

# U - Gas News Report

Unconventional Gas Activities in the World

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by Constancio Silva

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## COALBED METHANE

### EXPLORATION – DISCOVERY

**CHINA: Planned project – Agreement - UG 84-1**  
**Sino Gas & Energy raises \$53 million for China coal seam gas exploration and development**  
Sino Gas & Energy has reached an agreement to raise \$53 million to progress its forward **program of seismic, drilling and development on its coal seam gas production sharing contracts** in the Ordos Basin, China. The company is focused on developing Chinese unconventional gas assets, and holds a 49% interest in Sino Gas & Energy Limited through a strategic partnership completed with MIE Holdings Corporation in July 2012.

Linxing PSC partner China United Coalbed Methane had recently signed a supplementary gas agreement that will allow earlier pilot production from the project by converting gas into compressed natural gas for transport by road to a major distribution facility until pipeline sales commence.

This also facilitates long-term testing of selected wells, allowing important reservoir information to be obtained and reducing the need for excessive flaring. (November 27, 2013)

**INDIA: Domestic supply - UG 84-2**

#### **CIL to soon get right for exploring coal bed methane**

Public sector miner Coal India would soon **get the right to explore coal bed methane** in its existing mines, Vivek Rae, Secretary, Ministry of Petroleum and Natural Gas, said. Currently, India does not have a policy regime for simultaneous extraction of CBM and coal. But, it does have a CBM policy. The Petroleum Ministry has auctioned 30 CBM blocks in four rounds. Three others have been allocated on nomination basis. Rae said that India has better CBM opportunities than shale gas/oil.

With the third-largest proven coal reserves, and the fourth largest coal producer in the world, India holds **significant prospects for commercial recovery of CBM**. The resource has been estimated to be around **4.6 trillion cubic meters**, according to the Directorate General of Hydrocarbons.

Currently, three CBM blocks are producing around 0.15 million standard cubic meters per day. This is likely to touch 7.4 mscmd by 2013, according to the DGH. (November 27, 2013)

### PRODUCTION

**BOTSWANA: Planned project – Startup - UG 84-3**  
**Tlou Energy starts pilot production testing of Botswana coal seam gas project**

Tlou Energy has started pilot production testing at its Selemo Pilot Pod in Botswana that is aimed at establishing stabilized gas and water flow rates. Early indications are positive and consistent with the gaseous coals encountered during drilling operations. The company is also drilling the Lesedi 1B well that will be directionally drilled 750 meters through the target coal seam to intercept

the Lesedi 1P vertical pumping well which will then complete the Lesedi Pilot Pod.

Both pilot pods use the same approach that has been successful in the Queensland coal seam gas basins and is expected to facilitate faster and more efficient dewatering and gas drainage of the targeted coal seam.

Tlou has a 100% interest in the Karoo Central and Karoo West permits that cover about 7,000 square kilometers. (November 19, 2013)

### USE FOR POWER GENERATION

**INDONESIA: Memorandum of Understanding - UG 84-4**

#### **CBM Asia signs gas-to-power MoU with PT Navigat Energy**

CBM Asia holds several participating interests and rights in nine CBM production-sharing contracts, along with options to participate in at least nine more. Recently, CBM Asia signed a Memorandum of Understanding (MoU) with PT Navigat Energy to supply up to **5 million standard cubic feet per day** (MMscfd) of CBM from its planned production pilot(s) to a gas engine power generation project in the Barito Basin, located in South Kalimantan, Indonesia.

According to CBM Asia's press release, CBM Asia and PT Navigat, which is an integrated distributor of clean power generation technology in Southeast Asia, will follow through with negotiations with Persero, the state

power supplier for Indonesia, on the sale of power and gas. CBM Asia's role will be as a gas producer and supplier.

The latest MoU comes two months after a September signing of a non-binding MoU that will see CBM Asia and a multinational gas company conduct a market study of a CBM-to-LNG facility with a **potential capacity of up to 50 Mmscfd**. Should the study return the project's feasibility, the two companies plan to enter into an arrangement whereby CBM Asia will supply natural gas and the multinational will take the gas and build, own and operate a LNG facility.

