

SIEW 2011

SECURING OUR ENERGY FUTURE

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The world is on track to have 20 carbon capture and storage (CCS) projects by 2020, despite the high-profile cancellation of \$1.5 billion in funding for a British plant last month, a leading industry proponent said on Wednesday.



Ambassador Burhan Gafoor, Singapore's Chief Negotiator for Climate Change, addresses the Carbon Forum Asia at SIEW 2011. Credits: Energy Market Authority of Singapore (EMA)

Carbon Market has Key Role in Managing Climate Change

THE Carbon Forum Asia can send a strong global message, before the upcoming Durban conference, that the carbon market can make an important contribution to the task of managing the challenge posed by climate change.

Ambassador Burhan Gafoor, Singapore's Chief Negotiator for Climate Change, made this point at the opening of the Carbon Forum Asia (CFA) 2011, which is held as part of

Singapore International Energy Week (SIEW).

He noted that in the past five years, Carbon Forum Asia has become the leading event in the Asia Pacific for players in the carbon and energy markets.

"We begin our conference today at a moment of great challenge for the global economy. The outlook for the global carbon market is also very grim," he said.

Earlier this year, the World Bank made a stark assessment, which is that global carbon markets have stalled after five years of consecutive growth. There is the added uncertainty about the future of the Kyoto Protocol and the flexibility mechanisms.

He urged delegates to take a longer-term view of carbon markets as in the medium to longer term, there are reasons for cautious optimism about the global carbon market.

(continued on next page)

Ambassador Burhan, who was Ambassador and Permanent Representative of Singapore to the World Trade Organization (WTO) and to the United Nations (UN) in Geneva, from 2004 to 2007, gave three optimistic reasons:

■ First, the Cancun Agreements started a process of mitigation actions by both developed and developing countries which bode well for the carbon markets. Under the Cancun Agreements, all developed countries have pledged to reduce their emissions. This is complemented by the nationally appropriate mitigation actions of developing countries.

■ Second, the large majority of developed and developing countries want the global carbon market to continue. In fact, a specific decision was taken last year for the emissions trading and project-based mechanisms under the Kyoto Protocol to continue.

■ Third, the interest in the carbon market is growing. The EU remains the pioneer in this field and has extended its emissions trading scheme (ETS) beyond 2012 regardless of the outcome of the international negotiations. The California cap-and-trade system will also be operational in 2012.

He said: "Singapore has always strongly supported the role of the global carbon market. In Singapore's view, the Conference of Parties in Durban must send a strong signal to the international community that the carbon markets will continue post-2012. In particular, we need a clear signal that the Kyoto Framework will continue and that the flexibility mechanisms will not only continue but they will also be improved."

But he was pragmatic to note that the idea of a universal carbon market covering all the major players is still some time away.

"We are far from concluding a legally-binding global agreement on climate change. The reality is that we will have a fragmented carbon market



Volunteer coordinator for Greenpeace Raquel Munoz assists scouts as they assemble a wind turbine during a workshop in Durban ahead of the 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change (UNFCCC).
REUTERS/Rogan Ward

that will grow and expand in a bottom-up manner," he said. "In such a scenario, we need to develop common rules to govern the carbon markets between regions and between economies."

Singapore provides a good platform for carbon services companies to build and expand their businesses in the Asia-Pacific region, he added. Singapore is home to nearly 600 financial institutions and many of the major carbon market players already have a presence here. South-east Asia, too, remains an important source of carbon credits after China and India.

President of the International Emissions Trading Association (IETA), Mr Henry Derwent, said many developing countries, particularly in Asia, are ready to embrace emissions reduction objectives, and to use trading as part of the policy toolkit, simply because it works.

"Cutting emissions can be made into a business proposition. Asia has learned from the CDM just how good the business can be, and how effective are the results. As we stand on the threshold of a new phase in global climate policy, with new actors appearing on the stage, Carbon Forum Asia will continue its job of bringing the news, the analysis and the participants

together in one place," he said.

Chairman of Sustainable Energy Association of Singapore (SEAS), Mr Edwin Khew, said: "This is the beginning of an exciting and perhaps long journey for SEAS and Singapore to develop into a major regional centre for sustainable energy and carbon trading... Singapore will meet its key objectives of being a centre for sustainable energy technology and solutions financing and also carbon trading."

