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**ENERGY-ON-LINE**  
**A SELECTION OF DOCUMENTS RECENTLY PUBLISHED ON THE WEB**

**No 17 –November/December/January 2011**

**GENERAL INTEREST**

**Is the Energy Race our new “Sputnik” Moment?**

National Press Club Washington, D.C. - November 2010 – 30 pages

[http://www.energy.gov/media/Chu\\_NationalPressClub112910.pdf](http://www.energy.gov/media/Chu_NationalPressClub112910.pdf)

“For over a century, America has led the world in innovation. Today, that leadership is at risk...In this Sputnik moment, we should: 1) Increase support of energy R&D, especially where private investments don’t recoup the full value of the shared social good or when a new technology would displace an embedded way of doing business. 2) Formulate sensible, long range energy policies that have bipartisan support to guide the private sector of U.S... Wealth creation is driven by innovation.”

*Mark C. Snead and Amy A. Jones*

**Are U.S. States Equally Prepared for a Carbon Constrained World?**

Federal Reserve Bank of Kansas City – Economic Review – Fourth Quarter 2010 - 30 pages

<http://www.kansascityfed.org/publicat/econrev/pdf/10q4Snead.pdf>

“Climate concerns linked to greenhouse gas emissions, particularly carbon dioxide (CO<sub>2</sub>), have taken center stage in the national energy policy debate. Domestic energy use and carbon emissions continue to rise, and forecasts suggest further increases under the existing regulatory structure. However, heightened international and domestic pressure to reduce U.S. carbon emissions suggests that additional changes to the regulatory framework are probable in coming years. Reducing U.S. carbon emissions will likely require a comprehensive national framework that will alter the pattern of energy use and production in all 50 states.”

**Report to the President on Accelerating the Pace of Change in Energy Technologies Through an Integrated Federal Energy Policy**

Executive Office of the President - President’s Council of Advisors on Science and Technology –  
November 2010 – 58 pages

[http://www.eenews.net/assets/2010/11/29/document\\_gw\\_01.pdf](http://www.eenews.net/assets/2010/11/29/document_gw_01.pdf)

“This report addresses one of the greatest challenges facing our country: how to transform the energy system within one to two decades, through leadership in energy technology innovation, for reasons of economic competitiveness, environment, and security...In this report, the President’s Council of Advisors on Science and Technology (PCAST) calls for the development of a coordinated government-wide Federal energy policy”

## **Cutting the Cost of Clean Energy 1.0 - Toward a Clean Energy Deployment Plan for Jobs, Security, and Broad-Based Economic Growth in 2011**

Center for American Progress/ Coalition for Green Capital – Report - November 2010 - 40 pages

<http://www.americanprogress.org/issues/2010/11/pdf/cleanenergycosts.pdf>

“Our paper is organized around three key pillars for a private sector-led investment policy in clean energy: financing and other policy incentives to lower the cost of clean energy, regulatory reform to create jobs and markets and new competitive regional infrastructure to ensure sustained economic development... Together, these three pillars of a new clean energy investment strategy for 2011 will prioritize the rapid deployment of existing advanced clean energy technologies, which will help our construction sector rebound from the ravages of the housing crisis and the Great Recession.”

*Michael Levi, Elizabeth C. Economy, Shannon O'Neil, and Adam Segal*

### **Globalizing the Energy Revolution - How to Really Win the Clean-Energy Race?**

Foreign Affairs - Article - November/December 2010 –

<http://www.foreignaffairs.com/articles/66864/michael-levi-elizabeth-c-economy-shannon-oneil-and-adam-segal/globalizing-the-energy-revolution>

“Clean-energy technology is expensive and the United States is spending far too little on developing it. The U.S. government must do more to promote cross-border innovation and protect intellectual property rights..The United States can curb its own emissions and encourage energy efficiency and the development of clean-energy technology worldwide by rethinking carbon regimes.”

### **United States Energy Innovation Investment: Trend analysis**

Energy Innovation Center 2009-2011 – 9 pages

<http://energyinnovation.us/wordpress/wp-content/uploads/2010/12/EIT-TrendsAnalysis.pdf>

“The Energy Innovation Tracker (EIT) is a comprehensive database that catalogues federal energy innovation-related spending from 2009 to 2011 (inclusive of the American Recovery and Reinvestment Act spending) across nine federal agencies. Through a publicly available website and database, EIT allows the public to quickly access, query, segment, and filter federal energy innovation programs and download detailed sets of program line-items to facilitate a variety of analysis and in-depth assessments of federal research efforts.”