For CBM Asia, the two MoUs are important milestones as they indicate that the company has established commercial channels for early monetization of over 50 Mmscfd from pilot production and plan of developments, Alan Charuk, CBM Asia's president and CEO, said in a company statement. (November 27, 2013)

## **ENVIRONMENT**

### **AUSTRALIA: Regulation - UG 84-5**

#### **Coal seam gas laws give mining companies access to private land**

New coal seam gas exploration laws could provide a "back door" for mining companies to enter private land holdings without permission, farming and green groups have warned.

The NSW Government has tabled amendments to laws overseeing gas exploration in response to recommendations by Land and Water Commissioner, Jock Laurie. The amendments to the Petroleum Onshore Bill contain guarantees that during arbitration landholders can access legal representation and that "reasonable" legal costs be covered by the CSG company. Energy and Resources Minister, Chris Hartcher, said the amendments will put landholders in a stronger position, "with a greater say over natural gas exploration companies seeking to access their land". "The changes include stipulation that permit provisions may only be utilized for environmental data collection and geological survey purposes

such as water monitoring, flora and fauna – at the exploration phase only," Mr Hartcher said. "The community has broadly recognized that baseline data is important prior to any project being considered for approval. The permit system will support that aim."

NSW Farmers' president Fiona Simson said she was "comfortable that water testing is a priority and must be a priority for explorers and the government". "However, we understand that some people will have concerns around the third party access provisions and therefore should have their say." Greens NSW MP Jeremy Buckingham said the new permit system introduced in the bill would allow private mining contractors to access land for 'geological survey purposes' without an exploration licence or a land access agreement. "This is a back door for gas exploration that undermines other regulations," he said. (November 20, 2013)

## **SHALE GAS**

### **EXPLORATION – DISCOVERY**

#### **MEXICO: Regulation - UG 84-6**

#### **Mexico state oil co. spinoffs could exploit shale**

An official with Mexico's state-run oil company says a proposed **energy reform could make it easier for PEMEX to create subsidiaries to exploit the country's vast shale oil and gas reserves**.

Production and exploration director Carlos Morales says the company has only started to explore shale reserves that could more than double daily gas output. Mexico currently has to import gas to meet demands. He said shale exploration is not run by large oil companies such as Pemex, as it's known, rather by small specialty operations. Morales said that companies working in shale reserves "no doubt" would need licenses or concessions to make the ventures worthwhile, arrangements that are forbidden by the constitution. (November 21, 2013)

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**PAKISTAN: Planned project – Agreement - UG 84-7**

**Pakistan to get US assistance in exploring shale gas**

The United States has agreed to provide technical help to Pakistan in exploration of shale gas, a US company will assess Pakistan's oil and gas reserves, especially shale gas, The News has reported.

The study is to take nine months to be completed, one of the senior officials, who were part of the high level delegation that recently visited the US,

told The News. During the visit, the petroleum ministry signed an **agreement with the US consultant Advanced Engineering Associates International, Inc (AEAI)** that would embark on the strategic study to assess the actual reserves of shale gas in Pakistan and then with the help of the US experts four methods would be formulated to exploit the shale gas reserves, the newspaper reported. (November 20, 2013)

**ROMANIA: Delay - UG 84-8**

**Chevron halts shale gas work in Romania**

US oil major Chevron halted recently exploration works for shale gas in eastern Romania for the second time in two months after antifracking protesters broke through wire mesh fences around the site. **Thousands of people have rallied across Romania in recent months to protest against government support for shale gas exploration** and separate plans to set up Europe's largest open-cast gold mine in a small Carpathian town.

The US Energy Information Administration estimates that Romania could **potentially hold 51-trillion cubic feet of shale gas**, which would cover domestic demand for more than a century.