More than 1,000 participants from close to 50 countries are attending CFA 2011 and, over two days, will discuss the key issues and topics surrounding three key themes: Markets & Policy, Energy & Tech and Finance & Mechanisms.

Close to 120 speakers from key global and regional organisations, such as China CDM Fund, Japan Bank for International Cooperation, National Development and Reform Commission of the People's Republic of China (NDRC) and Tata Quality Management, World Bank East Asia & Pacific, Alstom Power and the Asian Development Bank are involved in the discussions.

The Carbon Forum Asia Trade Fair has attracted close to 100 international companies and organisations from 50 countries.

Robust Emerging Mkts Fuel Demand to Weigh on Supplies

By JESSICA JAGANATHAN and FLORENCE TAN

STRONG fuel demand growth from emerging economies will strain global supply and keep energy prices high even if demand from developed economies contracts, participants at a Singapore energy conference said on Tuesday.

Demand has grown to 87 million barrels per day from around 84 million bpd in the past five years despite the 2008 financial crisis and ensuing recession. Emerging nations such as China and India have ensured a steady increase in consumption over a good part of the decade.

To meet demand and to compensate for the decline in output from existing fields, the world would have to add between 40 million barrels per day and 65 million bpd in new crude output capacity in the next 10 years.

"There are 800 cars for 1,000 inhabitants in the U.S., 50 cars for 1,000 inhabitants in China," Jean-Jacques Mosconi, senior vice president, strategy and business intelligence at TOTAL, said during the conference. "It's a huge gap."

China's oil demand growth next year is unlikely to revisit the blistering pace of 2010 but at around 6 percent it will still be enough to underpin oil prices even as developed world economies struggle.

The world's No.2 fuel user is adding more refining capacity and storage tanks to feed an economy expected to grow at 9 percent or faster.

"There will continue to be some form of recovery in spite of all the fears of recession," Tan Hoon Tee, a senior



A man works on an oil rig at Sinopec's oil field in Dongying, China. REUTERS/Aly Song

adviser at McKinsey. "What we do know is that from those fundamentals, oil prices will remain supported."

Brent prices will average \$106.80 per barrel next year and \$108.60 in 2013, a recent Reuters poll of 35 analysts showed. Brent has averaged over \$111 a barrel so far this year, sharply up from an average of around \$80 in 2010.

But oil prices above \$100 per barrel are a threat to the global economy and current prices are already having an impact, Richard Jones, deputy director of the International Energy Agency said. A fuel burden with imports costing around 5 percent of gross domestic product starts to weigh on growth.

"It is already having an impact," Jones said. "An oil burden of more than 5 percent of the gross domestic production is worrying. The last time

we saw that was in 2008, and we all know what happened."

Jones declined to give an outlook for prices for 2012, but said that it should be at a level conducive for further investments and which ensures consumers are not hurt.

To meet rising demand, governments must ensure that they put in place the right policies to encourage new sources of energy to develop a play a bigger role in the overall mix, Nobuo Tanaka, former executive director of the IEA, said.

"A lot of countries are increasing investments in renewables," Tanaka said. "But there is still some time before renewables can start to play a significant role in the energy market. Government policy is important."

(Editing by Manash Goswami)

GAIL India Eyes \$1 bln Shale Gas Assets

By EVELINE DANUBRATA and HARRY SUHARTONO

STATE-RUN gas utility GAIL India aims to invest \$1 billion in one year's time in shale gas assets, particularly in the United States and Canada, its chairman and managing director said on Wednesday.

B.C. Tripathi said that optimistically, the company could make an investment, or acquisition in the next six months.

"Shale gas is the future of natural gas because shale gas is going to be one of the major sources of supply. The way it has happened in the U.S., probably there's large potential for shale gas in India as well as in China," he told Reuters.

"Going forward, we expect investments of almost \$1 billion in the shale gas assets in U.S. and Canadian markets in the next one year from now."

In September, GAIL said it had agreed to buy a 20 percent stake in one of Carrizo Oil & Gas Inc's shale gas assets in the United States and would invest a total of \$300 million over the next five years.

GAIL's plans come after Reliance Industries, India's top private sector firm, last year sealed three shale gas joint ventures in the United States, including a \$1.7 billion deal with Atlas Energy to own 40 percent of its Marcellus Shale operations.

