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Tomorrow's energy today

Gauging the **Gains** of Gasification



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From the Editor



There is something for everyone!

Hello Everyone,

In the course of the month, the editorial team had had a running debate on what is to be the main story of the month. Something that will be topical yet aligns with the ethos of simplicity that we stand for. Enter GASSIFICATION ; a renewable energy concept and perhaps a commodity that needs to be introduced into the interlectual market place as a determining factor in the future of energy.

As is the practice, we would be taking our journeys into the Asian continent, the Americas and the other parts of the six continents as we seek to draw out perspectives into recent developments. The opportunities section will have something on the Chinese contribution to oil and gas. As is to be expected, this offers some intrigue when you consider the import of the Chinese over the tradition power houses of the west in the energy business in Africa – need I say more? Be that as it may, that is not all there is to that section, we would be sharing details of some investors and versatile consultants that can add real value to any project.

What's more, we were made privy to infomation that Energia Today is gaining momentum. Its import and impact has been much faster that we had expected and in more ways than one. We see it both as a challenge and a responsibility and for all it is worth we had made a commitment to live out our responsibility as professionally as possible and with the appropriate tenacity. The best is yet to come!

When all is said and done, the more important thing is that there is something for everyone

Happy reading!

Hellena Sowunmi

Damage By Nigeria's Oil Bill May Be Hard To Fix

By Hellena Sowunmi



There are high expectations that Nigeria's controversial oil industry Bill will eventually pass. But the Federal Government may find it hard to move gears, as international oil firms targeted under the legislation scale back their investments.

Nigeria's parliament is debating the Petroleum Industry Bill, an attempt at the oil-sector reform in which Abuja can negotiate 'downward' a foreign firm's share of profits and impose higher royalties and taxes, said Mr. Peter Pham, director of the Africa Project at the New York based National Committee on American Foreign Policy.

Despite potentially spending billions of dollars, a firm not seen as "fully exploiting" an oil block may risk having it turned over to a Nigerian upstart instead, Mr. Peter added, who is also an associate professor at James Madison University in Harrisonburg, Virginia. Backers of the hotly debated bill will eventually see production and investment fall, perhaps by \$3 billion annually, which might prompt them to

"change the laws a bit and bring more people in," argued Sebastian Spio-Garbrah, a New York-based analyst covering Africa at the Eurasia Group, a research and consulting firm.

The country's oil industry needs to be deregulated because the Nigerian National Petroleum Corp. is "clearly inefficient," Pham said. Nigeria's share of global production, however, has been "off a third" in the last half-decade alone, Mr. Peter said, underlining that in 2009, about \$8 billion was invested in Angola's deep-water resources. Now the oil leader in sub-Saharan Africa, Angola will have achieved double its neighbour's production by 2020, he said, quoting industry estimates.

Western oil companies are still interested in the country despite the uproar over the petroleum bill. The Nigerian division of U.S. energy company Chevron announced plans to invest \$3 billion in several gas projects in the country, according to media reports last month. Reports also signaled that Total wants to invest \$20 billion in oil and gas exploration.

To an extent, operating in Nigeria under the new law will mean the oil majors will have to "grin and bear it," he added. It's likely they will adopt a business model not as traditionally "forward-thinking" as in the past and "try to extract what they can while they can," he said. It's doubtful, he added, that firms will pour money into exploration if their position in five or 10 years is uncertain.

Western oil money may seek out a market like Angola, which can offer a "business model that's fairly reliable," Pham told reporters. China may then figure more prominently in Nigeria, while local firms, many politically connected, will step up," he said.

"Yar'Adua could die tomorrow, Jonathan could be assassinated the next day, and these reforms would come in some fashion," Spio-Garbrah of the Eurasia Group stressed. The bill will pass because structural forces, irrespective of whether Jonathan becomes president, are pushing for this change, he argued. ☞



UNEP Calls For Caution On Power Project

The United Nations Environmental Programme is calling on the Ethiopian and Kenyan governments to approach the construction of the dams on River Omo with caution, underlining that, it is a delicate matter that requires sufficient assessment of the environmental impact.

Kenya has the capacity to produce enough electricity to sustain its growing demand for power if it properly invests in the windpower farm in Turkana. It does not need to rely on importing electricity from Ethiopia after the dams' construction, UNEP Executive Director Achim Steiner said on Friday.

"..... I have certainly followed the public debate and I share the concerns that have not yet been adequately answered. It is essential that these impacts be looked at early the construction of the dams would reduce the water levels in Lake Turkana which would subsequently be detrimental to the success of the wind farm."

UNEP's Programme Officer for the Nairobi River Basin Project Henry Ndede also said that a reduction in the water levels of Lake Turkana would significantly affect the wind power project and reduce chances of promoting the economic capacity of the Turkana region. "... The strength of the wind for the Turkana area is because of the

geological formation of the Rift Valley; such that the Rift valley walls channel the currents. But this is facilitated by the fact that we have abundant water which creates a local situation of convectional currents and you have continuous winds that are very useful in turning the turbines," he said.

Mr Ndede maintained that the decision to construct the dams on River Omo was a policy issue between the Ethiopian and Kenyan governments, advising the two countries to put into consideration the effects of the dams' construction on the environment.

He further explained that the cyclic nature of vapour and evaporation together with the different surface temperatures of the water played a significant role in enhancing or modifying the air currents that were moving over the lake. "It means that if you have reduced waters this pattern and speed of the air currents will be interfered with so it is good to establish how much this will affect the generation of electricity from wind." He however pointed out the possibility of the hydro and wind powers complementing each other in the end.

The UNEP Programme Officer explained that Kenya stood to have a lower economic advantage compared to Ethiopia after the construction of the dams, underlining significant reductions of the water levels at

Lake Turkana as well as a recession of the vegetable cover on the flood plains of the River Omo and the Upper catchments of the region.

Meanwhile, the members of the Turkana community accuse the government of ignoring them and the threat posed by River Omo's damming. Mr. Lion Lepalo, Save Lake Turkana Project Executive Director, said the damming of the river which supplied 80 percent of its waters to Lake Turkana would create a myriad of problems for the community and has asked the government to stop the interference of the river's water flow and conduct a comprehensive environmental impact assessment.

"People look at it like it has become a Lepalo issue. No; it is not my issue, it is not a Turkana issue, it is going to become a national issue. Because if a third of Kenya's power can come from that location then Turkana matters. Something is not right here. We need answers. What is Kenya's clarity of purpose here? There are better ways of sourcing for power," he said.

The World Bank meanwhile clarified that it was not funding the projects which are mainly Chinese funded. After the collapse of the second dam's wall (Giibe II) plans to construct Giibe III were halted as focus shifted into repairing the collapsed wall.

The quest for Uganda's Oil

In what is now like a thirst for African natural reserves, China National Offshore Oil Corp (CNOOC) has indicated its interest in partnering with UK based Tullow Oil Plc to help develop Uganda's energy resources. This is based on a statement from the president's office. It was also confirmed that Company officials from CNOOC and Tullow held talks with President Yoweri Museveni his office said in an e-mailed statement. China, the world's second-largest energy consumer, is seeking assets in Africa to secure fuel for its booming economy.