Chevron won approval to drill exploratory wells in the small town of Pungesti in the impoverished county of Vaslui in October but had to halt work soon after when residents blocked access to the site. It resumed work on December 2. Chevron said some equipment had been damaged on the site. (December 9, 2013)

**SOUTH AFRICA: Investment opportunities - UG 84-9**

**South Africa to exploit shale gas**

The discovery of shale gas provides yet another opportunity to grow and develop the economy, South African President Jacob Zuma said recently. Shale gas has been discovered in the desert area of Karoo in part of Northern Cape. "We are extremely excited about the prospect, because as Government we consider hydraulic fracturing for shale gas a 'game- change' opportunity for the Karoo region and for our economy at large," Zuma said.

Zuma said the government is fully aware of concerns that have been raised on hydraulic fracturing, including issues of water and the environment. "The Mineral Resources Minister will therefore be coming back to this area early next year to consult with communities, and to hear

what the people have to say, before any further decisions are taken by Government on this matter," said Zuma.

The government has said it will go ahead with the controversial exploration of shale gas deposits in a bid to improve the country's energy mix.

However, environmentalists have expressed strong opposition to the government move to explore shale gas. The Treasure Karoo Action Group (TKAG) says shale gas reserves, globally, have been overstated and world leaders are misinformed in this regard.

America's Energy Information Administration (EIA) estimates that South Africa might boast **shale gas reserves of around 485 trillion cubic feet.**

(November 30, 2013)

**SPAIN: Regulation - UG 84-10**

**Spanish government gives green light to fracking, but questions remain**

In an effort to promote shale gas exploration and drilling projects to boost its ailing economy the Spanish government explicitly legalized recently hydraulic fracturing. In a law heavily focused on boosting the electricity supply to the Balearic and Canary Islands, the government amended Article 9 of a 1998 hydrocarbon exploration law (Law 34/1998), to include hydraulic fracturing under the permitted exploration techniques for the oil and gas sector.

Although the law confirms political support for shale gas exploration, it raises questions about **whether the legal authority to determine shale gas regulation rests with central or regional governments.** The disagreement between Madrid and autonomous communities on who has jurisdiction over hydrocarbon techniques has the potential to result in a legal quagmire that will hallmark the regulatory outlook for the foreseeable future.

In Spain, hydrocarbon extraction falls under the authority of both the central government and the autonomous communities. Shale gas resources of particular interest to potential investors are located in the autonomous communities of Asturias, the Basque Country, Cantabria and Castile and Leon. Anxious to contain a regional trend of banning shale gas exploration, the Spanish government has responded by explicitly incorporating the permission to pursue hydraulic fracturing into legislation with national application. However, the precise **legal situation regarding the distribution of competencies for hydrocarbon exploration between the national and regional governments remains uncertain**. In the view of the central government, a regional moratorium on shale gas exploration would thus be in conflict with the newly amended national law on hydrocarbon exploration. However, regional MPs have accused the central government of forcing a conflict between Madrid and the regions and implied that regional governments may refuse to comply.

For the time being, **autonomous communities appear divided** – some have imposed temporary moratoria awaiting more clarity on potential impacts, while others have voted for complete bans on fracking. Two autonomous communities, Cantabria and la Rioja, have already ratified anti-fracking legislation in April and May 2013 respectively. In September 2013, in Navarra, the ruling Navarrese People's Union (UPN) introduced a ban on fracking.

Despite the aim of providing legal certainty for investors, the new amendment is unlikely to be the final stage in the evolution of the regulatory framework for shale in Spain. And while it remains unclear how regional governments will react to the central government's gambit, it is likely that some, along with civil society actors, will challenge the amendment in courts. This would further extend **uncertainty over the future of shale gas in Spain**. (November 19, 2013)

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#### UK: Investment opportunities - UG 84-11

##### France's GDF Suez to boost UK shale exploration

France's GDF Suez is the second heavyweight energy firm to dip a toe into British shale gas exploration after taking a 25% stake in onshore projects in northern England and Wales.

GDF Suez said recently it would team up with Dart Energy to develop 13 licenses in the western and eastern parts of the Bowland Basin, which has already attracted investment from Britain's Centrica .