*Warwick McKibbin, Adele Morris and Peter Wilcoxon*

### **Subsidizing Energy Efficient Household Capital: How Does It Compare to a Carbon Tax?**

The Brookings Institution – Climate and Energy Economics Discussion Paper - October 13, 2010 - 25 pages

[http://www.brookings.edu/~media/Files/rc/reports/2010/1025\\_energy\\_subsidy\\_mckibbin\\_morris\\_wilcoxon/1025\\_energy\\_subsidy\\_mckibbin\\_morris\\_wilcoxon.pdf](http://www.brookings.edu/~media/Files/rc/reports/2010/1025_energy_subsidy_mckibbin_morris_wilcoxon/1025_energy_subsidy_mckibbin_morris_wilcoxon.pdf)

“Current U.S. law offers a variety of tax incentives to encourage efficient energy use in households. Warwick McKibbin, Adele Morris and Peter Wilcoxon compare the environmental and economic performance of two policies: a tax credit for new energy efficient homes and an annual tax on carbon dioxide output.”

## **OIL - GAS**

### **(Un?)Happiness and Gasoline Prices in the United States**

The Brookings Institution – Report – September 2010 - 37 pages

[http://www.brookings.edu/~media/Files/rc/reports/2010/09\\_gas\\_prices\\_happiness\\_graham/09\\_gas\\_prices\\_happiness\\_graham.pdf](http://www.brookings.edu/~media/Files/rc/reports/2010/09_gas_prices_happiness_graham/09_gas_prices_happiness_graham.pdf)

“Gasoline purchases are an essential part of the American way of life. There were about 250 million motor vehicles in the United States in 2008 – just under a vehicle per person. Americans drive an average of more than 11,000 miles per year and gasoline purchases are an essential part of most households’ budgets. Between 1995 and 2003, gasoline prices in the U.S. averaged about \$1.49 a gallon, with average prices rising above \$2.00 in 2004. By the summer of 2008, gasoline prices had reached a national average of \$4.11 per gallon. At that time, Americans earning less than \$15,000 a year were spending as much as 15 percent of their household income on gasoline – double the proportion from seven years earlier. In addition, unpredictable fuel costs make planning monthly household expenditures difficult, which can be detrimental to individual welfare and even to the overall economy.”

*Thomas Klier and Joshua Linn*

**Corporate Average Fuel Economy Standards and the Market for New Vehicles**

FRB Chicago Fed Letter – January 2011 – 36 pages

[http://chicagofed.org/digital\\_assets/publications/working\\_papers/2011/wp2011\\_01.pdf](http://chicagofed.org/digital_assets/publications/working_papers/2011/wp2011_01.pdf)

This paper presents an overview of the economics literature on the effect of Corporate Average Fuel Economy (CAFE) standards on the new vehicle market. Since 1978, CAFE has imposed fuel economy standards for cars and light trucks sold in the U.S. market.

**Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves**

U.S. Energy Information Administration - November 30, 2010 – 28 pages

[http://www.eia.gov/pub/oil\\_gas/natural\\_gas/data\\_publications/crude\\_oil\\_natural\\_gas\\_reserves/current/pdf/arr\\_summary.pdf](http://www.eia.gov/pub/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/current/pdf/arr_summary.pdf)

Domestic proved reserves<sup>1</sup> of oil and natural gas increased significantly in 2009. U.S. natural gas proved reserves<sup>2</sup> increased by 11 percent in 2009 to 284 trillion cubic feet (Tcf). This is the highest level since 1971, despite an approximate one-third decline in the prices used to assess economic viability for 2009 reserves as compared to the prices used in 2008. U.S. crude oil plus lease condensate proved reserves rose 9 percent to 22.3 billion barrels in 2009, regaining 1.8 billion barrels of the 2.3 billion barrel decline in 2008. These increases demonstrate the possibility of an expanding role for domestic natural gas and crude oil in meeting both current and projected U.S. energy demands.

