

Bloomberg BRIEF

Clean Energy & Carbon

NEWS, ANALYSIS AND COMMENTARY FROM
BLOOMBERG NEW ENERGY FINANCE

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CLEAN ENERGY & CARBON WATCH

CARBON. Australia, bound by one of the highest prices in the world for CO2 permits, would pay no more than EU emitters under a plan to link the two markets. Page 3

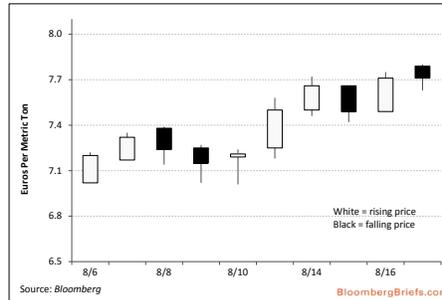
WIND. Dong Energy is buying 900 megawatts of offshore capacity for \$194 million – potentially a volume discount. Page 5

CLEAN ENERGY. The industry must endure growing pains before reaching maturity, writes Bloomberg New Energy Finance's Michael Liebreich. Page 10

CHINA'S CO2 MARKET. China wants to prevent some of the mishaps that have occurred in the EU market, says Alyssa Gilbert of Ecofys. Page 9

EU CO2 TO TRADE BETWEEN 7.30 AND 8.20 EUROS THIS WEEK. The market remains supported by utility purchasing activity and stronger German power. Page 8

EU CARBON PRICE PER METRICTON



MARKETS

	PRICE	WEEK CHANGE
Spot Polysilicon Avg. (\$/kg)	20.47	-4.35%
Corn (\$/Bushel)	7.78	+0.06%
Ethanol (\$/gallon)	2.7671	-0.57%
Palm (MYR/ton)	2751.00	+0.27%
Biodiesel (€/metric ton)	976.46	+5.57%
Front Month Brent (\$/bbl)	113.71	+0.67%
2013 ARA Coal (\$/t)	99.5	-2.36%
WIN12/13 UK NBP (p/th)	65.95	+1.00%
2013 DE base (€/MWh)	49.5	0.00%

Anglo, StanChart Look at Natural Capital Value

BY NICO TYABJI,
BLOOMBERG NEW ENERGY FINANCE

More than 50 countries and 86 companies, ranging from **Anglo American Plc** to **Standard Chartered Plc**, agreed at the Rio+20 sustainable development conference last June to consider the value of natural assets like minerals, timber and fisheries in their national accounting and business decisions.

Rachel Kyte, vice president and head of the sustainable development network at the **World Bank**, tells Clean Energy & Carbon Brief that “natural capital accounting” is “an issue that found a moment.”

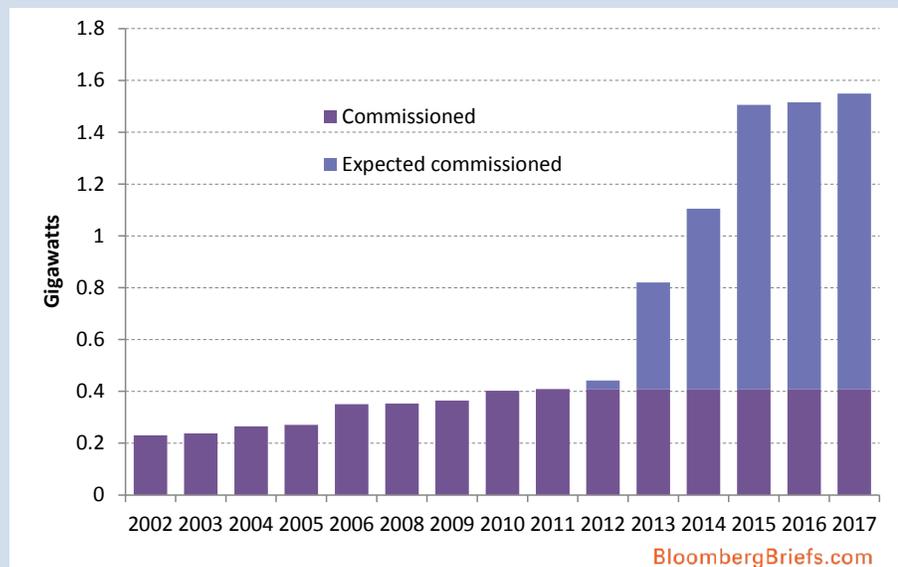
Q: What is NCA and why is it useful?

A: The world recognized decades ago that we were not valuing natural assets in the way that we value other assets. In our current economic models and systems, it's more difficult to make the case that they should be conserved or used differently. NCA has emerged from decades of research around how best to put a value both on natural assets and the services an ecosystem provides. This is not about replacing GDP – it's putting a different dataset alongside GDP that allows you to look at the value of those assets in total, and whether your planning decisions change as a result.

Q: Can you give us an example?

A: Think about flood protection provided by mangrove forests. In Thailand, the value of mangrove just for its wood content is around \$1000 per hectare. That would rise to about \$11,000 if you cut it back and use it for shrimp farming. But if you factor in the role it plays in flood protection, and the other ecosystem services and biodiversity it provides, then the mangrove is worth in excess of \$21,000 per hectare. That becomes a very important data point.

U.K. Waste-to-Energy Projects Could Hit 1.55 GW by 2017



Source: Bloomberg New Energy Finance

There are around 27 waste-to-energy projects in the U.K. with over 400 megawatts in total capacity. Total capacity could reach 1.55 gigawatts by 2017. See Insight on Page 13

ANGLO, STANCHART LOOK AT NATURAL CAPITAL VALUE...

You may be thinking about constructing manmade flood protection that would be enormously expensive – but would you rather put that effort into preserving the mangrove and gaining flood protection as well as other ecosystem services?

Q: Why is NCA on everyone's lips now?

A: At Rio+20, countries wanted to go home with something, and be able to show that they were doing something differently. NCA was an obvious step as the UN Statistical Commission had approved a standard methodology for valuing natural resource depletion in February. This conversation actually started in Rio the first time round, 20 years ago. In Rio this time, 57 countries (and now 62) agreed to start using NCA, as well as almost 90 companies. This built on the Gabarone Declaration championed by Botswana in May. It's an issue that found a moment, and the moment was to say let's stop talking about this and start doing it.

Q: What are the next steps for NCA?

A: The methodologies we have for valuing natural resources are robust but those for valuing ecosystem services are still a work in progress. The World Bank is doing a lot of the grunt work on this. We offer technical services to statistical agencies and governments to help them understand where they can use NCA and how it can help their economic decision making. We are engaging with the 62 countries that signed up, to work out who needs what kind of assistance, and want to convene them all next year to look at their progress, lessons learned, and continue to build the political momentum around the importance of this. Then the question – and lesson from countries like the U.K.,

Australia and Botswana that have already implemented some elements of natural capital accounts – is how you integrate them across planning and economic decision making. One of the reasons we're glad to have a large coalition of organizations and companies is to help with the political economy of using these accounts to make decisions in a different way.

Q: What is the private sector's role?

A: It is in the material interests of a firm to understand the full value of the services and products that they use in their supply chain, or the value of the services they themselves provide in restoring or protecting such assets. Integrated reporting requires leadership from the top to use it as an internal management tool, rather than just for external reporting and PR. Done well, it is transformative. NCA should affect the way a company thinks about its assets and liabilities over time and how to exploit its business model. In Rio I was having conversations with CEOs of major global firms who were saying, "We want to work with you and governments to use NCA to help countries manage their natural assets properly, because our future business is at stake if they cannot." So you've got the beginning of an alignment of interests between public and private sectors that we haven't seen before.

Q: Is there a danger that NCA "commodifies" priceless natural assets?

A: The clarification is that we are not putting a price on these assets. We are working within a framework to try to value them. This means you can then make decisions in full cognisance of the facts. At the moment, the value of these resources is zero, and look what's happening – they

are being dangerously depleted with ignorance of their true value.