This will be another boost to Britain's bid to exploit shale-gas deposits after the government unveiled incentives earlier this year to drive investment in the sector and renew hopes of reducing the country's growing reliance on imports.

Centrica, parent of British Gas, paid 40 million pounds (\$63 million) for 25% of the Bowland Shale in Lancashire, owned by license operator Cuadrilla Resources and its Australian private equity backer A.J. Lucas . Under the terms of the new agreement, GDF Suez will pay Dart Energy \$12 million in cash up front and will fund \$27 million in exploration and appraisal costs. It will then own a quarter share of 13 UK onshore licenses. GDF Suez said the funding would support exploration over three years, including drilling up to four shale gas exploration wells and 10 coal bed methane exploration wells.

In June, Britain doubled its estimate of shale gas resources in the Bowland shale area to 1,300 trillion cubic feet. (October 22, 2013)

## PRODUCTION

#### CHINA: Drilling campaign - UG 84-12

##### China's shale gas output reaches 143 million cubic meters

The National Energy Administration announced recently that China's commercialized shale gas production has reached 143 million cubic meters. Sinopec Co's shale gas project in Chongqing has realized a cumulative output of **73 million cubic meters** with a daily output of 150,000 cubic meters. By the end of 2015, the project will have an annual production capacity of 5 billion cubic meters with an output of 3.3 billion cubic meters.

PetroChina Co has a cumulative output of **70 million cubic meters** in Changning-Weiyuan and Fushun-Yongchuan shale gas projects. The company said the projects' output potential has far exceeded expectations during the exploration.

According to China's industrial plan for the shale gas sector, it will reach a **proven reserve of 1 trillion cubic meters with an annual output of 6.5 billion cubic meters by 2014**. (December 5, 2013)

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**POLAND: Domestic supply - UG 84-13**

**Poland will begin producing shale gas in 2014**

Poland will begin commercial production of shale gas next year, the Deputy Environment Minister recently, becoming the first European country to use the controversial technique known as fracking.

The London-listed company San Leon Energy said in a statement that the refracturing of a well initially drilled this summer in the north of Poland “has far exceeded expectations”. Testing to determine how much gas was produced by the well is still ongoing, however, and the company plans to drill another test well in the region.

Poland and Lithuania are the only two EU countries which are pushing forward with

exploration and quick commercial extraction of shale gas reserves using hydraulic fracturing.

Concerned about its energy security, Poland hopes to exploit its shale gas reserves estimated at between 800 and 2,000 billion cubic meters. The central European country currently imports about two-thirds of the 14 million cubic meters of natural gas it uses annually from Russia. Plentiful natural gas would also potentially allow Poland to reduce its reliance on dirty domestic coal for 90% of its electricity production, a situation that has caused tensions with European partners concerned about missing clean air targets. (November 27, 2013)

**SUPPLIES – IMPORTS – EXPORTS**

**EU: Regulation - UG 84-14**

**Shale boom unlikely in Europe**

Shale gas did not have the potential to be a “game changer” for energy supply in Europe because the continent lacked the property rights that have enabled the US boom, according to the head of trading at Eon. The power company is one of the largest potential customers for shale gas energy in Europe. However, Leonhard Birnbaum, said fracking was unlikely to succeed because the continent **lacked the right mix of land rights and infrastructure**.

There are four key factors, according to Mr Birnbaum, including **laws** in Europe that give gas rights to the state rather than landowners. Further factors that count against Europe include the lack of a developed **oil industry service sector**, a **finance market** that can securitize loans for drilling rigs, and **geological zones** “that have been relatively undisturbed by mining,” Mr Birnbaum said. He added that these were stronger reasons to discount shale gas in Europe than “the **environmental constraints** that are often discussed”.

The only country in which shale was likely to take off was “Ukraine – perhaps”, he added, but he said that Ukraine faced difficulties in accessing finance. Chevron signed a deal this month to explore for and produce shale gas at the Oleska field in western Ukraine. (November 20, 2013)

**INDIA: Domestic supply - UG 84-15**

**India will increase dependence on unconventional energy**

India will have to increasingly rely on unconventional energy sources such as **shale gas and coal bed methane** in coming years, ONGC’s Director, Narendra K. Verma said. He added that the state owned firm is also gearing up to increasingly exploit these resources.