**Oil and Gas Reality Check 2011: A Look at 10 of the Top Issues Facing the Oil Sector**

Deloitte - December 2010 – 16 pages

[http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/Energy\\_Resources/dttl\\_er\\_oilgas\\_realitycheck2011\\_031210.pdf](http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/Energy_Resources/dttl_er_oilgas_realitycheck2011_031210.pdf)

Bearish economic indicators released in the last few weeks notwithstanding, oil prices are pushing upward, testing the upper limits of the US\$70-80 per barrel range. Serving as a simple yet global and unified measure of economic recovery, it is oil’s price range and the strength and sustainability of the recovery that will impact the ways in which all forms of energy are produced and consumed. Among the trends and issues explored, China continues to be a priority for many oil and gas executives as they continue to be impacted by that country’s demand for fossil fuels. On the supply side, China’s desire for additional sources of oil and natural gas are expected to continue in the short-term, leading to more mergers and acquisitions within the sector.

**Federal Oil and Gas Leases- Opportunities Exist to Capture Vented and Flared Natural Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases**

U. S. Government Accountability Office –Report to Congressional Requesters - October 2010 – 57 pages

<http://www.gao.gov/new.items/d1134.pdf>

“The Department of the Interior (Interior) leases public lands for oil and natural gas development, which generated about \$9 billion in royalties in 2009. Some gas produced on these leases cannot be easily captured and is released (vented) directly to the atmosphere or is burned (flared). This vented and flared gas represents potential lost royalties for Interior and contributes to greenhouse gas emissions. GAO was asked to (1) examine available estimates of the vented and flared natural gas on federal leases, (2) estimate the potential to capture additional gas with available technologies and associated potential increases in royalty payments and decreases in greenhouse gas emissions, and (3) assess the federal role in reducing venting and flaring.”

**Energy-Water Nexus a Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development**

U.S. Government Accountability Office - Report to Congressional Requesters - October 2010- 75 pages

<http://www.gao.gov/new.items/d1135.pdf>

“Oil shale deposits in Colorado, Utah, and Wyoming are estimated to contain up to 3 trillion barrels of oil--or an amount equal to the world's proven oil reserves. About 72 percent of this oil shale is located beneath federal lands, making the federal government a key player in its potential development. Extracting this oil is expected to require substantial amounts of water and could impact groundwater and surface water. GAO was asked to report on (1) what is known about the potential impacts of oil shale development on surface water and groundwater, (2) what is known about the amount of water that may be needed for commercial oil shale development, (3) the extent to which water will likely be available for commercial oil shale development and its source, and (4) federal research efforts to address impacts to water resources from commercial oil shale development. GAO examined environmental impacts and water needs studies and talked to Department of Energy (DOE), Department of the Interior (Interior), and industry officials.”

*Frank Verrastro, Conor Branch*

**Developing America's Unconventional Gas Resources Benefits and Challenges**

CSIS Energy & National Security Program – December 2010 – 30 pages.

[http://csis.org/files/publication/101209\\_Verrastro\\_UnconventionalGas\\_Web.pdf](http://csis.org/files/publication/101209_Verrastro_UnconventionalGas_Web.pdf)

“The ability to produce increasing volumes from the United States’ vast shale reserves has the potential to reduce U.S. import reliance, reduce greenhouse gas (GHG) emissions, increase global gas supplies, and potentially alter the way gas is marketed globally, thereby conferring substantial economic, security, and environmental benefits for both the United States and the world at large. (CSIS)”

**NUCLEAR**

**Streamlining the Nuclear Energy Regulatory Process**

The Brookings Institution – Discussion - October 13, 2010 - 46 pages

[http://www.brookings.edu/~media/Files/events/2010/1013\\_nuclear\\_energy/20101013\\_nuclear\\_energy.pdf](http://www.brookings.edu/~media/Files/events/2010/1013_nuclear_energy/20101013_nuclear_energy.pdf)

“On October 13, the Energy Security Initiative at Brookings hosted Gregory Jaczko, chairman of the Nuclear Regulatory Commission (NRC), who spoke on these and other issues concerning an expansion of the U.S. nuclear power industry and the growth in license applications. Chairman Jaczko, appointed by President Obama in 2009, addressed NRC efforts to strengthen the licensing process and the use of new technologies while still enforcing safety and security requirements. John Banks, nonresident fellow with the Energy Security Initiative, provided introductory remarks and moderated a brief discussion with the Chairman. After the program, Chairman Jaczko took audience questions.”