Q: How should NCA evolve?

A: I hope eventually all countries will be using NCA alongside GDP and maybe even integrating them into one national account. And that it leads to different decisions. What we can't predict is what happens then to the conversation around environmental protection and sustainable development. But I'm quite sure it will lead to all kinds of innovations, including a whole range of new business and financial services and products that will help manage the risk and opportunities that these new accounts show you that you have, both at country and company level.

Bloomberg Brief Clean Energy & Carbon

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AT A GLANCE

Rachel Kyte, a British national, became Vice President of Sustainable Development at the World Bank in September 2011.

What's your top environmental goal? Making growth green and inclusive.

What's your biggest achievement? Reframing the pathway to sustainable development as inclusive green growth.

How are you "green" outside of work? I drive a hybrid, grow vegetables and eat less meat.

POLICY, SCIENCE

Germany to Propose Overhaul of the EEG Renewable Energy Law

The German government will draw up proposals to “fundamentally overhaul” the EEG renewable energy law that regulates subsidies for solar and wind-power generators, Environment Minister **Peter Altmaier** said.

Altmaier will make the proposals next month or in early October, he told reporters in Berlin. Germany should lead a “sound debate” over the future of the legislation before making a decision, he said, unveiling a 10-point plan of his ministry’s priorities until the end of this legislative term. Altmaier’s priorities include plans to offer private households free energy efficiency consulting to reduce power consumption by 30 percent and help lower the costs of the plan by several billion euros.

— Stefan Nicola

Japan Aims to Raise Biomass Power Usage to 5 Percent by 2020

Japan is seeking to raise the amount of power generated from biomass to about five percent of all power consumed by 2020, the Nikkei newspaper said.

The government will include the target in a plan to be approved by Cabinet office and related ministries as early as this month, the newspaper reported, without saying where it got the information. Japan currently produces about 0.3 percent of its power from biomass sources, the newspaper said. The nation is debating its energy mix after the Fukushima disaster in March 2011, and decisions are not expected until later this month at the earliest.

— Gearoid Reidy

California Air Chief Says November Carbon Auction on Track

California plans to sell the first carbon allowances in November, undeterred by warnings from a federal energy commissioner that a system meant to curb emissions may harm businesses, the state air board’s head said.

California carbon futures have tumbled on speculation that the auction may be delayed after **Philip Moeller**, a Republican member of the Federal Energy Regulatory Commission, warned California’s Democratic Governor **Jerry Brown** that the system may “seriously impact” the West Coast economy. Moeller said in a letter to Brown that a program rule banning companies from a practice known as resource shuffling isn’t clearly defined and may freeze power-trading in the region. The law is intended to prevent utilities from importing emissions-free power and sending carbon-intensive electricity generation outside the state.

“We don’t think it’s as likely to be a problem as his letter did, and we’re not backing down one inch on the issue of resources shuffling,” said **Mary Nichols**, the state air board’s head. “We agree it’s a problem that needs to be addressed, so we will address it.”

— Lynn Doan and Mark Chediak

Spain Energy Bill May Create Tax on Nuclear, Hydro, Europa Says

Spain’s energy overhaul may include taxes on production of nuclear waste and storage as well as a levy for the use of rivers by hydroelectric producers, Europa Press said, citing Industry Minister **Jose Manuel Soria**.

The overhaul proposal will go to the cabinet for approval “when there is consensus at the heart of government” over the issue, Europa cited Soria as saying in an interview. The overhaul will tax all kinds of energy generation without discrimination, he said. Consumers will have to contribute to the planned increase in system’s revenues via tariffs.

“Green tax” on most polluting forms of energy is “logical” and revenues from that tax will be used to pay down the tariff deficit, not to reduce the budget deficit, he said.

The government is considering a measure that would force more consumers to use the free-market rate for energy rather than the regulated TUR rate, Soria told Europa.

— Emma Ross-Thomas

Australia May Link with EU to Cap Emission Costs

Australia, bound by one of the highest prices in the world for greenhouse-gas allowances, would pay no more than European emitters under a plan to link the two markets, according to Bloomberg New Energy Finance.

One possible option would let Australian companies purchase European allowances starting in 2015, Seb Henbest, a Sydney-based analyst for New Energy Finance, said in a note. Australia announced plans last year to pursue ties with the European carbon market. The talks are continuing, and no agreement has been reached, **Mark Davis**, a spokesman for Australian Climate Minister **Greg Combet**, said in an e-mail.

European Union allowances traded Aug. 15 at less than half the fixed price of \$A23 (\$24.10) introduced July 1 in Australia. The gap has sparked complaints that Prime Minister **Julia Gillard**’s blueprint for a 5 percent cut in Australian emissions by the end of the decade puts domestic firms at a competitive disadvantage. A so-called one-way link would let Australian firms buy European permits and establish a price cap.

— Dinakar Sethuraman

BNEF says: This is a significant development. If Australia ultimately decides to link its market with the EU ETS, scrap its domestic price floor, and tighten its CER import limit, it will fundamentally change the economics of its carbon market. Businesses in Australia would then see a very different carbon price trajectory than previously thought, with ramifications for long-term planning and more immediate compliance activities and carbon price risk management. With Quebec and California also discussing plans to directly link their domestically legislated carbon markets, we could see a new phase in the development of emissions markets.

POLICY, SCIENCE...

China Asked to Probe EU Solar Dumping, Xinhua Says

China's Ministry of Commerce is looking into a request to investigate polysilicon dumping by German manufacturers after the country's biggest maker, **Solarworld AG**, pushed for a similar European Union probe.

Four Chinese solar companies, including New York-listed **LDK Solar Co.**, asked the government to start anti-dumping, anti-subsidy probes on polysilicon exported from the EU, the official Xinhua News Agency reported, without saying where it got the information. The polysilicon, the raw material used for solar panels, mainly came from Germany and Italy to a lesser extent, with Munich-based **Wacker Chemie AG** responsible for exporting the most, Xinhua said.

The Chinese complaint follows a push by about 25 European manufacturers led by Solarworld to get the European Commission to investigate whether Chinese rivals sold products at a loss in regional markets. China may take countermeasures if the European Commission acts on Solarworld's filing, the China Daily newspaper reported on July 25, citing an unidentified commerce ministry official.

The U.S. proposed anti-dumping duties on Chinese solar makers ranging from 31 percent to 250 percent after the Commerce Department in May ruled they sold products below costs.

— Stefan Nicola

Australia Proposes to Join Countries Against Aviation CO2 Trade

Australia's government supported joining other countries opposing the European Union's inclusion of international aviation in the bloc's carbon emissions trading system.

Transport Minister **Anthony Albanese** supported an opposition motion in Parliament calling on the government to "join in other appropriate international action to prevent the application of the European Union ETS to non-European Union airspace," according to a transcript of a debate on parliament's website.

The motion was originally proposed by **Warren Truss**, leader of the opposition National Party, on May 28, but had been postponed due to lack of time, Parliament documents show.

— Alessandro Vitelli

South Africa to Open Third Round of Bids in September

South Africa plans to open bidding for a third round of renewable-energy projects next month, Energy Department Director-General **Nelisiwe Magubane** said.

The government is confident that bidders were successful in the first round, which comprises 28 projects costing 46 billion rand and was announced in December, will reach financial close by the end of August, she told reporters Aug. 16 in Johannesburg. The deadline for financing was June 30. "Banks have been queueing to fund the program," Magubane said.

"The bidders are not struggling with funding, the delays have been on the government's side."

— Sikonathi Mantshantsha

Global Food Crisis May Hit Us 'Very Soon,' IFPRI's Fan Says

A global food crisis may "hit us very soon" as a drought ravages corn crops in the U.S., the world's largest grower, the International Food Policy Research Institute said.