Tripathi said in October that GAIL, which planned to open an office in Houston on Nov. 1, aimed to consolidate its presence in shale gas assets in the United States, and use the expertise for exploration in India.



Workers prepare to change drilling pipes on the rotary table of a natural gas drilling rig in the United States. REUTERS/Tim Shaffer

India has pushed back plans to unveil its shale gas exploration policy to next year, Oil Minister S. Jaipal Reddy had said.

Tripathi said he expects the company, which has a market capitalisation of around \$11 billion, to maintain the strong growth momentum in its revenue and profitability due to resilient demand for gas in the market.

"We have seen a growth of almost 20 percent both in our topline and bottomline. We expect that a similar momentum will continue in the remaining quarter as well because the market sentiment and demand numbers are quite encouraging at this moment in time," said Tripathi, who is in the city-state for the Singapore International Energy Week.

Shale gas now makes up one quarter of all U.S. natural gas production and

the Energy Information Administration forecasts this proportion to double by 2035.

Shale gas, which has four times the potential of conventional gas, can be extracted from soft finely stratified sedimentary rock that formed from consolidated mud or clay, by creating small cracks in underground rock formations.

Apart from the expansion in shale gas market, Tripathi said GAIL is aiming to boost its transmission pipeline network in India to 15,000 km by 2014 from 8,800 km currently.

GAIL share price traded nearly 1 percent lower on Wednesday. It has declined by around 18 percent since the start of the year.

(Additional reporting by Anuradha Kanwar Budhraj; Editing by Ramthan Hussain)

India Solar Power Costs could Fall by 40 pct by 2015



A labourer cleans solar cells on a window in Kolkata, India. REUTERS/Parth Sanyal

By RANDY FABI

INDIA'S solar power costs could fall by more than 40 percent by 2015, allowing the industry to compete against domestic oil and gas firms without the help of state subsidies, the head of Lanco Solar told Reuters on Wednesday.

Solar technology could provide a kilowatt hour of power at about 7 to 8 rupees a unit in the next few years, down from the current 11 to 12 rupees, due to surging global capacity, said Lanco Solar CEO V. Saibaba.

That would enable solar power to become a more viable option to coal, which costs around 2 rupees a unit, in fueling Asia's third largest economy and the world's third-worst carbon polluter.

"The most important thing is the economics of scale are coming," Saibaba said on the sidelines of an

industry conference. "In the next three to four years, I see the solar power costs coming down to 7 to 8 rupees a unit."

Under its Solar Mission plan issued in 2009, India is to produce 1,300 megawatts (MW) of power by 2013 and 20 gigawatts by 2022 at an overall investment of about \$70 billion.

Lanco Solar, a unit of Lanco Infratech, is one of 37 companies selected by India last year to build solar power projects, as the country looks to boost production from near zero.

"Given the current scenario with the way it is growing and the way costs are coming down, our industry will probably not require any financial support from the state going forward in maybe three to four years," Saibaba said.

Lanco Solar has secured several state projects, including a PV module-producing plant in Chhattisgarh and solar power generation plants in Punjab. It hopes to boost its solar capacity to 500 MW in three years.

(Editing by Michael Urquhart)



Workers walk in between rows of solar photovoltaics, after cleaning them, inside a solar power plant at Raisan village near Gandhinagar, in the western Indian state of Gujarat. REUTERS/Amit Dave

Asia '12 Refining Profits to Fall on New Capacity, Cooler Demand

By SENG LI PENG

ASIAN refiners could earn as much as 20 percent less in 2012 from processing a barrel of crude into fuel than this year's average, as they get pinched between new additions to capacity and expectations of slowing global demand growth.

Reduced earnings may mean complex refineries that are able to process cheaper heavier crudes into cleaner burning fuels will benefit at the cost of older, simpler plants that need more expensive higher quality oil to make such products. Tighter margins for the simpler plants could force them to cut output.