**Nuclear Waste: Actions Needed To Address Persistent Concerns with Efforts to Close Underground Radioactive Waste Tanks at Doe's Savannah River Site**

Government Accountability Office (GAO) - Report to the Chairman, Subcommittee on Energy and Water

Development, Committee on Appropriations, U.S. House of Representatives - September 2010 – 44 pages  
<http://www.gao.gov/new.items/d10816.pdf>

“Decades of nuclear materials production at the Department of Energy's (DOE) Savannah River Site in South Carolina have left 37 million gallons of radioactive liquid waste in 49 underground storage tanks. In December 2008, DOE entered into a contract with Savannah River Remediation, LLC (SRR) to close, by 2017, 22 of the highest-risk tanks at a cost of \$3.2 billion. GAO was asked to assess DOE's cost estimates and schedule for closing the tanks at the Savannah River Site, and the primary challenges, if any, to closing the tanks and the steps DOE has taken to address them.”

**Nuclear Commerce: Government wide Strategy Could Help Increase Commercial Benefits from U.S. Nuclear Cooperation Agreements with Other Countries**

U.S. Government Accountability Office - Report to the Committee on Foreign Affairs, House of Representatives – November 2010 - 58 pages  
<http://www.gao.gov/new.items/d1136.pdf>

“The United States has 26 agreements in force for peaceful nuclear cooperation. Under the U.S. Atomic Energy Act of 1954, as amended, these agreements are a prerequisite to certain aspects of U.S. nuclear cooperation with other cooperating partners. GAO was asked to (1) quantify the amount and value of U.S. nuclear exports facilitated by these agreements, (2) assess U.S. efforts to support the U.S. nuclear industry's ability to compete for sales, and (3) examine U.S. nuclear industry challenges to exporting.”

**RENEWABLES**

*Richard W. Caperton et al.*

**CLEAN Contracts: Making Clean Local Energy Accessible Now**

Center for American Progress - January 2011 – 26 pages  
[http://www.americanprogress.org/issues/2011/01/pdf/clean\\_contracts.pdf](http://www.americanprogress.org/issues/2011/01/pdf/clean_contracts.pdf)

For many reasons, it's time to change direction in America's energy use to rely on clean renewable energy, according to the paper. Renewable power reverses harmful environmental trends from global warming to local air pollution that hurts human health. But clean energy has many purely economic benefits as well. The paper looks at the one policy that has helped to bring more renewable electricity into the marketplace than any other: the Clean Local Energy Accessible Now, or CLEAN, contract, also known as a “feed-in tariff.”

*Jenna Goodward*

**To Increase Use of Solar Power, Collaboration Can Help**

World Resources Institute – Article – October 13, 2010  
<http://www.wri.org/stories/2010/10/increase-use-solar-power-collaboration-can-help>

“Companies and government agencies are increasingly turning to solar power to meet their environmental targets. Yet for organizations with little experience in purchasing solar power, the process can be complicated and seem prohibitively expensive. In an effort to make solar purchasing easier and more affordable for private and public sectors, WRI and Joint Venture Silicon Valley Network have both piloted on-the-ground collaborative solar purchasing initiatives.”

*Mark Gehlhar, Ashley Winston, and Agapi Somwaru*

**Effects of Increased Biofuels on the U.S. Economy in 2022**

USDA - Economic Research Report - October 2010 – 36 pages  
<http://www.ers.usda.gov/Publications/ERR102/ERR102.pdf>

Achieving greater energy security by reducing dependence on foreign petroleum is a goal of U.S. energy policy. The Energy Independence and Security Act of 2007 (EISA) calls for a Renewable Fuel Standard (RFS-2), which mandates that the United States increase the volume of biofuel that is blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022. Long-term technological advances are needed to meet this mandate. This report examines how meeting the RFS-2 would affect various key components of the U.S. economy. If biofuel production advances with cost-reducing technology and petroleum prices continue to rise as projected, the RFS-2 could provide economywide benefits. However, the actual level of benefits (or costs) to the U.S. economy depends importantly on future oil prices and whether tax credits are retained in 2022. If oil prices stabilize or decline from current levels and tax credits are retained, then benefits to the economy would diminish.