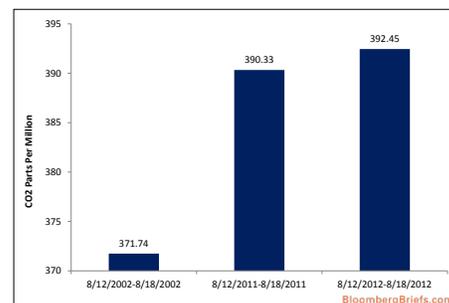
Governments must act to prevent the crisis, **Shenggen Fan**, director-general of the institute, said Aug. 14. The U.S. should end its biofuel program that uses 40 percent of its corn output, to boost supplies to meat producers, Fan said. The Washington-based institute, supported by governments and international organizations, is part of the Agricultural Market Information System formed by the United Nations to monitor food costs.

"The major problem is policy," Fan said in an interview. "Biofuel production has to be stopped. That actually pushed global food prices higher and many poor people, particularly women and children, have suffered."

— Luzi Ann Javier

CO2 in Atmosphere

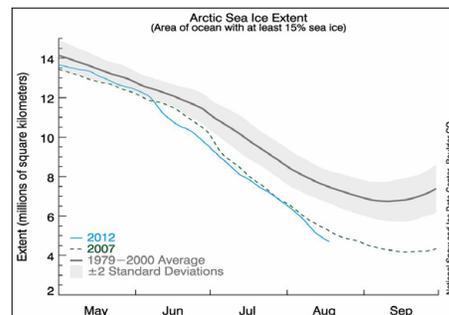
Carbon dioxide concentration levels are increasing at an accelerating rate decade to decade. Scientists say returning to an atmospheric CO2 concentration below 350 parts per million is needed to avoid climate change.



Source: NOAA/ESRL

Arctic Sea Ice

Arctic sea ice reached its annual maximum extent on March 18. This graph compares the daily sea ice extent for the year until Aug. 18 with the 1979 to 2000 average and the year with record low ice extent, 2007.



Source: NSIDC

SCIENCE BUZZ

■ The Commonwealth Scientific and Industrial Research Organisation has found that warming sea temperatures around Australia may force marine plants and animals, currently found in tropical and temperate waters, to move south.

■ University of Colorado Boulder and University of Helsinki researchers discovered a type of carbonyl oxide in the atmosphere that reacts with sulfur dioxide to form sulfuric acid, which has significant impacts on climate and health.

DEALS

Ratch-Australia Plans to Spend A\$1 Billion on Acquisitions, Wind

Ratch-Australia Corp., 80 percent-owned by Thailand's **Ratchaburi Electricity Generating Holding Pcl**, plans to spend A\$1 billion (\$1.1 billion) in the next three years buying power plants and building wind farms.

Ratch-Australia is considering acquisitions of coal- and gas-fired power stations and renewable energy projects as uncertainty about the government's price on carbon emissions and lower wholesale electricity prices pushes asset values down, **Steve Loxton**, chief executive officer of the Sydney-based company, said Aug. 14 in a phone interview.

The company also may bid on New South Wales-owned power generators when the state government puts the stations up for sale, he said.

"I'd rather be buying now than when times are particularly strong," Loxton said. "If there are large generation assets for sale, we'd definitely take a look. There don't appear to be many parties wanting to play in that space."

While Australia last month started charging polluters a fixed rate of A\$23 a metric ton for their carbon emissions, opposition leader Tony Abbott has vowed to scrap the program should his Liberal-National coalition win power in 2013. Australia has set a target of generating 20 percent of its power from renewable energy by 2020 to cut its reliance on coal.

The Australian power producer, 20 percent-owned by **Transfield Services Ltd.**, is also seeking New South Wales state approval for the Collector wind farm and expects to complete financing for the venture in the second half of next year, he said.

— James Paton

Sinopec May Spend \$1 Billion on U.S. Coal Gasification Project

China Petrochemical Corp., the country's second-largest oil and natural-gas company, and Chinese banks are in talks to invest as much as \$1 billion in a coal-gasification power project in Texas, the Wall Street Journal reported.

China Petrochemical, known as Sinopec Group, would acquire a stake and help provide financing for the \$2.5 billion Texas Clean Energy Project being developed by Seattle-based **Summit Power Group LLC**, the newspaper reported Aug. 14, citing unidentified people familiar with the talks. Details of the deal and the size of the equity stake still need to be finalized. The project has received \$450 million in grants from the U.S. Energy Department, according to the paper. An agreement may be announced as early as September.

— Benjamin Haas

Wasabi to Sell Stake in Australian Renewable Fuels to Lignol

Wasabi Energy Ltd., an Australian company investing in renewable energy, agreed to sell its 11 percent stake in **Australian Renewable Fuels Ltd.** to Canadian biofuels company **Lignol Energy Corp.**

Wasabi will sell 275 million shares in Australian Renewables for C\$4.30 million (\$4.33 million) to Vancouver-based Lignol, Wasabi said in a regulatory statement Aug. 15. Prior to the agreement, Wasabi was Australian Renewable's largest shareholder.

The transaction includes C\$500,000 in cash, 19 million common shares of Lignol issued at C\$0.08 a share and a 10-month secured convertible debenture for C\$2.25 million, Wasabi said. Wasabi said in June that it was raising money to develop projects and provide working capital. Wasabi owns the intellectual property of the Kalina Cycle, which is used to produce electricity from low heat sources. The technology can be implemented in geothermal plants, oil refineries, cement plants, steel and metal melting works.

— Chisaki Watanabe

PNE Wind Surges After Dong Offshore Wind Sale

PNE Wind AG jumped the most in 17 months in Frankfurt trading after **Dong Energy A/S** bought three of its German offshore wind projects for 157 million euros (\$194 million).

The German developer of wind farms received 57 million euros upfront from the Danish utility with additional payments of as much as 100 million euros due through 2015, according to a statement July 14. The sale is the biggest deal in its history, the Cuxhaven-based company said.

The Gode Wind I, II and III ventures have a combined capacity of as much as 900 megawatts and are located in the North Sea about 30 kilometers (19 miles) northwest of the island of Norderney.

The Gode Wind I and II projects have unconditional grid connection confirmation from TenneT, as well as building and operation permits, Dong said.

The Gode Wind III sale will be completed, provided it gets all relevant permits by the end of January 2014, according to Dong.

No investment decisions have yet been made for the three projects, it said.

— Sally Bakewell

BNEF says: The deal works out to about 174,000 euros a megawatt overall, but a much higher 245,000 euros a megawatt if only the permitted projects are taken into account. While this is lower than the 317,000 euros a megawatt offered by Brancor Capital Partners for the 252-megawatt Gode Wind II in 2011 (before it postponed its payments), Dong is buying as much as 900 megawatts, and it seems to be getting a volume discount.

WHAT'S CHEAPER - SOLAR OR WIND? FIND OUT ON...

LCOE 

DEALS...

Isofoton to Start Building Dominican Republic Solar Energy Plant

Isofoton SA, a Spanish photovoltaic-panel maker, will begin construction next month on a \$150 million solar plant in the Dominican Republic.

Isofoton signed an agreement with the government to sell power from the 50-megawatt project, which will be located 15 kilometers (9.3 miles) from the capital city of Santo Domingo, the Madrid-based company said Aug. 14 in a statement. Isofoton is part of the Affirma Group, according to its website.

— *Stephan Nielsen*

Brazil Wind-Turbine Makers to Get BNDES Loans, Group Says

Four wind-turbine suppliers will re-qualify for cheap loans from Brazil's development bank BNDES within three months as they start complying with local-content requirements.

Three of the companies will be eligible for low-cost loans within 40 days and a fourth within 90 days, **Elbia Melo**, executive president of Sao Paulo-based wind-industry trade group, Associacao Brasileira de Energia Eolica, said in a telephone interview.

Melo received the information from BNDES, which accused **Vestas Wind Systems A/S**, **Suzlon Energy Ltd.**, **Siemens AG**, **Acciona SA** and **Fuhrlander AG** of not getting at least 40 percent of their parts from local suppliers following an audit in June. The bank didn't identify to Melo which of the companies would regain financing.