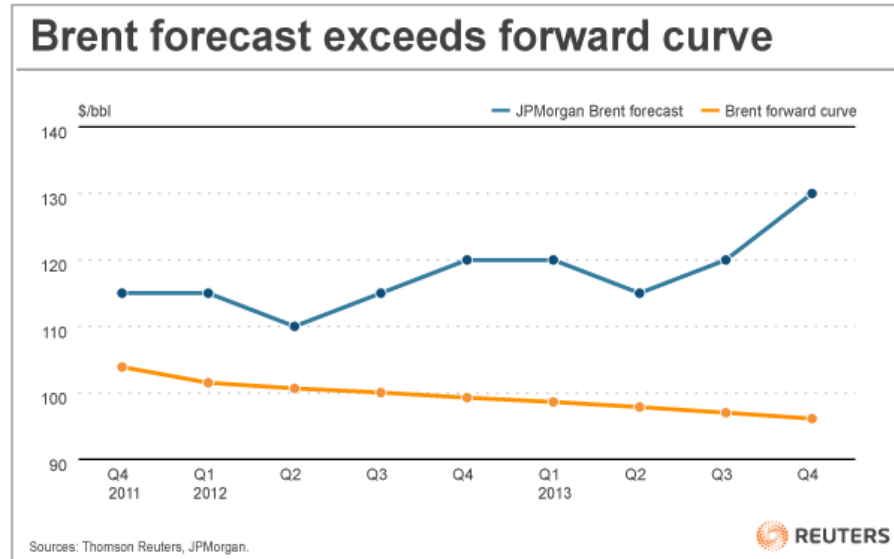
A prolonged decline may also bring delays to expansion plans, threatening to squeeze supply in years to come.

Industry executives are already cautioning against expansion of plants, particularly those exporting their output, in a sign the outlook is turning bleak. Some may get into petrochemicals to offset reduced earnings as refining margins slide.

"The refinery business is not a piece of cake anymore," Bhavana Suphailai, president, PTT Energy Solutions, said at the Singapore International Energy Week.

"The trend, moving forward, will be for refiners to look for partnerships with petrochemical companies."

China and India were exceptions



since they were adding refinery capacity in a bid to become self-sufficient, she added.

Asian refining margins measured against Brent crude may be around \$7 to \$8 a barrel compared with around \$8 to \$10 this year, says Sonia Song, HSBC's Asia head for oil and gas research. This is based on estimates that the average price of Brent crude is around \$90 a barrel in 2012 and \$110 this year.

Energy consultancy JBC Energy expects margins against Dubai crude to be down to an average of \$4.00 a barrel next year from \$6.00 a barrel this year.

For now, the industry is banking on China's gasoil demand to help support margins. Rising local consumption in the world's second-biggest economy is restricting exports, partly helping

to push diesel cracks, or profits from producing the fuel, to \$24 a barrel in April, the highest since 2008.

"Gasoil will remain the margin driver in Asia next year," said Vienna-based David Wech of JBC Energy. "China is expected to be the single largest contributor to global gasoil demand growth."

Gasoil is part of a group of refined products known as middle distillates, which accounts for around 30-40 percent of a refinery's output and is generally the most profitable segment.

Supplies of most other fuels such as gasoline, naphtha or fuel oil are expected to be ample, offering limited support to overall refining margins.

REFINING MARGINS

"Gasoline does not have as much upside as diesel because of the surplus

in the Atlantic Basin," said Wood Mackenzie analyst Sushant Gupta. "That would have some bearing on the crack spreads."

Several events helped keep refining margins firm this year -including reduction in exports from China and Japan to outages at two major refineries in the region.

Those margins will come under pressure as refiners expand in 2012. Asia is expected to add 900,000 bpd of refining capacity, mainly in China, next year and 100,000 bpd in the Middle East, according to Zhang Liutong, a Singapore-based senior analyst at FACTS Global Energy.

"In 2011, not much net refining capacity was added, with estimates at around 430,000 bpd in Asia and 110,000 bpd in the Middle East against relatively strong demand," Zhang said.

"As capacity additions are projected to slightly outpace demand east of Suez in 2012, refining margins are likely to ease from 2011."

Wech of JBC is also expecting capacity addition of about 840,000 bpd next year.

"In 2010, Asian refining capacity rose by 3 percent year-on-year to reach almost 28.2 million bpd. In 2011, there was a relative slowdown in capacity additions, with growth seen at 2 percent year-on-year," said Wech.

"Next year, we anticipate Asian capacity to increase by 2.9 percent to hit 29.56 million bpd compared to global refining capacity expansion of 1.7 percent."