*Ben Lieberman*

### **Is Wind the Next Ethanol? One “Renewable” Energy Source Follows another’s History of Failure**

Competitive Enterprise Institute – October 2010 – 5 pages.

<http://www.scribd.com/doc/40100754/Ben-Lieberman-Is-Wind-the-Next-Ethanol>

“Repeating past mistakes seems to be a recurring theme in federal policy, and nowhere more so than on energy issues. Much of the Obama administration’s “clean energy economy” and “energy independence” agenda is a virtual repeat of the follies of the 1970... The requirement that ethanol be added to the nation’s gasoline supply has quickly proven to be an economic and environmental failure. Congressional proposals mandating wind and other renewable sources of electricity show all the signs of becoming a similar flop, but with far more serious implications.”

## **INTERNATIONAL RELATIONS**

### **Developing Clean Energy Markets: Toward China-Japan-U.S. Trilateral Cooperation**

The Brookings Institution - Center for Northeast Asian Policy Studies - October 25, 2010 – 66 pages

[http://www.brookings.edu/~media/Files/events/2010/1025\\_clean\\_energy/20101025\\_clean\\_energy.pdf](http://www.brookings.edu/~media/Files/events/2010/1025_clean_energy/20101025_clean_energy.pdf)

[http://www.brookings.edu/~media/Files/events/2010/1025\\_clean\\_energy/schmidt\\_powerpoint.pdf](http://www.brookings.edu/~media/Files/events/2010/1025_clean_energy/schmidt_powerpoint.pdf)

“In recent years, the United States and China have engaged in high-profile discussions and collaborated on various aspects of clean energy. The United States and China have also separately worked with Japan. However, these nations—the world’s three largest economies and three of the four largest energy consumers—have not worked together in a trilateral format. On October 25, the Center for Northeast Asian Policy Studies at Brookings and the Economic Research Institute for Northeast Asia hosted a seminar featuring presentations by experts from Japan, China, and the U.S. Panelists described existing bilateral cooperation on developing clean energy markets and policies, and illuminated opportunities for truly trilateral cooperation, especially in the areas of energy efficiency and clean coal.”

### **Transatlantic Energy Strategies and Resource Nationalism: The New European Energy Landscape**

The Brookings Institution – Discussion - October 21, 2010 - 40 pages

[http://www.brookings.edu/~media/Files/events/2010/1021\\_europe\\_energy/20101021\\_europe\\_energy.pdf](http://www.brookings.edu/~media/Files/events/2010/1021_europe_energy/20101021_europe_energy.pdf)

“On October 21, the Center on the United States and Europe and the Energy Security Initiative at Brookings, and the Berlin-based Global Public Policy Institute (GPPi) hosted a discussion of the new European energy landscape and its ramifications for the transatlantic alliance. Energy experts and officials from both sides of the Atlantic will address critical issues, including security of supply, resource nationalism, shale gas and oil production, alternative and renewable technologies, and the impact of the financial crisis. In their remarks, David Goldwyn of the U.S. Department of State, Piotr Szymanski of the European Commission, and Pierre Noël of the University of Cambridge will consider the multi-faceted nature of European energy security and the role the European Union and the U.S. play in shaping a global energy governance architecture. Senior

Fellow Charles Ebinger, director of the Energy Security Initiative, will provide introductory remarks and moderate the discussion.”

*Katherine Sierra*

### **Universal Energy Access: Linking the MDGs to Global Climate Negotiations**

The Brookings Institution – Article – September 16, 2010

[http://www.brookings.edu/opinions/2010/0916\\_mdg\\_sierra.aspx](http://www.brookings.edu/opinions/2010/0916_mdg_sierra.aspx)

“The case for linking energy access to achieving the MDGs is counted by the hours that women and children spend gathering agricultural residue and dung for fuel; by the toll of respiratory illnesses caused by indoor air pollution; and by the frustration of small business owners who cannot expand business because of the lack of reliable energy. Lack of basic access to energy affects over 550 million Sub-Saharan Africans, mostly living in rural areas but increasingly found in the fringes of rapidly growing cities; over 600 million people in South Asia, mainly living in rural India; and significant but dispersed pockets of poor in other regions, including in middle-income countries that have been bypassed by the grid.”