"The important thing now is to recuperate loans for all these suppliers," Melo said. Turbines bought without cheap BNDES debt "aren't competitive in Brazil."

Banco Nacional de Desenvolvimento Economico e Social, as the lender is officially known, offers loans based on the long-term lending rate TJLP that carries annual interest rates of 6.4 percent minus a risk spread levied by the bank that disburses the financing, Melo said in an e-mail Aug. 13.

BNDES loans for equipment from suppliers that don't meet local-content rules carry interest rates of about 9.7 percent, minus a risk spread, and are linked to inflation, she said.

— *Stephan Nielsen*

South Korean Group Plans \$900 Million Solar Project in Pakistan

CX Solar Korea is leading a group that signed an agreement with the government of Pakistan to build a 300-megawatt solar farm that will require an investment of as much as \$900 million.

The group plans to start a 50-megawatt installation near Quetta in southwestern Balochistan province that will use a combination of crystalline silicon and thin-film panels to see which perform best, said **Moon-sok Choi**, chief executive of CX Solar, a Seoul-based project developer.

The group expects to build 300 megawatts by 2016, Choi said. The power will be sold under a 25-year contract, with details still being negotiated, Choi said in an e-mailed response to questions.

CX Solar is in talks with panel suppliers, including Bernin, France-based **Soitec SA**, which makes Concentrix photovoltaic panels, Choi said.

— *Natalie Obiko Pearson*

Greenko Signs Project Finance Loan for Indian Wind Project

India's Greenko Wind Projects signed a 4.35 billion rupee project finance loan to fund a wind power project in Andhra Pradesh, a coastal state in the southeast of the country.

Greenko Wind Projects Pvt. signed the loan for the wind farm in Andhra Pradesh, a coastal state in the southeast of the country. The facility matures in 2027 and the borrower is a unit of Greenko called **Rayala Wind Power Co.**, according to data compiled by Bloomberg.

— *Katrina Nicholas*

SHARE PRICES OF CLEAN ENERGY COMPANIES BY REGION

Americas

COMPANY	8/17/12	8/10/12	WEEKLY CHANGE	% CHANGE
Archer-Daniels Midland Co.	26.17	25.94	0.23	0.89%
Bunge Ltd.	64.62	64.97	-0.35	-0.54%
First Solar Inc.	21.26	21.43	-0.17	-0.79%
General Electric Co.	21	21.1	-0.1	-0.47%
SunPower Corp.	4.61	4.29	0.32	7.46%
Tesla Motors Inc.	30.01	29.94	0.07	0.23%

Asia and Oceania

COMPANY	8/17/12	8/10/12	WEEKLY CHANGE	% CHANGE
GS Yuasa Corp.	321	313	8	2.56%
Sinovel Wind Group Co.	6.08	6.33	-0.25	-3.95%
Suntech Power Holdings Co.	0.98	1.09	-0.11	-10.09%
Suzlon Energy Ltd.	16.8	17.25	-0.45	-2.61%
Trina Solar Ltd.	4.82	4.78	0.04	0.84%
Xinjiang Gold-wind Sci&Tec-H	2.63	2.74	-0.11	-4.01%

Europe, Middle East and Africa

COMPANY	8/17/12	8/10/12	WEEKLY CHANGE	% CHANGE
Abengoa SA	12.975	10.125	2.85	28.15%
GKN Plc	226.1	217.8	8.3	3.81%
Schneider Electric SA	51.26	49.155	2.105	4.28%
SolarWorld AG	1.182	1.325	-0.143	-10.79%
Q-Cells SE	0.147	0.133	0.014	10.53%
Vestas Wind Systems A/S	32.5	29.29	3.21	10.96%

Note: Market price is shown in local currency

CARBON MARKETS

EU Seeks UN Agreement in 2012 on Global Voluntary CO2 Market

The European Union is seeking United Nations agreement on rules for a new voluntary global carbon market that would encourage emission reductions.

The so-called new market mechanism would allow developing and developed nations to trade emission reductions internationally, assuming they are "below an ambitious crediting threshold," Cyprus, which holds the EU presidency, said in a group of submissions dated Aug. 13 on the website of the UN Framework Convention on Climate Change.

The EU envisages a decision at a UN climate-protection meeting planned for Doha, Qatar, starting Nov. 26 on the new market's "core modalities and procedures," with a more final agreement a year later, according to the document.

The market may include high-emitting industries such as energy and should allow developing nations to voluntarily undertake more ambitious greenhouse-gas cuts than incentivized by current markets, including the UN-overseen Clean Development Mechanism, Cyprus said. Credits from the CDM, the world's biggest emissions-offsetting market, can be used by factories, airlines and power stations in the EU's cap-and-trade market.

— Mathew Carr

Iranian CO2 Offsets Not Eligible for Futures Delivery, ICE Says

United Nations-approved carbon dioxide offsets from a project in Iran will not be eligible for delivery into futures contracts on the ICE Futures Europe exchange, according to the bourse.

The credits "will not, from today's date, be eligible for delivery under a CER Contract, until further notice," ICE Futures said in a notice posted on its website Aug. 13.

The project to switch to lower-emitting fuels at a sugarcane plant owned by **Amirkabir Agri Industrial Co.** in Ahvaz, was awarded 18,552 UN Certified Emission Reductions Monday, according to data on the UN Framework Convention on Climate Change website.

"This action taken by ICE to ban trading in Iranian CERs is unlikely to have an impact on the CER price, but it could set a precedent," Richard Chatterton, an analyst for Bloomberg New Energy Finance in London, said. "Iranian CDM projects are expected to generate only 17Mt of CERs before 2020. The main credit buyers of Iranian CERs are two Swiss entities – Climate Protection Finance and Swiss Carbon Asset – listed in the project documentation."

— Alessandro Vitelli

Indian HFC-23 Emissions Project Seeks Credit Issuance From UN

An Indian project that cuts HFC-23 heat-trapping gas has requested 979,543 metric tons of Certified Emission Reduction credits, even as a previous request for 1.03 million tons at the same site is being reviewed by regulators.

The previous request from the project for greenhouse-gas emission reduction by thermal oxidation of HFC 23 in Gujarat, India, was placed in review June 5. Buyers of the credits include **Ineos Fluor Ltd.**, according to project documents on the website of the United Nations Framework Convention on Climate Change's Clean Development Mechanism.

— Mathew Carr

Japan's Marubeni Interested in Buying Romanian Carbon Credits

Japan's **Marubeni Corp.** has expressed interest in buying an "important part" of Romania's surplus of Assigned Amount Units, which the country plans to sell by the end of this year, Romanian Deputy Economy Minister **Rodin Traicu** told reporters in Bucharest.

— Irina Savu

SHARE PRICES OF UTILITY EMITTERS IN EUROPE

COMPANY	8/17/12	8/10/12	WEEKLY CHANGE	% CHANGE
RWE AG	33.39	33.175	0.215	0.65%
E.ON AG	18.255	17.805	0.45	2.53%
Enel SpA	2.574	2.448	0.126	5.15%
EDF SA	16.66	16.44	0.22	1.34%
Public Power Corp SA	2.47	2.39	0.08	3.35%
GDF Suez	20.04	19.31	0.73	3.78%
CEZ AS	742	738	4	0.54%
Iberdrola SA	3.35	3.05	0.3	9.84%
ENI SpA	17.92	17.85	0.07	0.39%
Tauron Polska Energia SA	4.75	4.84	-0.09	-1.86%
EDP - Energias de Portugal SA	2	1.937	0.063	3.25%
Drax Group PLC	482.8	484.3	-1.5	-0.31%

Note: Market price is shown in local currency

SHARE PRICES OF INDUSTRIAL EMITTERS IN EUROPE

COMPANY	8/17/12	8/10/12	WEEKLY CHANGE	% CHANGE
ArcelorMittal	13.035	12.94	0.095	0.73%
Total SA	40.38	39.96	0.42	1.05%
Tata Steel Ltd	394.8	400.1	-5.3	-1.32%
HeidelbergCement AG	40.755	40.46	0.295	0.73%
Royal Dutch Shell Plc	28.76	28.85	-0.09	-0.31%
Exxon Mobil Corp	88.4	88.44	-0.04	-0.05%
Lafarge SA	38.005	37.985	0.02	0.05%
Italmobiliare SpA	7.79	7.095	0.695	9.80%
BP Plc	454.35	448.6	5.75	1.28%
Holcim Ltd	59.45	61.05	-1.6	-2.62%
Statoil ASA	149.3	148.5	0.8	0.54%
Repsol YPF SA	16.06	14.38	1.68	11.68%

Note: Market price is shown in local currency

CARBON MARKET COMMENTARY

Weekly Commentary from Bloomberg New Energy Finance

Cracks Appear in the Rally

BY KONRAD HANSCHMIDT, BLOOMBERG NEW ENERGY FINANCE

The European carbon market remains supported by utility purchasing activity as well as stronger German power. Still, the price support could be weakened by short-term selling this week. We expect European Union allowances to trade in the €7.30-8.20 a metric ton range.