He said ONGC had got the technologies for horizontal drilling but it would be a costly proposition at present to exploit shale gas. It

would require factory-mode of production and land and water — precious resources in an overpopulated country like India — would have to be diverted for the purpose. Verma said coal-bed methane was also very important and ONGC had already forayed into it.

On the technological aspect, he said the technologies used in the US could either be replicated or they could be used with some modifications, but “we have to address the other issues and challenges first”. (November 20, 2013)

**US: Investment opportunities - UG 84-16**

**Devon Energy buying Eagle Ford assets for \$6B**

Devon Energy Corp. is buying oil-producing assets and other property in the Eagle Ford shale formation in Texas from GeoSouthern Energy for \$6 billion. Devon said Wednesday that the assets include current production of 53,000 barrels of oil equivalent per day and 82,000 net acres with at least 1,200 undrilled locations. The acquisition includes acreage in DeWitt and Lavaca counties in Texas. The assets are expected to reach a peak production rate of about 140,000 BOE per day.

Devon was a pioneer in combining the use of horizontal drilling with hydraulic fracturing to free up natural gas from shale rock formations. That led to a boom in natural gas production last decade, but the increased drilling eventually created a glut that depressed natural gas prices. Devon continued to concentrate its

operations in natural gas, even as other companies refocused on making profits from drilling for oil in states such as Texas, Oklahoma and North Dakota.

Analysts say the GeoSouthern deal will give Devon a **better balance between oil and natural gas**.

Canaccord Genuity analyst Robert Christensen said oil currently accounts for 12% of Devon's total volume. "This deal would likely increase Devon's oil production by a significant amount, as GeoSouthern is the 4th largest oil producer in the Eagle Ford," he wrote. (November 20, 2013)

## COMPANIES

### BRUNEI: Stake modification - UG 84-17

#### **Petroleum Brunei to buy stake in Petronas' Canadian shale gas asset**

Petroleum Brunei plans to buy a stake in Petrolia Nasional Bhd's (Petronas) Canadian shale gas asset and its Canadian LNG facility. Petronas said a number of **agreements were signed** with the Brunei petroleum authorities towards deepening mutually beneficial cooperation in the oil and gas industry between the two parties. The highlights of the agreements included:

\* A Head of Agreement (HOA) towards formalizing a unitization arrangement for Malaysia's Kinabalu West NAG field and Brunei's Maharajalela North Panel field.

\* A Head of Agreement towards a provisional arrangement for joint development of Malaysia's Gumusut/Kakap field and Brunei's Geronggong/Jagus-East field.

\* Two Production Sharing Agreements (PSAs) awarded by Petroleum BRUNEI to Petronas Carigali Brunei Ltd and Shell Deepwater Borneo Ltd for Brunei's offshore Blocks N and Q.

\* An agreement for Petroleum BRUNEI to acquire an interest in PETRONAS' Canadian shale gas asset and in PETRONAS' proposed Canadian LNG facility, as well as a share of the facility's LNG production.

\* A Memorandum of Understanding (MOU) between Malaysia Marine and Heavy Engineering Sdn Bhd with PB Services Sdn Bhd towards a possible joint venture for the provision of engineering and fabrication services.

\* The HOA to formalize the unitisation arrangement for the Kinabalu West NAG National Unitization Secretariat of Brunei Darussalam. The HOA paves the way for the two parties to resolve a number of issues relating to the unitization and future development of these straddling fields. (December 9, 2013)

## ENVIRONMENT

### EU: regulation - UG 84-18

#### **Strangling shale gas in Europe**

In October the European Parliament narrowly voted to extend the EU's Environmental Impact Assessment (EIA) directive to the drilling of a single shale-gas well. National ministers are due to vote soon on the move in the EU Council. If they uphold the measure, all shale exploration underway in Europe—from the Bowland Basin in Lancashire, England, to Lublin Province in Poland—will face significant new delays. The larger danger for Europe is that energy investors may take such a decision as a signal to give up on the EU as a place to develop shale oil and gas. There are now so many more opportunities worldwide for shale-gas development that the industry may conclude its best strategy in Europe is to stay out of it.

