its customer care operation. Through a career that spans more than 31 years at Union Gas, has gained extensive experience in engineering, field operations, marketing and energy conservation.

Has held the positions of vice president, marketing and customer care, vice president, operations and vice president, engineering and gas supply operations. Joined Union Gas after graduating from the University of Waterloo with a civil engineering degree. Active in the natural gas industry through his participation with the International Gas Union.

Brief remarks: Ms. Xiaoli LIU, Deputy Director of Energy Economics and Development Strategy Center, **Energy Research Institute of National Development and Reform Commission**, China

Graduated from College of Graduate Studies and Research, Institute of Petroleum Exploration and Development of China, Beijing, China in 1988 and got a Master's Degree. Mainly engaged in researches on China's oil and gas development strategy and policy, oil and gas market analysis, energy strategy and policy. Has lead and participated in more than 70 priority research projects and international cooperation projects assigned by China's Central Finance Leading Group Office, NDRC, National Energy Administration (NEA), Academy of Macro-Economic Research (AMR), provincial governments, other ministries and from international organizations, domestic and foreign energy companies. Currently, is a vice chairman of China Petroleum Economic Commission, consultant of China National Atomic Energy Agency and one of members of Global Agenda Council on Energy Security 2011-2012.

Brief remarks: Mr. Anil Kumar JAIN, Special Commissioner, **Government of Madhya Pradesh**, India

The above service is the premier Civil Service of the country for superior positions of the Government. Has manned the position of District Magistrate in the State of Madhya Pradesh. Subsequently, served as Chief Executive in several Corporations involved in development of small scale industry amongst others. Has also served at the State Government Secretariat, in the Departments of Revenue, Mining and Agriculture. In the Government of India during 2003-08, served in the Ministry of Petroleum & Natural Gas at New Delhi looking after Upstream activities. During the years 2009-11, served as Special Commissioner for the state Government of MP in New Delhi. Also held the charge of MD, MP State Industrial Development Corporation.