DEMAND OUTLOOK

A weakening global economic outlook will also weigh on margins, analysts said.

The International Energy Agency, an adviser to 28 industrialized countries, last month cut its global fuel demand growth forecast for 2011 by five percent, or 50,000 barrels per day, to 990,000 bpd. Next year, the IEA said, world oil consumption will expand by 1.25 million bpd, or 160,000 bpd less than previously expected.

Oil producing group OPEC cut its global oil demand growth forecast for a fourth consecutive month, citing an economic downturn in developed countries and efforts by China and

India to curb fuel consumption.

China's oil demand growth next year is unlikely to revisit the blistering pace of 2010 but is expected to come in at around 6 percent, similar to 2011.

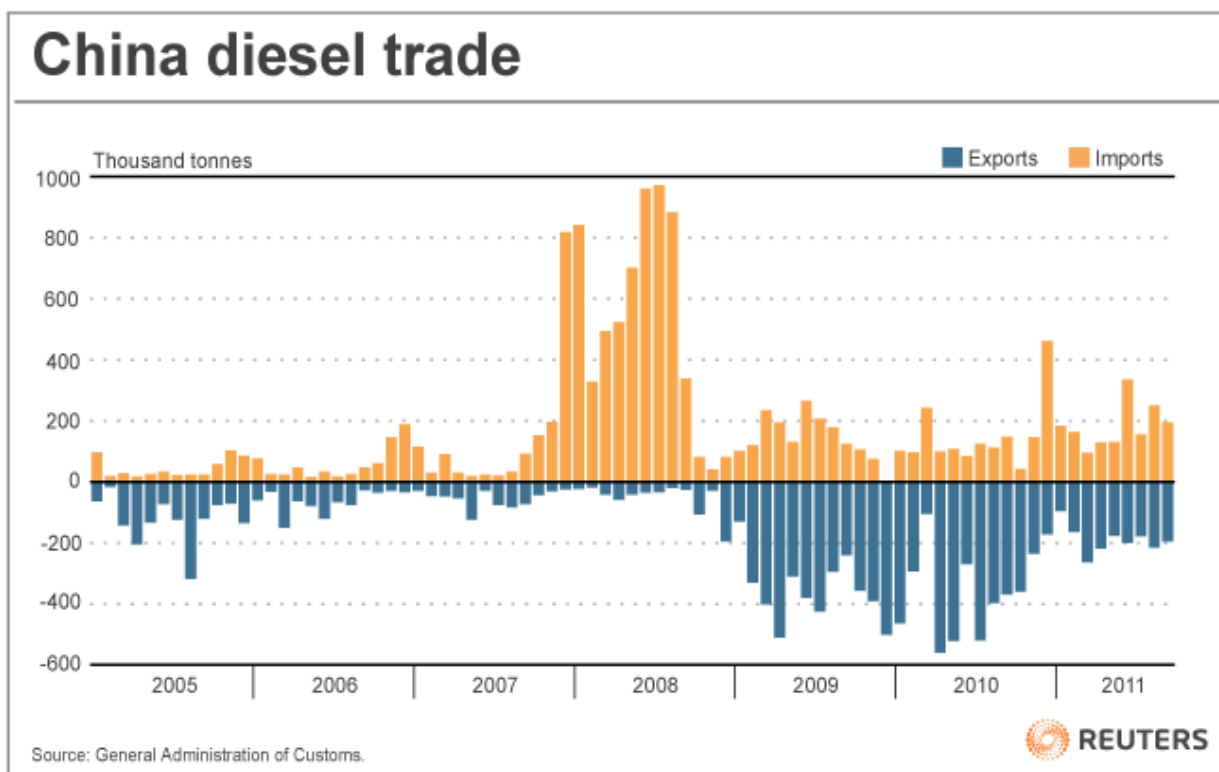
Asian refining margins benefitted from a series of supply shocks this year. China, a top exporter to the region, stalled shipments late in 2010 to meet a spike in domestic demand triggered by a power shortage that prompted the use of diesel in small generators.

While the market was still recovering from the disruption to Chinese exports, the March earthquake in Japan crippled refineries there and cut supplies from Asia's second-biggest exporter of the fuel.