Currently the rules only require an EIA for gas drilling if the commercial extraction exceeds 500,000 cubic meters per day. That excludes the overwhelming majority of commercial shale wells that Europe might see in the future, and certainly the test wells it will take to get there. Most operating shale wells in the U.S. and China produce less than 100,000 cubic meters apiece per day.

The EIA rule-change would require that all "exploration and exploitation of non-conventional

hydrocarbons"—i.e., every hydraulically fractured shale well—be subject to a complex and costly assessment, regardless of how much gas the well produces. The assessment would add approximately a year-long delay to development, and would be mandatory even for test wells that might never turn a profit. That would include, for instance, the exploratory well in Poland that's been producing about 8,000 cubic meters of gas per day since the summer.

There is not yet a single shale-gas well anywhere in Europe producing commercial flows. So why are EU regulators in such a rush? Surely it would be wiser to wait for Poland, the U.K. and others to proceed with exploration and commercial development. Then, **after more national regulatory experimentation, EU institutions would be better able to work out where European regulation could add real value.**

Then again, from an environmental perspective it may be that EU-wide regulation is of little value at all, given the nature of environmental impact. The EU's 28 nations cover 4.4 million square kilometers and come with vastly different geologies and natural resources, not to mention different property rights and legal systems. What's good for the Baltic Basin might not work at all for the Fylde Coast.

The controversy also raises a major constitutional question: Under the EU principle of subsidiarity, how could European officials even propose a rule that would regulate down to the level of a single test well? Article 194 of the Treaty on the Functioning of the EU states that European

environmental policy "shall not affect a Member State's right to determine the conditions for exploiting its energy resources." That appears to be exactly what Brussels is trying to do. (December 7, 2013)

US: Study publication - UG 84-19

**New study finds higher methane emissions from fracking**

A major new study finds that methane emissions from the production of shale gas may in fact be higher than previously thought. The study, published in the Proceedings of the National Academy of Sciences on November 25, casts into doubt the notion that natural gas produces half as much greenhouse gas pollution as coal. Natural gas has been embraced by many, including President Obama, as a centerpiece of America's climate change plan.

Methane can be released from natural gas wells during the drilling process. Scientists have thus far had difficulty measuring these "fugitive methane emissions" precisely, with competing studies stirring controversy. The latest report, published by a group of 15 scientists, found that the U.S. Environmental Protection Agency is significantly underestimating the amount of methane released during natural gas production. Specifically, **the report concludes that fugitive methane emissions could be 50% higher than EPA estimates.**

The findings could put pressure on state environmental regulators as well as the U.S. EPA to draw up new regulations, according to Dan Lashof of the Natural Resources Defense Council. "Methane is a powerful climate change pollutant, and the study gives greater impetus to the EPA and states to establish stronger standards to reduce leaks from the oil and gas system,"

If the latest figures are accurate, it could mean that the greenhouse gas advantage that natural gas has over coal could be a mirage. The Energy Information Administration estimates that U.S. carbon dioxide emissions declined 12% since 2007, citing natural gas supplanting coal as a major reason. That number does not account for methane emissions however. Colorado is leading the charge in regulating methane, as its air quality regulators recently proposed rules that would require tougher standards at drilling sites. The rules would force operators to use infrared cameras to detect leaks; conduct inspections of pipelines, tanks, and other equipment on a monthly basis; and observe stricter limits when operating near residential communities. No other state has enacted rules that target methane pollution.

The regulations in Colorado enjoy the support of several key industry players, including Anadarko, Encana, and Noble Energy. They caution that compliance with the rules will cost up to \$80 million a year due to required inspections. The Colorado Department of Public Health and Environment estimated the annual cost would only reach \$30 million. (November 29, 2013)

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