POWERING UP THE FORWARD CURVE

Last week's EUA price rally was driven by speculation on further nuclear shut-downs and reports of active power hedging – two drivers that may lift prices over the next few days. **Electrabel SA**, the operator of the faulty Doel-3 nuclear plant in Belgium, has confirmed the halt of another reactor in Belgium for safety inspections. The head of the Belgian nuclear regulator said it is unlikely that the Doel-3 reactor will continue operations. Carbon prices may rise if some or all of the remaining four plants in Europe built by the same manufacturer are also halted for inspections. Meanwhile, utility hedging has become increasingly dominant on the EUA market according to traders. **RWE AG** and **EON AG** joined other major utilities in indicating increasing hedging rates last week. Power generators are continuing to lock in dark spreads that are well above last year's average rates.

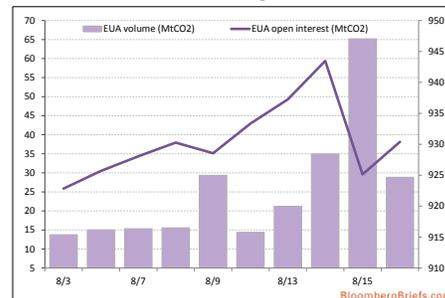
BACK TO BACKLOADING

As September nears, the market may return its attention to the backloading proposal. The German economy minister last week stated opposition to intervening in the allowance market, reiterating that any future tightening of the EU Emissions Trading System targets will face resistance. There is likely to be sufficient political support for amendments of both the directive and the auctioning regulation. We expect the Climate Change Committee meeting on Sept. 19 to be the first official discussion point for backloading after the summer break. We expect the directive change to be voted on by the parliament over Oct. 22-26 and by the council on Dec. 19. We anticipate a return to policy-driven trading in September as more information may be uncovered on the progress of getting backloading into legislation.

MOVING OVER TO PHASE THREE

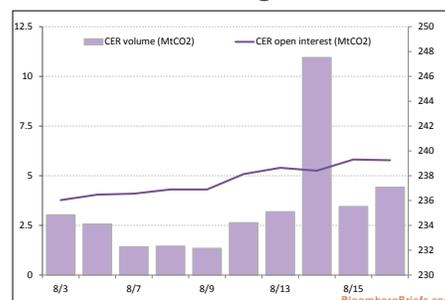
Last week, ICE Futures Europe exchange announced that it will not accept Phase 2 allowances for delivery after April 30. The conversion of all Phase 2 allowances to Phase 3 is currently scheduled for June 2013. The move subsequently led to many people reportedly unwinding their long March 2013-June 2013 positions, which due to the illiquid market saw it widen by €0.05 a metric ton last week. We could see further trading opportunities arise from the June switchover. Early auctions of spot Phase 3 contracts, which we do not expect to start before October this year, may serve as a trigger. The rising supply of Phase 3 allowances and the potentially higher demand for Phase 2 spot due to the inability to borrow between 2012 and 2013, is likely to result in a spread developing between the two contracts. The spread will offer surplus holders the chance to arbitrage between the two spots, while financial market participants may benefit from the widening of the Phase 3 spot and December 2013 spread.

EU Carbon Trading Volumes



Source: EMIS <GO>

UN Carbon Trading Volumes



Source: EMIS <GO>

MARKET ACTIVITY LAST WEEK

DAY	EUA	CER	SPREAD	COMMENT
MONDAY	7.50	3.02	4.48	EUAs rise 4 percent with support from gas and power
TUESDAY	7.66	3.02	4.64	German and French GDP figures turn out better than expected
WEDNESDAY	7.49	2.85	4.64	EUAs track German power down in the morning
THURSDAY	7.71	2.91	4.80	EUAs close at weekly high of 7.71 euros, with support from oil and gas
FRIDAY	7.71	2.90	4.81	EUAs open to a weekly intraday high of 7.80 euros before consolidating

COMPARE CLEAN ENERGY TECHNOLOGIES ON...

LCOE

INSIDER

China May Limit Traders in CO2 Market to Avoid Fraud Threat



Ecofys, a Netherlands-based consultancy, has been contracted to help China's Tianjin Climate Exchange develop a pilot emissions-trading program. China, which plans to launch a national carbon market by 2015, selected Tianjin, along with four other cities, and two provinces to run pilot programs. **Alyssa Gilbert**, a manager at Ecofys's London office, tells Siobhan Wagner of Bloomberg New Energy Finance, the way trades are conducted in China may differ from Europe as officials are keen to avoid theft and fraud. In the EU, computer hackers stole carbon permits and scammers pocketed money meant for value-added tax bills.

Q: The Tianjin carbon market is expected to be ready for operation in 2013. What is Ecofys' role in its design?

A: The project is through the ADB [Asian Development Bank] to support Tianjin. We're managing the project so in a way we're responsible for all the deliverables. We have pulled together a group of international and domestic consultants – three key experts on the international side and also a large number of Chinese experts. We're responsible for delivering three packages of work to the Tianjin government and the first two really look at the policy side of developing an emissions trading scheme. It looks at what existing options are out there, what other schemes have done on a range of policy design decisions ranging from benchmarking to MRV [measurement, reporting and verification], cap-setting and so-on. The third part of the project is about the IT required to make it happen. It's about developing the IT specifications for both the registry and trading platform. This project will deliver the specifications but will not deliver the actual registry and trading platform. That will be commissioned separately.

Q: Ecofys advised on the design of the EU emissions-trading system. What sort of lessons did you learn? How will this affect your recommendations for Tianjin?

A: I think you can see through the development of the EU trading scheme from phase one to phase two and phase three, how lessons have already been built in. For example the changes in allocation methodology, the changes in what the cap overall looks like, the changes in the ability to use offsets and the changes to the MRV guidelines have also changed over time. All those things show an evolution. So you can see in the EU we've already had the benefit of a long learning experience, which is great. What this means is we can take this history lesson to Tianjin and show the technical differences between what we've done at the beginning of the EU scheme to what's done now and why those changes were made and that can be very informative if you're looking at a new scheme in China or a region of China. You can say OK what can we stop ourselves from getting wrong or how can we protect ourselves so we allow flexibility in the future.

Q: How will China differ to the EU in the way it runs its carbon market?

A: To be honest at the moment I see more similarities than differences. A lot of the issues that you had at the beginning of the EU scheme were all about data availability and therefore the importance of MRV. You needed to start getting installations to have the data that you need [to] decide what an appropriate cap is. Those issues are actually very comparable. What will be interesting to see is what actually happens with the trading. That's where there potentially could be a big difference. We have had open ability to trade in Europe and I think especially with the kind of fraud and all those issues that happened a few years ago in Europe, that's made people in China quite nervous. They want to see liquidity in their market but, on the other hand, they don't want to have those problems. For example, there's a potential to restrict who's actually able to trade in the early phase. By controlling which parties trade that could also influence what happens in the market on quite a few levels. These general concerns are probably reflected in all of the projects [across China]. I'm sure that's something they'll consider.