At the end of July, Taiwan's Formosa refinery, Asia's fifth-largest, was shut after a fire, and another fire in late September at Royal Dutch Shell's Singapore facility forced the closure of the company's biggest oil processing plant, capable of processing half a million barrels of oil per day.

(Additional reporting by Jessica

Jaganathan and Lee Yen Nee; Editing by Clarence Fernandez and Manash Goswami)



Reuters graphic/Catherine Treveltham, Christine Chan 24/10/11

LNG Spot Trade to Thrive Despite Tighter Supplies

By FRANCIS KAN

MORE flexible liquefied natural gas (LNG) supply contracts that allow for unsold cargoes to be diverted to the spot market will help boost trading of the fuel, said the chief executive of Singapore's upcoming LNG terminal.

Singapore is building a 6 million tonnes per year (tpy) regasification facility primarily to meet growing domestic demand for power, but also as a platform to facilitate spot trading as more LNG traders set up operations in the city-state.

"The spot market for LNG now account for 20 percent of world trade, up from 10 percent," said Neil McGregor, CEO of Singapore LNG in an interview with Reuters at Singapore International Energy Week. "One positive development for spot trading is that there are increasing amounts of divertable LNG, where there was none previously."

This development will help ease concerns that tighter supplies expected over the next few years due to strong Asian demand may dampen spot market trading, he said, as most consumers try to lock in supplies through long-term deals.

In the longer term, rising shale gas exports from the United States could also add to supplies for trading, he added.

Last week, BG Group became the first company to seal a U.S. LNG export deal when it signed a 20-year agreement to source gas from



A rendering of the secondary jetty of a liquefied natural gas terminal in Singapore, due second quarter of 2013. REUTERS/Handout/Samsung C&T Corporation

Cheniere Energy's upcoming LNG export terminal at Sabine Pass in Louisiana.

The Singapore terminal, being built on Jurong Island, is 60 percent complete, with two tanks due to be operational by the second quarter of 2013, said McGregor. A third tank will be completed a year later.

The Singapore government is prepared to build more tanks if needed for spot trading as power utilities seek to boost output by using the fuel to meet local demand, said S Iswaran, second minister for trade and industry, in an interview with Reuters earlier this week.

In the longer term, the terminal

could be used to supply LNG as a marine fuel, McGregor said.

"We think it has good prospects to eventuate in the 5 to 10 year horizon, but any utilisation of the LNG Terminal to support this activity will have to be commercially justified," he said.

(Reporting by Francis Kan;
Editing by Manash Goswami)

Global CCS Investment on Track, Despite Setbacks



A flexible tube for CO₂ is pictured in Spremberg, Germany, as part of Vattenfall's CO₂-free power plant. This is part of a pilot project for carbon capture and storage (CCS) – the first plant in the world that will take toxic emissions from coal and bury them in the ground. REUTERS/Hannibal Hanschke

By DAVID FOGARTY

THE world is on track to have 20 carbon capture and storage (CCS) projects by 2020, despite the high-profile cancellation of \$1.5 billion in funding for a British plant last month, a leading industry proponent said on Wednesday.

A report by the Global CCS Institute on Wednesday also says CCS can be a cost-effective tool to curb greenhouse gas pollution from coal and gas-fired power stations when compared with other low-carbon emission technologies.

CCS involves trapping carbon dioxide (CO₂) otherwise emitted by

fossil fuel power plants, and piping it underground for long-term storage in spent oil fields or aquifers. The technology is also used in the natural gas sector and fertiliser making.

CCS is not yet competitive for the power sector but governments and the International Energy Agency see it as a key way to fight climate change by trapping and burying greenhouse gas emissions, while maintaining stable energy supply.

While CCS is regarded as a part of the energy mix in coming decades, there are doubts about how quickly it will be adopted and the rate at which

the technology's costs will fall.

"Our view is a bit different," said Brad Page, CEO of the Global CCS Institute, which is backed by governments and industry and based in Australia.

"Our latest status report shows there are 74 projects in progress around the world today. There are 8 in operation and another six under construction. Of those, 6 are power projects," he told Reuters on the sidelines of the Singapore International Energy Week.

Another 12 would reach final investment decision over the coming year, with more than half of those power projects.