Tullow on the other hand is engaged in a battle with Eni SpA, Italy's biggest energy producer, for oil assets being sold in Uganda by Heritage Oil Plc.

In January, Tullow exercised its right of first refusal over the blocks which it co-owns with Heritage, in an effort to thwart an agreed \$1.5 billion deal with Eni. "The government of Uganda will reach a decision in the coming weeks on the current process of pre-emption that will respect the contractual rights of the existing companies," the president's office said.

International energy producers are competing for assets in Africa as traditional fields go into decline and after nations from Venezuela to Russia curbed access to their resources. Uganda is an "attractive zone," Jean-Jacques Mosconi, head of strategy at Total SA, Europe's third-largest oil company, said last week.

Total Speculation

The Financial Times reported that Tullow has presented Uganda with the choice of Cnooc or Total as potential partners. Total spokeswoman Phenelope Semavoine declined to comment. Uganda's government is trying to maximize the benefits of its oil resources after economic growth slowed last year.

Per- capita income in sub-Saharan Africa dropped for the first time in a decade in 2009, with 7 million more people falling into poverty in the region, the World Bank said on Jan. 21. Uganda plans to bank all its oil revenue then use a percentage of the accrued interest to fund its budget, government minister Henry Okello Oryem said Dec. 29.

The Tullow delegation was led by Chief Operating Officer Paul McDade and Elly Karuhanga, the company's president for Uganda. The Ugandan government "looks forward to welcoming new companies" in the oil industry as well as discussing proposals by existing operators, the president's office said. Li Shiqiang, a Beijing-based press officer at China National, didn't answer calls to his office telephone.

Shortlist

Tullow, the U.K. explorer with the most licenses in Africa, has drawn up a shortlist of partners to help with the estimated \$5 billion cost of developing its Ugandan oil fields. Tullow had wanted to sell as much as 50 percent of three combined blocks in the Lake Albert region.

Detailed plans regarding field exploration, a refinery, power generation and a possible

pipeline across Tanzania or Kenya to export oil will be presented to Uganda's government in the first week of February, Tullow's Chief Executive Officer Aidan Heavey has said.

Provisional Backing

Last week, Uganda's Energy Minister Hillary Onek gave his provisional backing to Eni in preference to Tullow over the assets being sold. Heavey flew to Uganda late last week to press the company's case with Museveni. The dispute centers upon Heritage Oil's 50 percent share in Blocks 1 and 3A in Lake Albert which are up for sale. Shareholders in the St. Helier, Jersey-based company approved the proposed asset sale yesterday, with 99.99 percent of votes cast in favor. The sale is expected to be completed in the first quarter.

Eni said Nov. 23 it had signed a letter of intent with Heritage to buy its share of the fields for as much as \$1.5 billion. The sale may yield as much as \$400 million in capital gains tax for Uganda, Onek said last week. The Italian energy producer has been seeking to expand reserves with fields in Africa, central Asia and the Gulf of Mexico after output cuts from disruptions in Nigeria.

About 1.5 billion barrels of oil are still to be discovered in the Lake Albert Rift Basin, according to Tullow estimates. More than 700 million barrels have already been found.

Tullow, which operates in 15 African states, plans to produce at least 5,000 barrels a day in Uganda in 2012, with output rising to 150,000 barrels a day within five years. ☞

Shell, CNPC Sign 30 Year China Tight Gas Contract



BEIJING - Royal Dutch Shell Plc., China National Petroleum Corporation (CNPC) have signed a 30 year deal to jointly develop natural gas in China. Both companies have submitted a production sharing contract to the Chinese central government for approval.

"There is a big expectation building up, clearly given the fundamental change in the domestic North American gas market," Shell Chief Executive Peter Voser told reporters on Tuesday. New sources of natural gas have added supplies in North America equivalent to about a century's worth of use," he added.

Shell made the announcement on Tuesday of plans to develop and produce natural gas in western China's Sichuan basin with state-owned China National Petroleum Corp. Based on Shell's statement, Shell and CNPC, under a 30-year contract is expected to develop reservoirs of one type of unconventional gas called tight gas in an area of about 4,000 square kilometers in the Jinqu block of central Sichuan province. Tight gas is natural gas contained in rock that must be broken open before the gas can flow easily to production wells.

Development of unconventional gas reserves such as tight gas, shale gas or coal-bed methane gas has unlocked huge new domestic energy sources in North America, profoundly rebalancing the global energy equation.

The world's biggest natural-gas fields in the Middle East and elsewhere that had expected the U.S. to be their main customer must find buyers elsewhere, causing a domino effect with consequences in Russia.

China the world's second-largest energy user has been a buyer, with a need for gas as a cleaner alternative to burning coal, a source of three-quarters of its power and a major pollutant. China suffered widespread gas shortages last winter.


"This is another step forward for Shell's world-wide tight gas strategy, building on our technology and production track record in China and elsewhere..... The agreement will strengthen our partnership with CNPC in developing cleaner energy to meet China's growing needs," said Malcolm Brinded, Executive Director of Shell's upstream international division."

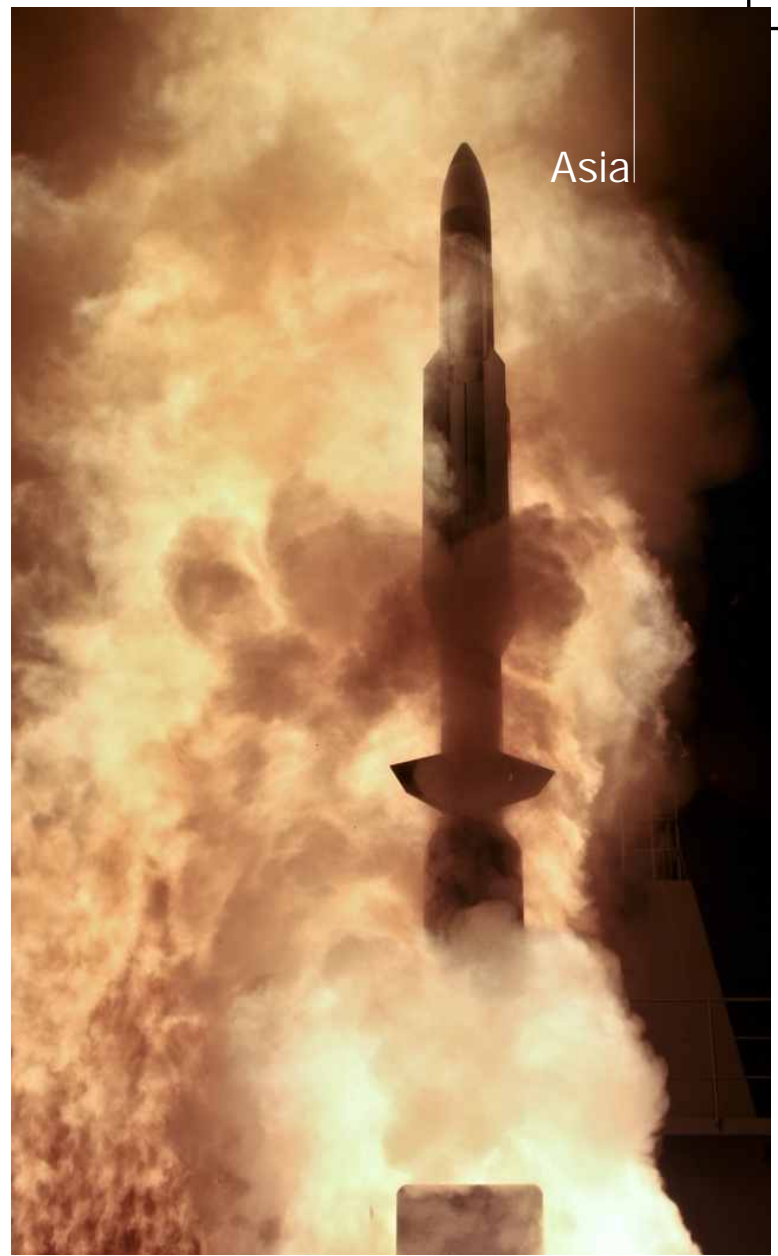
Analysts also commented that the deal was part of a broader alliance between CNPC and