NYSE EURONEXT AND BLOOMBERG NEW ENERGY FINANCE REGIONAL CLEAN ENERGY STOCK INDEXES

The three indexes, covering respectively Europe, Middle East and Africa, the Americas, and Asia and Oceania, currently follow a basket of between 125 and 325 companies with a moderate, or greater, exposure to renewable energy and energy-smart technologies. The following indexes track shares over the past year. They are indexed to 1,000.

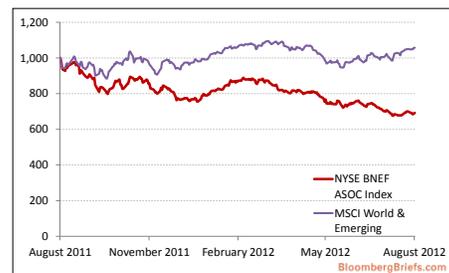
NYSE-BNEF Europe, Middle East and Africa Clean Energy Index



NYSE-BNEF Americas Clean Energy Index



NYSE-BNEF Asia Oceania Clean Energy Index



Source: Bloomberg New Energy Finance

WHERE ARE CARBON PRICES GOING?

CARX GO

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Clean Energy's Puberty Years – Bewildering and Irreversible

BY MICHAEL LIEBREICH, BLOOMBERG NEW ENERGY FINANCE

These are difficult years for the clean energy sector. A few years ago it seemed to be entering a golden age of limitless growth and infinite potential, the arrival of a new age of progressive environmental business. **Barack Obama** prophesied that his election as president would herald the moment “when the rise of the oceans would begin to slow, when our climate would begin to heal.”

The arrival of the global financial crisis, coinciding with the failed Copenhagen climate talks, put an end to all that. For a while it looked like the sector might escape Armageddon, pivoting from sunlit optimism to industrial planning, co-opting the world's stimulus programmes with talk of green jobs and shovel-ready projects.

Over the past two years, however, the full challenge facing the sector has been revealed. The Wilderhill New Energy Global Innovation Index, or NEX, which tracks 96 clean energy stocks worldwide, has underperformed the S&P 500 by 53 percent since the end of 2010. The sector is dotted with the wreckage of former darlings like **Q-Cells SE**, **Solyndra LLC**, **Solar Millennium AG** and **Evergreen Solar Inc.** Even leading firms like **Vestas Wind Systems**

A/S, Hoku Corp and **Panasonic Corp.** are having to lay off staff.

The U.S. wind industry is facing the likely expiry of its Production Tax Credit at the end of this year just as it tries to climb a wall of cheap unconventional gas. In Europe, feed-in tariffs are being reduced or removed. In every sector there is more manufacturing capacity than demand.

Is this the inevitable end of every clean energy boom? Was the whole cleantech thing just a bubble? Are we now back in the new normal? The answer to all of these is no. What we are seeing is an industry in transition. Six different transitions, in fact, all happening at once. Each one on its own challenging, all together, painful. But six transitions which will see the emergence in due course of a fully mature and competitive clean energy sector.

ECONOMICS

The first transition relates to the economics of clean energy. In the past, the cost of clean energy was so much higher than fossil alternatives that project developers based investment decisions largely on the generosity of subsidies or support mechanisms available in any location. Now, with

recent reductions in clean energy costs, the industry is shifting towards one where revenue from power sales drive investment.

Latin America is arguably leading the way, with capacity being built in Brazil, Chile and Mexico on the basis either of market electricity prices, or of auctions in which wind has actually out-bid fossil fuel opponents such as gas-fired generation. Among the large projects recently financed in that region without European-style subsidies, Macquarie Mexican Infrastructure Fund in February tied up \$693 million in debt for its Marena 396-megawatt wind project in Mexico, and in May, **Siemens AG** landed a contract for turbines for a 115-megawatt wind project north of Santiago in Chile. In March, Mexican industrial conglomerate **Grupo Musa** said it was developing a \$1.4 billion photovoltaic project in Baja California to reduce – yes, reduce – its power bills.

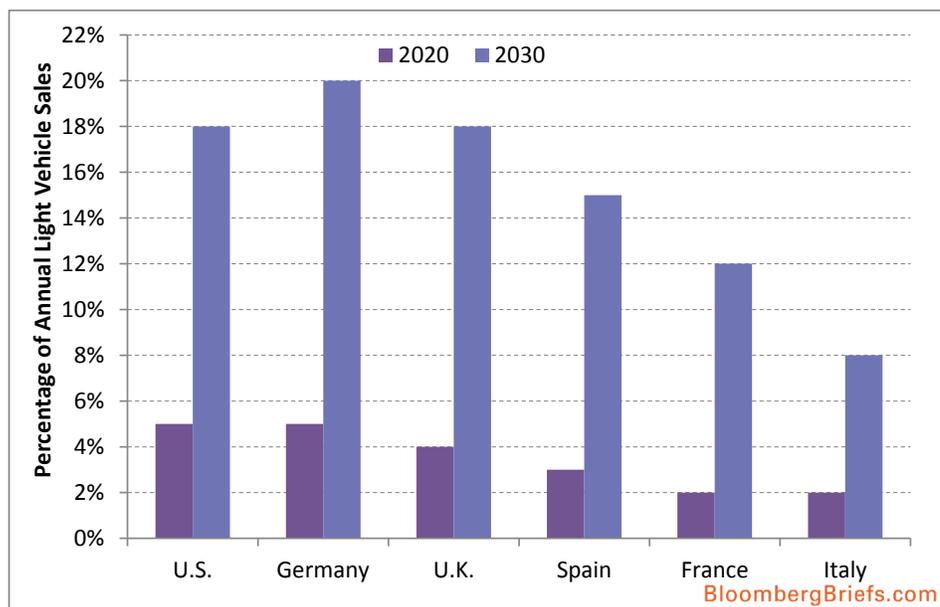
Spain will be an acid test of the appetite for non-subsidized clean power. Two years ago the Spanish government made retroactive changes to the feed-in tariff regime; now the sector is being threatened with new taxes. However, some developers are bouncing back by announcing huge PV projects made economic – they hope – by tumbling hardware costs and high electricity prices, rather than by subsidies. In May, for instance, German companies **Wuerth Solar GmbH & Co.** and **Gehrlicher Solar AG** said they planned to build PV parks of 287 megawatts in Murcia and 250 megawatts in Extremadura respectively. Their plan, contingent on government approval, is for construction to start in 2013-2014.

In solar, we are already at the point where small-scale, residential PV can produce power at a levelized cost below the retail electricity price in several important countries – including Germany, Denmark, Italy, Spain and Australia.

This does not mean that it is economic for households to go off-grid and generate all their power from rooftop PV, but the economic case is there for panels to produce at least a proportion of total needs. Geothermal power and waste-to-energy have been fully competitive for some time.

The second transition involves the impact of renewables on the wider power sector.

Electric Vehicles May Be 20% of German Light Vehicle Sales in 2020



Source: Bloomberg New Energy Finance

FOCUS...

For a long time, wind and solar were so tiny in terms of power contribution that they had a negligible impact on wholesale prices. Now, in places as far apart as Germany and Texas, the percentage of renewable generation has reached a point at which it is starting to move prices, changing the returns for conventional and clean energy generators.

In Texas on June 22, wind power output reached 8.4 gigawatts, a new record. Wind was supplying 17.6 percent of the total system load at one point, thanks to high winds. That was far from a U.S. state record: on April 15, wind met 57 percent of Colorado's power needs. In Germany on May 25, solar power generated a massive 22 gigawatts of electricity per hour, enough to meet 50 percent of national electricity demand. Such peaks of renewable supply put extreme downward pressure on spot power prices, because the marginal cost of production from fuel-free technologies is zero. In fact, the Texas wind surge pushed electricity prices in the Texas West Hub below zero for 2.5 hours, something that has also been seen in Denmark and Germany; in the U.K., wind farms in similar situations have been paid to stop generating.