### **Investing in Clean Energy: How to Maximize Clean Energy Deployment from International Climate Investments**

Center for American Progress - Global Climate Network Discussion Paper - November 2010 – 58 pages

[http://www.americanprogress.org/issues/2010/11/pdf/gcnreport\\_nov2010.pdf](http://www.americanprogress.org/issues/2010/11/pdf/gcnreport_nov2010.pdf)

“The study makes the case for public-private investment in the clean energy economy by identifying how much additional funding is needed to meet national energy targets in China, India, South Africa, and Nigeria and which financial instruments are likely to get support from the international community.”

## **COUNTRY ANALYSIS BRIEFS**

### **Iraq**

Energy Information Administration - September 2010 – 10 pages

<http://www.eia.doe.gov/emeu/cabs/Iraq/pdf.pdf>

“Iraq was the world’s 12th largest oil producer in 2009, and has the world’s fourth largest proven petroleum reserves after Saudi Arabia, Canada, and Iran. Just a fraction of Iraq’s known fields are in development, and Iraq may be one of the few places left where vast reserves, proven and unknown, have barely been exploited. Iraq’s energy sector is heavily based upon oil, with approximately 94 percent of its energy needs met with petroleum.”

### **South Korea**

Energy Information Administration - October 2010 – 9 pages

[http://www.eia.doe.gov/emeu/cabs/South\\_Korea/pdf.pdf](http://www.eia.doe.gov/emeu/cabs/South_Korea/pdf.pdf)

“South Korea was the world’s tenth largest energy consumer in 2007, and with its lack of domestic reserves, Korea is one of the top energy importers in the world. The country is the fifth largest importer of crude oil and the second largest importer of both coal and liquefied natural gas (LNG). South Korea has no international oil or natural gas pipelines, and relies exclusively on tanker shipments of LNG and crude oil. Despite its lack of domestic energy resources, South Korea is home to some of the largest and most advanced oil refineries in the world. In an effort to improve the nation’s energy security, state-owned oil, gas, and electricity companies are aggressively seeking overseas exploration and production opportunities.”

### **Kazakhstan**

Energy Information Administration - November 2010 – 10 pages

<http://www.eia.gov/emeu/cabs/Kazakhstan/pdf.pdf>

“Full development of its major oilfields could make Kazakhstan one of the world's top 5 oil producers within the next decade. With production of 1.54 million barrels per day (bbl/d) in 2009, Kazakhstan is already a major producer, and continued development of its giant Tengiz, Karachaganak, and Kashagan fields is expected to at least double its current production by 2019. Kazakhstan's sector of the Caspian Sea is believed to hold several other major oil and natural gas deposits as yet unexploited.”

### **Azerbaijan**

Energy Information Administration - November 2010 – 6 pages

<http://www.eia.doe.gov/emeu/cabs/Azerbaijan/pdf.pdf>

While Azerbaijan's importance as a supplier of natural gas and oil likely will increase in the future, the continued disputes with Armenia over the Nagorno-Karabakh region, as well as issues with Azerbaijan's access to the Nakhchivan exclave continue to provide some political risk in the country. Furthermore, the conflicting claims over the maritime and seabed boundaries of the Caspian Sea between Azerbaijan and Iran also provide continued uncertainty, with Iran insisting on an even one-fifth allocation and challenging Azerbaijan's hydrocarbon exploration in disputed waters. Bilateral talks continue with Turkmenistan on dividing the seabed and contested oilfields in the middle of the Caspian, while discussions with Georgia continue on the alignment of their boundary at certain crossing areas.

### **United Arab Emirates**

Energy Information Administration - January 2011- 9 pages

<http://www.eia.doe.gov/emeu/cabs/UAE/pdf.pdf>

The United Arab Emirates (UAE) is a federation of seven different emirates which together comprise the third largest economy in the Middle East behind Saudi Arabia and Iran. Its per capita GDP is second only to Qatar. The UAE is an important producer of natural gas and oil, ranking seventh globally in total proven reserves of both. Abu Dhabi possesses the majority of oil and natural gas reserves followed by Dubai, with small amounts in Sharjah and Ras al-Khaimah. The country is also a member of the Organization for Petroleum Exporting Countries (OPEC).