Shell, as the state-backed giant uses the huge and rapidly expanding Chinese gas market to help it access global hydrocarbon assets and Shell's proven technologies in unconventional gas.

Meanwhile, BG Group PLC and China National Offshore Oil Corp. reportedly plan to sign an agreement to buy liquefied natural gas from Australia on Wednesday. The deal comes nearly a year after Cnooc agreed on initial terms for the 20-year purchase of 3.6 million metric tons of LNG annually from BG's proposed export terminal in Queensland State, Shell signed a joint assessment agreement with PetroChina in November 2009 for shale-gas cooperation in Sichuan. Assessment work in the Fushun block that covers another area of about 4,000 square kilometers started in January 2010.

Shell is already producing gas in Changbei, a tight gas field in the Ordos Basin in northern Shaanxi province, which began commercial production in March 2007 and now supplies three bcm per year to Beijing and eastern China.

"We are focusing quite strongly into the difficult gas area... these are two big blocks. Lots of explorations. Very exciting," Shell's China chief Lim Haw-Kuang said. 



Asia

N.Korea nuclear negotiator to visit US

By Agency Reports

SEOUL — North Korea's chief nuclear negotiator plans to visit the United States next month, a media report said Friday, amid renewed efforts to bring the communist nation back to international disarmament talks.

South Korea's Yonhap news agency, quoting a diplomatic source, said the visit by Kim Kye-Gwan would be in return for a trip to Pyongyang in December by US envoy Stephen Bosworth.

"I believe the schedule for Kim's visit has already been fixed," it quoted the source as saying in a report from Beijing, where Kim has been holding talks with his Chinese counterparts. No precise date was mentioned.

China, which hosts six-nation nuclear disarmament talks, is trying to persuade the North to return to the negotiations which it quit last April -- a month before its second

atomic weapons test. But this week's meetings in Beijing have been hard going, according to media reports, with Pyongyang sticking to its demands that UN sanctions be lifted before it rejoins the nuclear dialogue.

The North also wants US agreement to hold talks about a formal peace treaty before it comes back to the forum also grouping South Korea, Japan and Russia. It was unclear whether Kim's visit would go ahead if the parties fail to agree on restarting the nuclear dialogue.

Yonhap said Wu Dawei, China's chief nuclear negotiator who has been meeting Kim, would travel to other six-party member nations after the Lunar New Year this weekend. "We exchanged important opinions with China on the matters of the peace treaty on the Korean peninsula and the resumption of the six-party talks," Kim told reporters in Beijing Thursday. "Results of the meeting will be made known later."

China is North Korea's only major ally, its main trade partner and its chief supplier of desperately needed food and oil. But it was not clear whether it would be able to coax the North back to dialogue.

The two sides were trying Thursday to narrow differences on economic assistance, Yonhap said.

South Korean officials estimate the North will run short of 1.29 million tons of grain this year, equivalent to almost four months' supply.

UN Chief, Ban Ki-moon's top political advisor Lynne Pascoe was due Friday to wind up a mission to North Korea aimed partly at reviving the disarmament talks. Pascoe met Kim Yong-Nam, the North's official number two leader on Thursday. He passed on a message from UN chief Ban Ki-moon to leader Kim Jong-Il, the North's media said, but no details were given. ☞

OPEC's Gulf Arab Members Seek Quota Compliance



Arab oil producers in the Gulf will likely call for quota compliance at OPEC's meeting on Wednesday but will not press for output discipline as long as prices remain high, analysts said.

"Highly compliant Gulf producers will call for quota discipline, but it will not be a pressing issue at OPEC's next meeting since oil price is high, demand is rising and outlook is positive... It starts to become a key issue if the oil price drops sharply." Kuwaiti oil analyst Mohammad al-Shatti told reporters.

Officials and analysts forecast that the Organisation of Petroleum Exporting Countries (OPEC) will keep its output quota unchanged at the Vienna meeting, considering positive market reaction. But questions remain on OPEC overproduction. The oil cartel's production hit a 14-month high in February at 29.15 million barrels per day (bpd), when output from Iraq, which is

not bound by the quota system, exceeded 2.6 million bpd for the first time since the 2003 US-led invasion.

Production of the 11 OPEC members bound by quotas reached 26.55 million bpd, 1.7 million bpd above the output quota of 24.845 million bpd adopted in December 2008. And according to Middle East Economic Survey (MEES), the majority of the overproduction came from outside OPEC's Arab member states in the Gulf — Saudi Arabia, the United Arab Emirates, Kuwait and Qatar.

Iran and Angola overproduced by 400,000 bpd each in February, while the four Gulf Arab states, whose official quota is 53 percent of the OPEC-11, exceeded their quotas by just 200,000 bpd, according to MEES figures.

Saudi SAMBA group, however, in its latest report, said that production regulation will be critical to securing balance in the oil

market in 2010. "Changes in any or all of these elements, particularly the strength of the dollar, could have an adverse impact on (oil) prices," SAMBA said.

Oil prices rebounded from just above \$30 a barrel early last year to between \$70-\$80 for most of 2009 and into 2010. Oil expert Kamel al-Harami believes OPEC's overproduction is close to two million bpd and the Gulf States exceeded their quotas by more than 500,000 bpd.

A former member of Kuwait's Supreme Petroleum Council, Musa Maarafi, expects oil prices to remain at their current level throughout 2010 but warned that the problem lies in the large stockpiles, the rising phenomenon of floating stocks and the return of speculators. "Despite these factors, I still think Gulf States won't seek more than moral pressure for quota compliance since both consumers and producers are pleased with prices," Maarafi said. ☞

European offshore wind capacity up by 54% - EWEA

Currently, 17 offshore wind farms, totalling more than 3,500MW, are under construction in Europe this is because the European offshore wind generating capacity increased by 54% in 2009, the Energy Association claimed recently.

The trade association's newest publication, "The European offshore wind industry: key trends and statistics," stated that eight new wind farms, consisting of 199 offshore wind turbines and with a combined capacity of 577MW, were connected to the grid in 2009.

The European Wind Energy Association (EWEA) said that this represented a growth rate of 54% compared to the 373MW installed during 2008. And, it added that in 2010 it expects the completion of 10 additional European offshore wind farms, adding a further 1,000MW. Currently, 17 offshore wind farms are under construction in Europe, totalling more than 3,500MW, with just under half being constructed off the UK.