A worker at a pilot project for carbon capture and storage (CCS) in Spremberg, Germany. REUTERS/Hannibal Hanschke

"If they keep going at the rate they are then the 20 projects by 2020 will be realised," he said. He pointed to \$25 billion pledged by governments globally to support CCS.

The first two CCS projects for the power sector are under construction, one each in Canada and the United States, with these to earn money by using the recovered CO₂ for oil extraction and then pumping the CO₂ underground.

"The area that is a bit under-done at the moment is around steelmaking and cement where we are not seeing any investment," Page said.

MAJOR CANCELLATION

Costs, though, remain a major issue for cash-strapped governments.

A British government decision last month to withdraw funding for the country's first and most advanced CCS project at Longannet in Scotland has underscored critics' doubts that CCS can reach commercial scale by the end

of the decade.

Late last month, the government said it had dropped funding for the project that would have trapped emissions in a 330 megawatt unit but that the one billion pounds in subsidies would be dedicated to a different CCS project.

Projects have also been delayed or cancelled in Norway, Dubai and the United States. CCS also consumes large amounts of a power stations' energy, adding to costs.

The institute's report said it found hydropower and onshore wind technologies to be among the lowest-cost options for reducing emissions from the power sector. Once these technologies are fully exploited or in countries where they are not an option, CCS becomes very competitive, it said.

The cost of cutting or avoiding CO₂ emissions for a coal-fired power plant fitted with current CCS technology ranges from US\$23 to \$92 per tonne of CO₂ and is a little higher for natural

gas-fired power plants, the report said.

This compared to an avoided cost of \$90 to \$176 per tonne for offshore wind, \$139 to \$201 per tonne for solar thermal and more for solar photovoltaic, or PV.

Page was optimistic about China's move towards CCS.

"China has six projects that we can identify already. These are at earlier stages than others but they are also large and ambitious projects."

But he couldn't see major investment in CCS in Australia in the short-term, despite parliament's expected approval of carbon pricing scheme next week. The scheme starts July 2012.

He said a carbon price starting at A\$23 was not about to trigger huge investment in CCS to cut emissions from coal-fired power stations, which supply about 75 percent of the nation's electricity. "The cost gap is probably double that in Australia."

(Editing by Miral Fahmy)

SOLAR

Phoenix Solar Sets Up in Singapore



Solar panels are pictured on the Marina Barrage building, with the Singapore Flyer observation wheel and office and hotel buildings pictured in the background. REUTERS/Laurence SiMeng Tan

ANOTHER leading global integrated manufacturer of solar photovoltaic (PV) products has set up base in Singapore – the second over 48 hours.

Singapore-based Phoenix Solar Private Limited (Phoenix Solar), the Asia Pacific subsidiary of Germany-based Phoenix Solar AG, announced the receipt of Regional Headquarters (RHQ) status in Singapore, awarded by the Singapore Economic Development Board (EDB), for the Phoenix Solar Group's first regional headquarters operation outside Germany.

The announcement was made at the Marina Bay Sands Singapore Convention and Exhibition Centre in conjunction with Singapore International Energy Week (SIEW), and as Phoenix Solar celebrates its fifth anniversary in Singapore.

China-based Trina Solar Limited (TSL) had earlier yesterday announced Singapore as its choice as the Asia-Pacific operating headquarters to signal its growing presence and customer base in the region, to cover Singapore, Thailand, Malaysia, the Philippines, India, South Korea, Japan, Australia, New Zealand and also to the Middle East and South Africa.

"Phoenix Solar chose Singapore for its excellent connectivity in the

region, capable workforce, strong infrastructure and stable political climate," said Mr Christophe Inglin, Managing Director of Phoenix Solar Singapore. "It also has extensive academic and R&D capabilities, creating platforms for innovation and opportunities to test creative new concepts in the market."

He said the solar PV market in Asia is projected to experience double-digit growth rates over the coming decade. This will be driven mainly by increasing energy demand and economic growth, high consumer and political awareness of PV, coupled with proactive government policies. In India alone, the PV market grew 57 per cent in 2010 with further expansion plans to 2022.

The Economic Development Board (EDB) gave the thumbs-up to Phoenix Solar.