In one sense, this development is good for renewables, as it demonstrates to a skeptical public that investment in clean energy can result in lower, rather than higher, power prices. In another sense, it is not so good, because it begs the question of how countries can maintain a stable power system when intermittent generation depresses power prices and makes them so volatile.

Policy-makers have a range of tools to deal with the issue, the main one being to bring in incentives to maintain peaking capacity. Generators need to know that it is worth their while building capacity – often in the form of gas generators – which can quickly be switched on when the wind does not blow and the sun does not shine. Other tools include incentives for storage technologies such as batteries and pumped hydro, investment in demand response, and interconnection with neighbouring countries. All of this will require a new, more sophisticated mind-set from regulators. A mistake can create windfall profits or slam the brakes on investment, or both, and it is a high-stakes game, keeping the lights on as old nuclear and coal capacity is retired. It will take a while until regulators everywhere figure out how to play this new game. Meanwhile, the

clean energy sector has to tread carefully.

Transition three relates to the emergence of a mature supply chain, one which will be dominated by industrial players with advanced capabilities in quality assurance, cost engineering and investment planning.

In the early 2000s, as clean energy took off, its technology providers were nimble start-ups, long on vision and technology, but short on operational skills. During the go-go years, there was enough market demand and enough capital for these companies to survive. No longer. There's a trend for major industrials to lead in clean energy markets. Small players who are not on the steepest of learning curves are not going to make it.

ACQUISITIONS

Some of the majors are getting into clean energy by opportunistic acquisition. First movers were **General Electric Co.**, with its 2002 acquisition of **Enron Corp.**'s wind business and Siemens, with its take-over of **Bonus Energy A/S** in 2004. Some component makers too have fallen into larger hands, including gearbox maker **Hansen Transmissions International NV**, bought by **ZF Friedrichshafen AG** last summer. In wind, acquisitions have not been the preferred route so far. While there has been plenty of talk about possible takeovers of major players like Vestas, **Suzlon Energy Ltd.** and **Gamesa Corp. Technologica SA**, there have been no formal offers yet. **Enercon GmbH** too was on the target list until this year, when its founder announced his intention to place his shares in a foundation. Offshore pioneer **Bard Holding GmbH** has been looking for some time to find a buyer. Engineering giants like **Mitsubishi Heavy Industries Ltd.** and the Korean shipbuilding players now moving into offshore wind have so far opted to build their own operations, rather than make acquisitions.

In PV, there have been some acquisitions of module-making specialists by industrial groups, including **Robert Bosch GmbH**'s takeover of **ErSol Solar Energy AG** in 2008 and **Total SA**'s purchase of 60 percent of **SunPower Corp.** last summer, though neither of those buyers is thought to be particularly enamored with their deals. Meanwhile most of the other PV supply chain manufacturers, from **Suntech Power Holdings Co.** to **Trina Solar Ltd.** and **SMA Solar Technology AG** to **Renewable En-**

ergy Corp., remain – for the moment – in the hands of investors, rather than large corporate owners. Production of silicon is split between specialists and major players. Suppliers of production equipment have seen some M&A activity, with **Meyer Burger Technology AG** buying **Roth & Rau AG** in 2011. Some of the most significant industrial groups entering the solar market have chosen to do so organically, rather than by acquisition – most recently GE with its thin-film announcement last year, and **Foxconn Technology Co Ltd**, the Taiwanese contract manufacturer plotting its entry into the module business.

In some of the secondary areas of clean energy outside wind and solar, industrial giants have been more prepared to make acquisitions. In solar thermal, Siemens has mopped up niche players such as manufacturer and developer **Solel Solar Systems** and thermal receiver firm **Archimede Solar Energy**, while **Areva SA** absorbed Ausra Inc. In the fledgling area of marine power, as we wrote in this column last month, the likes of Siemens, **ABB Ltd**, **Andritz AG**, **Rolls-Royce Holdings Plc** and **Alstom SA** have bought into specialist device makers.

In biofuels, enzyme producer **Verenium Corp** has gradually seen its next-generation biofuel assets acquired by **BP Plc**. Likewise, **DuPont Co.** bought enzyme company **Danisco A/S** last year.

In smart grid in 2011, **Toshiba Corp.** bought electronic metering leader **Landis+Gyr AG**, and **Schneider Electric SA** took over distribution management software provider **Telvent GIT SA**. Then, **Eaton Corp.** acquired electrical grid equipment maker **Cooper Industries Plc** in May this year; more recently, Siemens snapped up **Senergy Sistemas de Medicao SA**, a smart-metering business previously owned by Brazilian company **Nansen SA Instrumentos de Preciso**; and ABB purchased wireless communications firm **Tropos Networks Inc.**, to gain control of the latter's GridCom mesh networking technology.

Other areas have been slower to consolidate through acquisition, including batteries, where growth in manufacturing capacity has run ahead of demand, particularly among companies hoping to serve the electric vehicle sector. Start-ups and small technology players remain prominent, though their difficulties are obvious – as exemplified by

FOCUS...

the bankruptcies of **Valence Technology Inc.** and **Ener1 Inc.** This month saw China's largest auto parts company, **Wanxiang Group Corp.**, sign a non-binding memorandum of understanding for a multi-stage deal that could see it ultimately acquiring 80 percent of troubled **A123 Systems Inc.** The deal is subject to all conditions being met for each stage, and Wanxiang exercising all of its options for each stage. Still, it can only be a matter of time before the battery sector too is dominated by the big boys.

Whether they grow their clean energy businesses organically or by acquisition, the shift of supply from independent specialists to major industrials will have profound effects. Costs will come down as these companies bring their purchasing and operational skills to bear. These suppliers have real balance-sheet power – they promise long-term service contracts and stand behind their products with meaningful warranties; they may even extend vendor finance to smaller customers. And major engineering companies have powerful friends – they can draw on webs of alliances and play the lobbying game in a way that start-ups can only dream about. Once the big engineering companies are in the driving seat, the world of clean energy will be a very different place.

ADVANCED TRANSPORTATION

The fourth ongoing clean energy transition relates to advanced transportation. We are still very much in the calm before the storm. The modern pioneers of the electric drive-trains, **Toyota Motor Corp.** and **Tesla Motors Inc.**, have been followed by the nimbler giants, **Mitsubishi Corp.**, **General Motors Co.** and **Renault-Nissan.** But 2013 will see a veritable flood of new electric and plug-in hybrid models from major manufacturers – **Bayerische Motoren Werke AG**, **Volkswagen AG**, **Daimler AG**, **Ford Motor Co.**, **Fiat SpA**, **Honda Motor Co.** and so on. Every car company is now betting in some way on electric; even **Chrysler Group LLC** is experimenting with a hybrid Dodge Ram.

Electric vehicle sales are increasing, though from a modest base. Bloomberg New Energy Finance estimates that sales of EVs worldwide in the first half of 2012 were more than 45,000, equivalent to nearly 90 percent of the figure for the whole of 2011. This will not be enough to meet the 320,000

unit target automakers had aimed for in 2012, yet each new model brings an advertising budget, each sale increases pressure to grow the charging network. Increased volume means lithium-ion battery prices are falling steeply, and are set to go on dropping. The market appears to have self-sustaining momentum, aided by the same \$100 oil price that is also fueling interest in natural gas-fuelled vehicles. A tipping point, at some stage, beckons, provided there is no strong reversal of current policy priorities.

In due course the uptake of electric vehicles will have a substantial impact on fuel use and transport patterns, as well as on electricity demand and the architecture of the grid. For the moment, all this lies beyond the imagination of most road users, and beyond the investment horizon of most companies. The clean energy industry can do little more than wait and hope.

The fifth transition that the sector is navigating relates to biofuels moving from first-generation to next-generation. Bloomberg New Energy Finance forecasts that world biofuel output will increase threefold between now and 2030 – reaching 558 billion liters per year. Importantly, the mix may change completely: in 2010, next-generation feedstock such as cellulosic biomass residues and dedicated energy crops accounted for less than 1 percent of total biofuel production; by 2030 this could be as high as 60 percent, if technology improves, and costs fall, as much as the industry hopes.