In addition, a further 52 offshore wind farms, representing more than 16,000MW, have won full consent in European waters. More than 100GW of projects are at various stages of planning and could provide enough power to meet 10% of

European electricity demand.

Those wind farms that are built are getting larger - the average offshore wind farm size in 2009 was 72MW, up from 62MW the previous year, while the average turbine size was 2.9MW.

Christian Kjaer, EWEA chief executive, said that despite the increases, independent project developers were struggling and needed government and EU support. "This is an incredibly good result considering the continued difficulties of obtaining project finance for large projects," he said. But he added: "For the offshore wind power industry to continue its development, it is vital that governments and the European Commission provide policy frameworks that stimulate investor interest and allow project developers to move their plans forward."

Finance

In financial terms, the EWEA calculated that the 2009 turnover of the offshore wind industry was approximately €1.5 billion (£1.3 billion). It expects this to double in 2010 to approximately €3 billion (£2.6 billion), with European companies "well-placed" to take advantage of opportunities in North America and Asia. But the move to wind farms further offshore and the difficulty in raising project capital meant that government support would remain

vital for the development of the offshore wind industry.

The European Commission's Recovery Plan, which put €255 million (£225 billion) of a €565 million (£498 million) into six offshore wind farms was said to provide "a crucial injection", while the EWEA said the continued involvement of the European Investment Bank (EIB) was equally critical.

Further "significant steps" towards a European 'supergrid', including nine countries signing up to investigate the possibility in the North Sea (see this [NewEnergyFocus.com](#) story) and another €300 million the EIB put towards a similar project to connect Britain and The Netherlands (see this [NewEnergyFocus.com](#) story) were also welcomed.

Christian Kjaer said that the decision to inject €255 million into the offshore wind sector showed that decision makers "understand that offshore wind is key to Europe's future energy supplies". "The European Investment Bank's increased involvement will also be instrumental for the future success of offshore wind's contribution to European recovery, job creation and technology leadership," he added. ☎



Mexico adopting renewable energy law for energy diversity

By Sowunmi Hellena

As one of the countries that borders the United States, Mexico is the 14th largest independent nation in the world and has an estimated population of 111 million making it the 11th most populous country. All these are not news but what could be is that about 76 percent of the Central American nation's installed generation capacity is fired by fossil fuels. However, confronted with a growing demand locally for electrical energy, the

Mexican Government has adopted a policy to broaden its energy sources.

Buoyed by an interest in promoting the international agenda on climate change, the Government of Mexico has this in its decisions as it relates the international agenda noting the commitment to reduce its emissions.

It should be understood that in May of

2007, President Felipe Calderón announced the National Climate Change Strategy which focuses on climate change as a central part of Mexico's national development policy.

Moreover, in July 2009, the Government of Mexico formally committed itself to a detailed long-term plan for emission reductions embedded in the Special Climate Change Program that provides an accounting of emissions by sector, creating

The Americas



a framework for monitoring improvements and establishing a legally binding blueprint for emission reduction initiatives. This is to be done sector by sector.

To reach these aggressive objectives, the government of Mexico passed the Renewable Energy Development and Financing for Energy Transition Law, which entered into force on November 28, 2008.

The main objective of the Law is to regulate the use of renewable energy resources and clean technology, as well as to establish a national strategy and financing instruments to allow Mexico to scale-up electricity generation based on renewable energy sources. To help make this a reality, Mexico's Renewable Energy Technical Assistance Program is helping the government promote and develop renewable energy and also assisting the Mexican government in the design of policies and regulations needed to implement its new Renewable Energy Law.


The technical assistance program is funded by Energy Sector Management Assistance (ESMAP) and the World Bank.

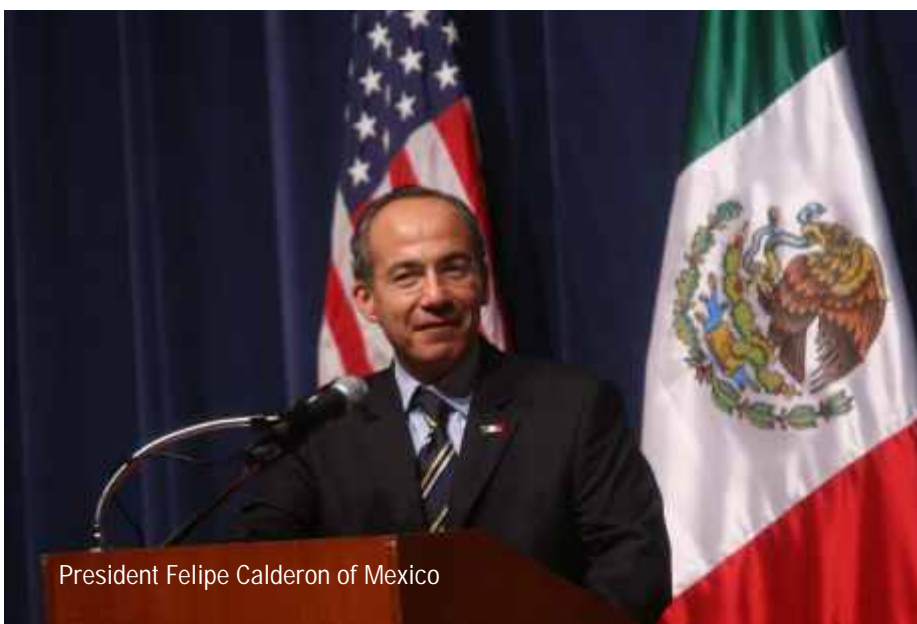
On November 3, 2009, a seminar was held in Mexico City on "International Experiences of Policy and Regulation to Promote Renewables." The Seminar is part of the ESMAP Mexico Renewable Energy Technical Assistance Program aimed at helping the Mexican government implement its new renewable energy law.

The event was organized by the Mexican Secretariat of Energy (SENER) and ESMAP-World Bank. Nearly 100 people attended the seminar, including representatives from government, the electric utility, private sector, and academia.

The World Bank's Senior Energy Specialist, Leopoldo Montanez said, "We are providing technical assistance to the government to allow Mexican authorities successfully introduce renewables in their generation mix."

Our team is offering just-in time advice and support to high level government officials to facilitate the implementation of an effective Renewable Energy Strategy as well as enable exchange of knowledge across countries."

Since Mexico is endowed with large indigenous potential of renewable energy. 