"We are pleased and excited that Phoenix Solar has chosen Singapore as its Asia Pacific headquarters", said Mr Yeoh Keat Chuan, Assistant Managing Director of EDB. "This is a strong vote of confidence to Singapore's attractiveness as an energy hub for the region."

Phoenix Solar Singapore's regional growth is on track and in tandem with Asian growth trends, said Mr Inglin. It recently completed a 207kWp car park canopy in the Philippines and is

constructing two power plants in Thailand of 9.7MWp and 6.2MWp. It also acquired three further projects amounting to 7.3MWp in India.

Mr Murray Cameron, Chief Operating Officer of Phoenix Solar AG, said he was proud of the success of the Singapore subsidiary.

"We see Asia as a critical element in the group's growth story, and the experienced and capable team we have here is well positioned to leverage on the developments in the region," he said.

The deployment of solar technology will result in multiple benefits for Asian economies, he added. These include the reduced dependence on conventional energy sources such as fossil fuels, ultimately leading to the reduction of greenhouse gases. Installing solar energy systems also creates local jobs, thus stimulating Asian economies.

Phoenix Solar Singapore was established in October 2006 as the Asia Pacific subsidiary of Phoenix Solar AG. The core management team has over 40 years of combined experience in the PV and renewable energy sector, knowledge which gives them a leading edge when providing long-term innovative solar energy products and solutions.

SOLAR

Singapore Plans Floating Solar Cell Project

THE leading global integrated manufacturer of solar photovoltaic (PV) products has set up base in Singapore – the second over 48 hours.

This was revealed after the installation of Singapore's first floating solar project at Tengeh Reservoir. It is the first of its kind in the region and has a system size of 2 megawatts (MW).

National Environment Agency chief executive Andrew Tan said he was optimistic that local solar adoption in Singapore "will continue to proliferate, driven by factors such as increased capabilities and innovation and government support".

In partnership with private sector companies, EDB and PUB will examine the cost effectiveness of these floating PV systems and ascertain the improvement in performance of the solar modules, due to the expected cooling effect from the water. PUB will also study potential secondary

benefits of these installations, such as reduced water evaporation and algae growth in our reservoirs.

Dr Beh Swan Gin, Managing Director of EDB, said: "This pilot project exemplifies Singapore's continuing efforts to overcome our resource constraints through innovative renewable energy solutions. The project also enables cleantech companies to address a sophisticated need, which if successful, can be scaled up and commercialised globally."

The announcement was made at the Solar Pioneer Awards Ceremony, held at the inaugural PV Asia Pacific Expo, as part of the Singapore International Energy Week (SIEW). At the ceremony, the inter-agency Energy Innovation Programme Office (EIPO), co-led by EDB and the Energy Market Authority (EMA), awarded a third wave of five private sector projects with the Solar Pioneer Award.

The award recognises solar installations in Singapore that are

pioneering in terms of system design, size and installation techniques, and help to build solar system integration capabilities.

The five projects are Keppel DHCS' District Cooling Systems Plant at Changi Business Park, Hyflux's Innovation Centre, GlaxoSmithKline Biologicals' plant, OUB Centre Limited's One Raffles Place Tower 2 and UOL Group's Upper Pickering Hotel & Office Development.

The EDB said system sizes of solar projects in Singapore have increased over the years. For example, Keppel DHCS' District Cooling Systems Plant at Changi Business Park, with a size of about 550 kilowatt-peak (kWp), will be Singapore's largest solar PV system on a building. These projects are also helping to build up capabilities throughout Singapore's solar ecosystem, comprising system integrators, architects, engineers, developers and technology providers.

ANNOUNCEMENTS – NOVEMBER 3

- Day 3 of Clean Energy Expo Asia, which will focus on Clean Energy Financing and Energy Efficiency
- The launch of EMART Asia which will feature speakers such as **Daniel Ahn, Director and Senior Strategist for Commodity Cross-Asset Strategy, CITI and Adjunct Fellow for Energy, Council On Foreign Relations, Hooman Peimani, Head, Energy Security & Geopolitics, Energy Studies Institute, Singapore and Apoorv Mathur, Advisor Strategy & Head of Risk Management, TATA Power Trading**
- For all solar energy enthusiasts, this is the last day of the PVAP Exhibition
- Smart Grid case studies from Singapore, Japan and Korea will be shared at Asia Smart Grid 2011.