Next-generation biofuels have been attracting the lion's share of venture capital and private equity going into the renewable fuels sector for over five years now. According to our data, first-generation biofuels such as corn ethanol and rapeseed biodiesel attracted \$1.2 billion in 2006, against \$216 million for next-generation fuels based on converting non-food crops and waste. By 2010, the tables had been turned completely, first-gen attracting \$84 million against next-gen's \$606 million. In 2011, it was a mere \$14 million for first-gen and \$802 million for the next-gen.

Indeed next-gen biofuels has been one of the few clean energy areas to enjoy a rising tide of money from the recession-battered VC/PE industry. Venture funds have not been funding the likes of algae-based fuels maker **Sapphire Energy Inc.**, which landed \$144 million in the second quarter of this year, out of the goodness of their hearts.

They have been doing it because they perceive the potential for substantial industry growth. So have the likes of **Royal Dutch Shell Plc**, **BP** and **Exxon Mobil Corp.**, which have also been heavy investors in the sector. Our analysis, published during the World Economic Forum in Davos this year with the support of **Novozymes A/S**, shows that using 17.5 percent of agricultural waste in eight regions of the world could supply 50 percent of the world's transport fuels. In a few years, we will be seeing a battle royal for the future of transportation between next-gen biofuels and electrification.

The sixth and final transition is the shift from a narrow to a broad geographical base. A few years ago, investing in clean energy meant investing in Europe, Brazil or North America. Then came China and Korea. Now, new Latin American countries are in play, from Chile and Mexico to Nicaragua and Panama, which did well in the inaugural ClimateScope index we released with the **Inter-American Development Bank.** Last year, India was the fastest-growing major clean energy market, and its recent black-outs will give manufacturers new incentives to secure their own power. Since the Fukushima nuclear accident, Japan is back in the clean energy game. With solar power now competitive with kerosene and diesel, Africa is waking up, as is the Middle East.

At the beginning of this sixth transition, clean energy was restricted to wealthy democracies willing to buy indulgences to assuage the guilt of fossil-fuel reliance. At the end of it, clean energy will be simply another part of the energy mix, available anywhere, economic, ubiquitous, attractive.

This is the real narrative behind the growing pains of today's clean energy industry. The great clean energy squeeze of 2010-2012 does not herald the end of the sector. Just as the bursting of the dotcom bubble did not herald the end of the Internet and the collapse of telecoms valuations did not herald the end of the mobile phone industry.

Six transitions. Six painful processes, which together will reveal the mature form of the clean energy industry. Clean energy is dead. Long live clean energy!

Note: Michael Liebreich is chief executive of Bloomberg New Energy Finance. Twitter: MLiebreich. This article will also be available to Bloomberg New Energy Finance clients for download at bnef.com.

INSIGHT

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Excerpts from Bloomberg New Energy Finance Research**U.K. Waste-to-Energy Capacity May Triple by 2016**

- According to Bloomberg New Energy Finance, there are 27 waste-to-energy projects operating in the U.K. today, with a total capacity of over 400 megawatts. Project developers have used incineration as the technology of choice until now, though the capacity pipeline suggests the next wave of projects will employ more gasification-related technologies.
- Several projects are suffering severe commissioning delays, the reason for which appears to be difficulties in obtaining the necessary planning permission. On average, a waste incineration project takes roughly 68 months to come online.
- U.K.'s waste-to-energy capacity is set to triple in 3 to 4 years. Still, there will be little applicable municipal solid waste, or MSW, available for energy recovery with recycling rates also set to rise by 50 percent before 2020.
- Decreasing waste volumes means the generating capacity required to convert the available MSW fractions face a decline – from 2.4 gigawatts in 2012 to 1.5 gigawatts in 2020. Therefore, projects currently commissioned, or under construction or even just announced, will be more than enough to process U.K.'s MSW streams by 2020.
- With little headroom for any more large-scale waste-to-energy projects in the U.K., investors and developers will now have to turn their attention to smaller-scale projects that can convert commercial and industrial waste.

IN BRIEF**Battery Supply May Exceed Electric Car Industry's Demand**

Manufacturers are aiming to produce over 300,000 electric vehicles in 2012, increasing to nearly one million in 2014. Bloomberg New Energy Finance expects more realistic numbers, of around 135,000 EVs in 2012, increasing to 542,000 in 2014. Going by the manufacturers' figures, end-2012 will see a potential overcapacity of lithium-ion batteries of over 22 gigawatt-hours, shortening to 19 gigawatt-hours by 2014. Still, estimates are for actual overcapacity to be much larger – around 26 gigawatt-hours – from 2012 to 2014 as EV demand and battery supply increase concurrently.

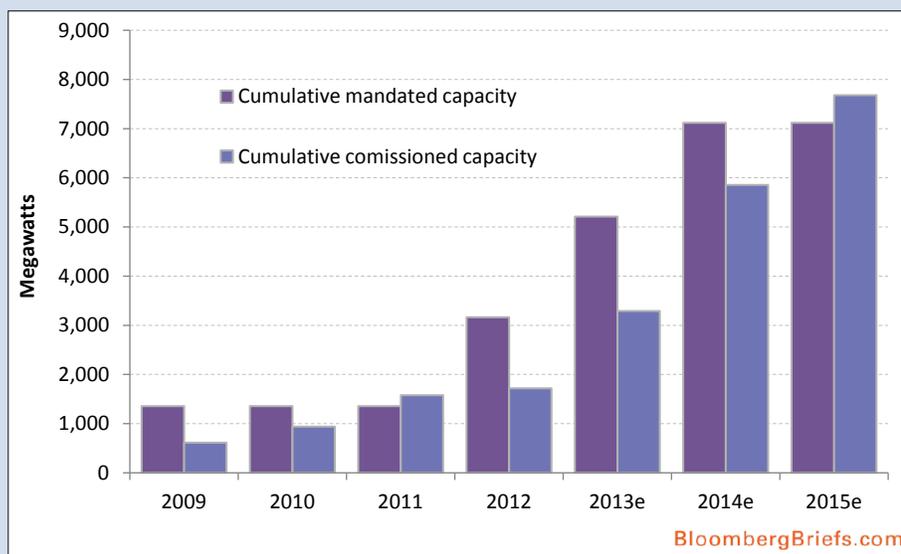
Are U.S. Duties on Asian Wind Towers Leading to a Trade Spat?

The International Trade Administration of the U.S. Department of Commerce announced on July 27 anti-dumping duties on wind tower imports from China and Vietnam. Although Chinese companies affected by this case have downplayed its significance, media reports expressed fears of a widening clean energy trade spat and urged Chinese manufacturers and government bodies to resolve the disputes. The case is but one skirmish in a growing international conflict over clean energy trade. There are active proceedings over wind and solar components and rare earth minerals used in generation technology in North America, Europe and Asia.

Poland's Re-Drafted Act Brings Relief for Wind, Pain for Biomass

The Polish Ministry of Economy re-drafted its Renewable Energy Act and on July 27, published a version still subject to government and parliamentary approval. According to the revised version, feed-in tariffs for micro generation will be guaranteed for 15 years, though only until 2027. The proposed rates seem particularly attractive for small-scale photovoltaic projects. Large-scale projects will receive support through a technology-banded green certificate program.

SEE THE BLOOMBERG NEW ENERGY FINANCE WEBSITE FOR FURTHER DETAILS WWW.BNEFCOM.

Brazilian Wind a Hit at Auctions But a Miss at Reaching Cumulative Mandated Capacity Until 2015

Source: Bloomberg New Energy Finance

Over the last three years, Brazil has contracted 6.7 gigawatts of wind capacity from 514 projects via five auctions, at an average price of \$71 per megawatt-hour. Still, it does not appear likely to reach its cumulative mandated capacity until 2015.



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