President Felipe Calderon of Mexico

Gasification:

Another Potentially Phenomenal Clean Energy Concept



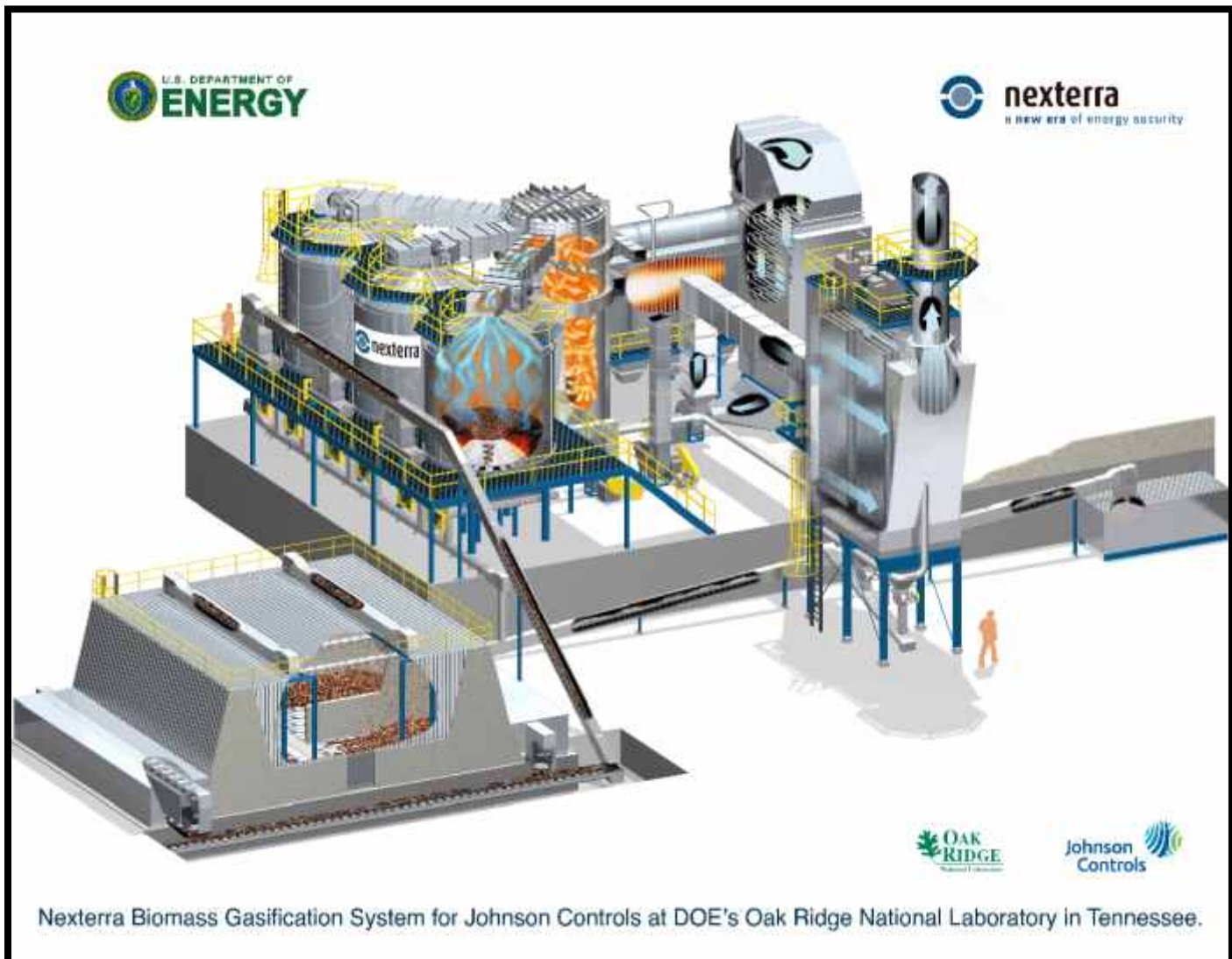
In the next couple of weeks, all roads will lead to South Africa for the World Cup; a remarkable achievement, for a country that has gone through 'the valley of the shadow of death' so to speak, in the process of discovering itself.

One of the remarkable innovations of the apartheid era was the fact that the country had to look within for the things it could not produce and Energy was one of those areas that it was lacking. The State run energy corporation SASOL used the technology to produce energy in a time they could only look within to survive.

However the history of gasification is much older than that and it was in 1669 that we had the oldest records of anything to do with the technology when Thomas Shirley conducted crude experiments with carbonated hydrogen. However it was in 1788 that the records show that Robert Gardner obtained the first gasification patent. Though these developments started in the Americas, but it was in Europe that the commercial expansion took place with the Siemens technology breakthrough of a successful unit in 1861 and the earlier French intervention of 1840 with the first commercially used gas fires and more.



As can be deduced, Gasification is an old technology with a long history of development with a significant part of it being of commercial usage. The good interesting thing is that this technology has the potential of being a game changer in the developments of renewable energy. What may have been forgotten by many is that the 1970's brought The Arab Oil Embargo and the "energy crisis" had initially prompted the U.S. government to support industrial scale gasification projects. From this development came the first Integrated Gasification Combined Cycle (IGCC) electric generating plant. Presently, several IGCC power plants are operating throughout the world. And crude oil price spikes and geopolitical instabilities in major oil-producing countries have generated serious interest in using gasification for GTL (Gas



To Liquid) synthetic fuel processes.

Variations in Gasifiers

Many design variations of Gasification Reactors (Gasifiers) exist; however, depending upon the type of flow conditions present in the equipment, they all fall into one of three general categories:

* Moving Bed - Dry carbon fuel is fed through the top of the gasifier. As it slowly drops through the vessel, it reacts with steam and oxygen as they flow in opposite directions over the bed. The fuel goes through the process until it is completely spent leaving behind low temperature syngas and molten ash. Trace contaminants are later scrubbed from the syngas.

* Entrained Flow - Fuel can be fed dry or wet (mixed with water) into the gasifier. The reactants (steam and oxygen) flow unidirectionally upwards through the gasifier, as the stages of gasification take place, until high temperature completed syngas exits the top of the reactor. Molten slag drops out at the bottom.

* Fluidized Bed - Steam and oxygen flow upwards through the reactor tower while fuel is injected into, and remains suspended in, this stream while gasification takes place. Moderate temperature syngas exits the while dry

(unmelted) ash is evacuated at the bottom.

So, why bother with Gasification?

So why go through all of this? Yes, it is a complicated and challenging process, but the reasons for developing gasification are compelling. Hydrocarbon resources throughout the world are both finite and unevenly distributed. For the United States, dwindling reserves of crude oil and natural gas contrasted against abundant coal and biomass resources illustrate the economic viability of gasification. Syngas can be used to not only manufacture all manner of industrial and commercial chemicals, but it can also play an important role in the development and manufacturing of synthetic liquid fuels for transportation.

Its advantages include:

- * Feedstock flexibility
- * Product flexibility
- * Near-zero emissions
- * High efficiency
- * Energy security

While the down sides are:

- * Complex multi-stage process
- * Up-front processing of feedstock
- * Syngas must be cleaned/purified
- * Initial setup is expensive

As can be imagined, the gasification story is not all glory. It has its drawbacks and trade-offs just like any other complex endeavor, and whether it is ultimately fruitful and sustainable remains to be seen. Looking at the big picture though, gasification, and its resulting Syngas, with its potential to create all types of useful chemicals and synthetic fuels, certainly deserves a spot-at-the-table with other alternatives.

In the simplest of terms, Gasification is the conversion to gas. However for this process, gasification can be defined as a process that converts carbon rich materials, such as coal, petroleum, etc; into carbon monoxide and hydrogen by reacting the carbon material, such as waste, or compost at high temperatures and in the presence of oxygen and/or steam.

In this case, Plasma gasification is a gasification treatment technology that uses an electrical arc gasifier. This arc breaks down waste primarily into elemental gas and solid waste (slag), in a device called a plasma converter. The process has been intended to be a net generator of electricity, depending upon the composition of input wastes, and to reduce the volumes of waste being sent to landfill sites. ☹

India and China Face Off in Africa

By Priyanka Bhardwaj and Michael J. Economides



he nearly insatiable hunger for oil has led the world's most-populous countries to Africa. And while China's efforts to tap Africa's oil resources are well known, India is trying to catch up.

Earlier this month, during an India-Africa summit in New Delhi, which was attended by representatives from 15 African countries, it became clear that India needs to learn from China's success in dealing with Africa. The resource base is certainly attractive. Africa has about 10% of the world's oil reserves and the oil tends to be of better quality than the high-sulfur crude found in India. And while India may want to expand its investments in Africa, the Chinese are far ahead, a point made clear in an August 2009 report by the London-based Royal Institute of International Affairs (RIIA) on Asian involvement in Nigerian and Angolan oil industries which said that "China's deeper pockets have certainly put a brake on India's ambitions."

At the India-Africa Summit, it was pointed out that China has also promised billions of dollars in cheap loans to Africa, besides multibillion-dollar deals for infrastructure development and even offered military support in return for resources. Estimates peg loans by China to fund Angola's post-war reconstruction at \$20 billion in 2009. In return China has managed to procure a lot of Angolan oil.

Indian firms have been making some inroads in Africa. State-run oil major ONGC Videsh Limited (OVL), India's largest oil exploration firm, has invested in assets in Sudan, Ivory Coast, Libya, Egypt, Nigeria and Gabon. OVL has invested \$2.5 billion in the Sudanese oilfields and is vying for a stake in at least one exploration

block in Ghana. Private Indian firms such as Reliance Industries Limited have invested in Sudan and East Africa. Meanwhile, state-owned Indian Oil Corp and privately held Essar Group have invested in Nigeria and Sudan. Other Indian firms are reportedly negotiating in Chad, Malawi, Niger, Angola and Mauritania.

Egypt has invited two Indian companies, Alkor, and state entity Gujarat State Petroleum Corporation Limited, to invest in geological surveys as well as in the exploration and production of oil and gas. Upstream companies are having good success in Egypt. Between 1999 and 2007, the country's gas production has more than tripled. And while Indian firms are finding a receptive audience in Africa, they are still trailing far behind the Chinese. Indo-African trade, which now totals about \$30 billion per year, is just half the level of China's trade with the continent and Indian investments in Africa are just one-fourth that of China's.

Between 2003 and 2008, Chinese direct investment in Africa soared, going from about \$500 million to nearly \$8 billion. Western observers have also pointed fingers at China for worsening repression and human rights abuses in Africa by supporting the hyper-corrupt regimes in Sudan and Zimbabwe.

However, New Delhi has realized that it cannot let matters drift in Africa. Despite a recent spurt in domestic supplies in oil and gas, demand for hydrocarbons in India far outstrips supply. India's attempts to source gas via international pipelines from Iran, Turkmenistan and Myanmar have not borne fruit. Thus, it is logical that Indian firms are looking at an aggressive push to tap Africa's natural sources.

Officials privately suggest that New Delhi should be open to playing a military assistance role if needed. At the very least they suggest an increase in India's role as part of UN peacekeeping forces.

During the India-Africa Summit, India's federal petroleum minister, Murli Deora, said India is "making a renewed push to open doors for Indian state-run firms in the African oil industry by offering to invest in building new refineries in return for gas and equity in oil fields." Indian firms are now in talks with Nigerian officials to build new refineries to develop the country's downstream sector. And Indian companies are trying to leverage their infrastructure commitments in Sudan to secure drilling rights. India firms are developing a 180-kilometer rail link from Khartoum to Al-Masala-Mian. India is actively pursuing acquisition of equity stakes in 22 hydrocarbon blocks in Sudan.

While questions remain about India's ability to effectively compete against China in Africa, Indian firms are signing major deals elsewhere. Recently, ONGC Videsh Ltd and Hinduja Group signed accords with Iran to take a 40% interest in the \$7.5 billion, Phase 12 development of the South Pars gas field. In addition, ONGC recently acquired Britain's Imperial Energy, which has significant assets in Russia.

Those deals are important, but it remains to be seen how influential India will ultimately be in Africa.

Priyanka Bhardwaj is a journalist based in New Delhi, India. Dr Michael J. Economides, is Editor-in-Chief of Energy Tribune, a US-based energy magazine

David Koch

fast facts and figures ▶▶▶



Age: 65

Fortune: Inherited

Source: Oil

Net Worth: \$12 bil

Country Of
Citizenship: United
States

Residence: NYC,
New York

Industry: Petroleum
/ Natural gas

Marital Status:
Married, 2 children

Education:
Massachusetts
Institute of
Technology

David Koch is an American engineer, billionaire and businessman. He is one of the co-owners (with older brother Charles) of Koch Industries. As an executive vice president of Koch Industries he manages a conglomerate with major petroleum and natural gas holdings.

According FORBES, it is the second largest privately held company (after Cargill) in the United States.

As a premier resident of the city of New York, he is the city's second wealthiest

resident after Michael Bloomberg. He is a political conservative in a liberal town. He has gotten the attention of the town's tabloids as for his many fights with his brother and for the causes he believes in.

Known for his simplicity, if you want to see David Koch, you must first of all talk to him! Not his assistant or his public relations firm. No secretary manages his agenda or keeps his calendar.

With brother Charles, they are the two sons of Fred C. Koch, MIT grad who invented the method of turning heavy

oil into gasoline.

His father had taken the technology to the Soviet Union but became disillusioned with Stalin, returned to the United States where he joined John Birch Society. His older brother Charles became chairman of Koch Industries after their father's death, expanded into chemicals, pipelines, asphalt and commodities trading.

Meet David Koch, Energia Today's energy personality of the month. 🌐

EnergiaInterview

“Women can accelerate the energy revolution”

Interview with Helene Pelosse, DG of IRENA



Tell us about yourself.

I was born in 1970 as the second of five children and grew up in a small village in the French countryside during the two oil shocks and the ensuing economic crisis. I recall very well how my father told me at one point in the past that fuel would cost 2 dollar per liter one day – and I can still see him insulating our house because oils was becoming so expensive. Now I realize that my father's past predictions have become true. Now as a mother of three kids I am the one who makes predictions on the end of oil and the transition to renewable energy.

What has it been like so far working with IRENA?

Working for IRENA will be a long journey. There are summits and valleys that we have to cross. To me it is like having a fourth child: Many sleepless nights and many moments of joy.

The decisions at Copenhagen would have had phenomenal impact on the activities of IRENA. In your own views, why do you think the event failed?

Well, I think it did not fail completely. We have an agreement on financing. This will enable many countries to deploy renewable energies nationally even though a global consensus on CO2 reductions is still missing. Countries have to realize, and some already did, that introducing renewables is not a burden but rather a pleasure. We have to stop using the expression burden sharing and use opportunity sharing instead. Using renewables has so many positive side effects in terms of job creation, emission reduction, energy security and energy equality.

How many signatories do we have with IRENA and what has the support been like with the respective governments?

141 countries plus the EU have signed the Statute of IRENA. Many of them will send experts to work with IRENA for a certain period. I am very much looking forward to building a multinational team here in Abu Dhabi. IRENA will profit immensely from the expertise our future colleagues bring to IRENA from the different corners of the world. We can also witness a very strong commitment from our host

country, the United Arab Emirates. They want IRENA to succeed in its work and are supporting us very much.

The agency is to be responsible for renewable energy evangelism. One of the key fuel for development of that is data. Do you have a framework for generating data especially in developing economies? In 2010 we are cooperating with the IEA and the United Nations in order to better understand the energy situation in each of our member states. We need to gather sound information, statistics and data on the potential of renewable energies all around the globe. This is why IRENA is starting already now to collect renewable energy related data. You are right – the basis of good advice is a reliable data base.

As you have realised, we are from Nigeria. In simple terms how would you describe the relevance of the activities of IRENA to the person on the street in Nigeria? Nigeria is an oil producing country but we all know that there will be an end to oil. Even now, the oil that is drilled in Nigeria does not guarantee access to energy for all Nigerians. IRENA has been founded to help its members utilize the potential of renewable energy that is always there, in every country around the world. Renewables can be harvested at every doorstep.



In a few words, what are your key goals for 2010?

I want to recruit a multicultural, international team here in Abu Dhabi to implement IRENA's Work Programme for 2010. When recruiting, we have been starting with the support functions like human resources, IT and finance but will now turn towards the upper management. At my nomination half a year ago, I made the commitment to staff IRENA with 50% women. I owe this to my grandmother who passed away only two days after I was elected Interim Director-General of IRENA. She was a member of the governing council in a city in France. She studied physics, raised nine kids and was active in politics. And she was an ecologist before anybody knew about green political parties.

How involved are the countries from developing economies at this time? They are extremely involved. They have high expectations and many see renewable energies as their future. But there are still obstacles that have to be overcome, especially in the field of human resources, technologies and financing. This is where IRENA comes in. We have been founded by our members to help them overcome these barriers.

We are told that the Kingdom of Tonga has turned to IRENA for help in the development of its power infrastructure. Can you tell us a little bit about that? Tonga seeks advice on tailor-made policies to power its remote islands in a sustainable way. A number of islands within the Kingdom of Tonga are lacking basic electricity supply and they do not want to turn towards expensive grid-extensions. Together with Tonga, IRENA will chart out a renewable energy based strategy to power the main and outer islands. We are cooperating with the World Bank on this. The strategy focuses on Solar Home Systems that turn individual households into small power plants. It is a dream today but in the future it can be a reality for many other countries like Tonga.

As a busy person with such a schedule, how do you relax?

I go jogging in the morning, I look at the sun and the sea that is very close to where I live and listen to the silence.

Finally, is there anything you would like to add?

I want to call on women to help achieve the global energy transition. Women are the pillars of society - this holds true especially in Africa. I count on women to speed and scale up the renewable energy revolution. At the end of the day it is about the future of their children and grandchildren. ☺

RenewableEnergy

MASDAR: Driving Future Energy Postulations



ABU DHABI – Targeted as an ambitious hub for science research, entrepreneurs, sustainable developments and clean energy, MASDAR has announced plans to go a step further with confirmed plans to capture its first carbon emissions from a steel plant in 2012. It is a project that will both reduce carbon emissions in the area and increase oil production..

In addition, the Abu Dhabi based institute will with officials to concretize a policy by the end of 2010 to work carbon capture storage (CCS), into the city's power production model. Thereby attracting private investors and serving as a de facto role model.

In the words of Sam Nader, a Director with the institute, "MASDAR will be working as a think tank with different policy makers this year on proposals," Nader said in an interview at the World Future Energy Summit. "There should be economic incentives for power producers, and for that, there needs to be regulatory policy."

As the firm driving Abu Dhabi's clean energy drive and building its flagship carbon-neutral city, MASDAR has signed an agreement with the government of Alberta, Canada to share research on CCS initiatives. Under the project's first phase--which will cost at least \$2.5 billion--MASDAR will capture 5 million tons of carbon by the end of 2014.

The thinking is for MASDAR to sell carbon gas emitted from industrial plants--initially from three sites--to state-owned Abu Dhabi National Oil Co(ADNOC)., which would pump it into oil reservoirs to maintain pressure and increase oil production.

"We are working in close cooperation with them, technically and commercially," Nader said. "Before we go into major EPC [engineering, procurement, and construction] on the plants, we have to finalize a contract based on carbon offtake."

MASDAR, already runs a pilot carbon injection project with ADNOC at the Rumaitha oil field. One ton of carbon pumped into a reservoir could yield



Renewable Energy

carbon gas into oil reservoirs. The pipeline's design will be finalized by the second quarter of the year, with approval to award EPC contracts likely this year, Nader said.

The new pipeline network, and equipping three existing plants to capture emissions, requires a capital expenditure of about \$2.5 billion, Nader said. Masdar is talking to partners and will award the technology contracts in the first half of the year, he added.

Its first capture will be 800,000 tons of carbon from the state-owned Emirates Steel plant carbon by the end of 2012. Masdar will also capture carbon at two power stations in Taweelah, first from a plant operated by Taweelah Asia Power Co., and by the end of 2012 at an Emirates Aluminum plant.

Masdar will also capture 1.7 million tons of carbon from a fourth site, a planned \$2 billion hydrogen plant it is building with British Petroleum in Shuweihat. "Retrofits are costly, so we'll definitely focus on planned sites after this phase," Nader said.

The project aims to capture more than 90% of a plant's emissions, in a move that will help Abu Dhabi--one of the world's highest per capita carbon emitters in the world--boost its green credentials. Abu Dhabi is the world's third-largest oil exporter.



the region once the emirate's CCS network is in place. "Hopefully, in 20-years time, we create a market for itself," Nader said.

"The fact that we have the oil industry here, and that oil companies are interested in boosting their production, only increases the strategic aspect of building a CCS network in Abu Dhabi," Nader said.

The Abu Dhabi government introduced its carbon capture plans two and a half years ago as part of a larger strategy to build a green industry and wean the economy off oil.

Abu Dhabi plans to almost quadruple its power generation capacity from six gigawatt to 23 gigawatt by 2020 to meet soaring demand. While some of that will be met by planned nuclear power plants and renewable energies, "the rest has to come from fuel," Nader said. ☹

between 1.5 and 3.5 barrels of oil, according to estimates.

MASDAR could also sell the carbon across

OIL
Masdar will build a 500-kilometer pipeline network across the emirate to pump the



The Roadmap to electricity deregulation in the Irish energy market

The Irish retail electricity market has undergone considerable positive changes in the last 18 months. Recognizing the increased level of competition and changing market dynamics in all market segments, especially in the past 18 months, the Commission consulted on proposals to deregulate the retail electricity market in December 2009. In its review, the Commission set out a number of proposals to define a roadmap which would set out the milestones for the deregulation of the electricity market that would see electricity prices for Irish electricity consumers being set by competition rather than by regulation. The objectives of deregulation are to increase choice for Irish consumers, provide further downward pressure on retail prices and stimulate innovation in new retail products.

That process of consultation has resulted in a set of key decisions which will lead to a work programme of significant change to the Irish electricity market. These decisions have been arrived at following extensive consultation with the Commission's stakeholders; electricity industry players in Ireland and Northern Ireland, the Northern Ireland Utility Regulator and the Single Electricity Market Committee, and other relevant state agencies (including MABS, the National Consumer Agency and the Competition Authority), business representatives, consumer groups and relevant expert research groups (including the ESRI). The

Commission has also engaged with the Department of Communications, Energy and Natural Resources (DCENR) in discussions on the legal requirements for price regulation. The conclusions in this report also incorporate the findings of direct market research on the experience and awareness of the retail electricity market amongst domestic and business consumers.

The consultation paper set out proposals for defining relevant retail markets and assessing the level of competition in each market in terms of its suitability for deregulation. This paper examined the relevant barriers to market entry, expansion and exit which could potentially constrain the development of competition in each of the defined markets. A number of specific quantitative thresholds for market concentration were proposed for the determination of the level of competition in a particular market. The consultation also sought the views of stakeholders on the proposals for the mechanisms of review, the sequence of deregulation where it applies to different markets and the interim arrangements that would apply until such time as all markets were deregulated. The consultation suggested the need for post-deregulation market monitoring and potential special protections for vulnerable customers in a deregulated market.

The Commission has defined 4 separate relevant markets, currently limited to national boundaries; Large Energy Users,

Medium-Sized Business including Public Lighting, Small Business and Domestic. In light of significantly reduced market shares of the incumbent supply company and the extremely high levels of switching, the Commission has concluded that barriers to competition are sufficiently low that deregulation can be considered for all markets.

The Commission has decided to continue with the phased deregulation of the electricity retail market and has determined the following as the appropriate criteria to decide on the deregulation of the specific market:

- (i) There are at least three suppliers active in the relevant market; and
- (ii) There is a minimum of 2 independent suppliers, each of which has at least 10% share of load (GWh) in the relevant market; and
- (iii) ESB PES and ESBIE combined serves or will serve within a specified period a defined percentage of consumption market share in a relevant market. For each of the Business markets, the percentage market share is 50% or less. In the Domestic market, the percentage market share is 60% or less.

There are two additional requirements for the Domestic market. First, switching rates must be greater than 10%. Second, ESB must provide the Commission with a satisfactory commitment for the rebranding of ESB supply companies prior to the deregulation of the domestic



market. Thus de-regulation at a market share of 60% is conditional on ESB undertaking to remove the ESB brand from the retail market.

Given the rate of change in the market with very high levels of customer switching, the Commission is mindful of the need to avoid regulatory overshoot by removing price controls when thresholds are met without undue delay.

Therefore the Commission is proposing a quarterly forward looking analysis which provides clear signals to the market. Where thresholds have been met at the time of the quarterly review, deregulation will occur with immediate effect, subject to legislative changes. Where thresholds have not been met at the time of the review, a six, three and one month forecast based on average consumption will be made to indicate to industry when deregulation will happen.

The Q1 2010 review will be published in parallel with this paper with further reviews each quarter.

All markets will be assessed on their own merits, so that should one or all of the business markets become eligible for deregulation, the Commission has decided that ESB PES will serve both regulated and unregulated customers. This raises some concerns with respect to cross subsidisation and as such the Commission will require ESB PES to demonstrate that separate accounts are held for both business books.

The continued success of the retail market and the further development of competition post deregulation will continue to be of the highest priority. With this in mind the Commission will

continue to monitor the market closely, publishing biannual retail market monitoring reports. These reports will review;

1 With no common parent company shared with other suppliers

- Number of suppliers
- Market Share (GWhs) for all suppliers
- Level of Switching
- Revenue data for all suppliers
- Range of tariffs on offer and average prices paid by customers by tariff for all suppliers

Subject to these reviews, should the Commission conclude market dynamics have changed such that if competition and consumers in a given market have been negatively impacted, the Commission will take steps to remedy those market failings. In the first instance, the Commission will adopt a more light handed approach, but consideration will be given to the re-regulation of any market where that is deemed appropriate.

As competition has been established for longer in the business markets, where market research indicates that consumers are more informed about their choices in terms of supply, the Commission has concluded that business customers are driving active switching in all markets. However the Commission agrees with the many respondents who advocated a higher duty of care to domestic customers.

In spite of the unusually high level of switching that continues to be observed in the market there is an acknowledged

group of customers who are less likely to switch and therefore may be excluded from the potential benefits of competition.


In addressing this, the Commission is exploring measures to encourage greater market engagement and stimulate competition. This will include liaising with the Dept. of Social Protection on alternative options in relation to the administration of the Free Electricity Allowance, including the possibility of competitive tendering for supply to these customers.

The Commission notes that this document is not exhaustive. While this paper sets out the core decision on the roadmap, some of the final details of the implementation of this significant programme of work for the deregulation of the electricity market will require further consideration and consultation in the following keys areas;

- Competition review
- Changes to legislation / statutory instruments
- Consumer issues consultation
- Commitment from ESB with regard to the brand

The Commission will consult on a number of customer protection issues including the following:

- Application of the Universal Service Obligation²
- Application of the Supplier of Last Resort³ obligation.
- Application of the Non-discrimination obligation.
- Treatment of vulnerable customers.
- Improving general customer awareness
- Encouraging active market participation among all sectors of the domestic market.
- Improving price transparency.

Wholesale market liquidity, the potential re-integration of ESB generation and supply into one business, global aggregation and the strength of the ESB brand were amongst the issues raised by respondents. With the exception of the branding issue, the Commission is satisfied that all of these issues are currently being addressed in parallel work streams and as such are outside the scope of this decision paper. The SEMC is currently preparing a review of liquidity and market power in the SEM and the impacts ESB deregulation would have on the current arrangements. A consultation on this matter will be published in the summer. 

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Business opportunities in the Upstream & Downstream Nigerian Oil & Gas Industry. For more information, kindly contact: editor@energiatoday.com

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 3) Drill collar 10,000 pieces/year

1) Aravind Prasad is the Chief Executive Officer of Evolgence Energy, a startup firm looking for joint venture collaboration with energy companies across the globe. Any Joint venture consultants or energy companies are welcome. So are mutually beneficial business opportunities in the Power Sector both generation and distribution sectors.

2) Roger Dago is an Associate Director at Executive Development Africa. The firm provides Coaching to Board Members & Top Executive to improve company performance through Business Development. Roger has worked in the oil & gas industry for a number of years at various positions starting as a Credit Manager as well as Senior analyst in the planning and strategy team of Africa. His strengths are in the downstream business and has maintained strong contact with the petroleum industry. He will be pleased to




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exchange with anyone or provide his experience/expertise to any organisation.

3) Silvano Coletti is a global investor and business developer mainly focussed on clean/renewable energy initiatives. He is managing CHELONIA SA, the Swiss investment and advisory firm. He has founded and

managed operations in solar, wind and biomass projects. he studied engineering and joined executive MBA at Harvard Business School. He is actually working on applications designed to provide power utilities innovative solutions to address the barriers of integrating large amount of non-dispatchable power generated by renewable energy sources like wind and solar.



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