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## ALTERNATIVE ENERGY

### Jun Yang Solar acquires stake in coal power firm

Solar farms developer Jun Yang Solar Power Investments announced the purchase of a CNY525.5 million stake in coal-fired power projects operator Beijing Sanjili Energy. "Solar is in early development, which means it is difficult for us to rely entirely on it for stable profit generation," Jun Yang President Peng Libin said. "Meanwhile, Sanjili faces pressure to have at least 10% of its generating capacity fueled by clean energy." The purchase of the 25.7% stake in Sanjili would benefit both firms, which plan to cooperate on clean-energy projects, he said. Jun Yang has 31.5 megawatt (MW) of operating solar farms in Qinghai and Henan provinces. It aims to raise that to 500 MW within five years. Sanjili has 4,640 MW of operating coal-fired plants and 780 MW of natural gas-fired plants in Henan and Jiangsu. It has Beijing's approval

to build 1,320 MW of coal-fired units costing CNY4.8 billion, and 2,000 MW of coal-fired units in Jiangsu at CNY8 billion.

### Focus on cheap electricity, not cheap solar panels, says SunPower

Chinese solar manufacturers are still trying to sell panels at the lowest prices and have failed to adapt to an industry seeking more efficient components, SunPower Chief Executive Tom Werner said in July. Prices for panels have plunged, and now make up less than half the cost of a system. Offering ever-lower panel prices has become a money-losing strategy for most solar companies, Werner said. SunPower, based in California, focuses on delivering the most efficient panels in the industry. That lets customers produce electricity at lower prices, and makes its products more appealing, Werner said. SunPower's panels use cells that convert as much as 24% of the energy in sunlight into electricity. The company expects to reach 25% in "a few years", Werner said. Yingli Green Energy, the world's largest panel maker by shipments last year, sells panels with efficiency rates as high as 15.4%. SunPower typically charges more for its panels and Werner said the higher efficiency justifies the price tag. Panel prices make up about 20% to 25% of the cost of a solar system, compared with as much as 70% in 2010 and 2011, said Ben Kallo, Analyst for Robert W. Baird in San Francisco.

### Chinese wind turbine makers not ready for mass exports

Chinese wind turbine makers may not be ready for mass sales of their products overseas for five more years because they are lacking marketing and after-sales support on the ground, according to Jukka-Pekka Mäkinen, Chief Executive of Switch, a Finnish maker of permanent magnet generators and converters. It also took a long time for them to come up with customer financing packages, he said. In 2010, Han Junliang, Chairman of Beijing-based Sinovel Wind Group said its target was to export half its output by 2015, but last year, the company booked overseas sales of CNY472 million, accounting for only 11.8% of total sales. In March, quoting figures from the China Wind Energy Association, Sinovel said it led its rivals with a 29% share of China's accumulated export sales. Xinjiang Goldwind Science & Technology, China's second-largest wind turbine maker, said in 2010 it was aiming for 30% of sales from overseas markets by last year, but it made only 11.6% of its sales overseas. Switch is providing design and engineering help to Chinese turbine makers so that their products are reliable, efficient and low-maintenance. China has been the world's largest wind turbine market since 2010, but its producers are relative newcomers. Although they only set up production lines about eight years ago, four Chinese makers ranked among the world's 10 biggest producers by market share in 2011. They rely on foreign partners however for help with product design and the supply of key components. Xinjiang Goldwind Science & Technology, China's second-largest wind turbine maker and the world's third-largest, had a German partner, Vensys, which it bought in 2008. Sinovel Wind Group, China's largest producer, teamed up in 2005 with the U.S. firm American Superconductor (AMSC), but the partnership broke down in 2011 when AMSC filed several lawsuits against Sinovel for alleged illegal use of its intellectual property. Asked if he was concerned that Switch's partners might steal its intellectual property, Mäkinen said: "If they screw us, we take our stuff elsewhere. We still own the drawings and designs. We have to trust our strategy: that means we have to trust our partners. We have to provide something they don't have, like the latest technology for big-capacity generators, and export sales channels and customers", the South China Morning Post reports.

### China raises solar power target

China is aiming for a five-fold increase in solar power generating capacity by 2015. The country aims to install about 10 gigawatt (GW) of solar capacity annually from 2013 to 2015, bringing the total to more than 35 GW by the end of 2015, the central government said. The 35 GW target is higher than the 21 GW announced by the National Energy Administration (NEA) last year. The government is also encouraging mergers and acquisitions (M&As) in the domestic industry and urging banks to provide credit support for big and efficient solar panel producers. The government will improve tariff and subsidy systems to allow better investment returns for solar projects. During the second half of 2013, global solar photovoltaic demand is forecast to reach 20 GW, up 22% from a year earlier, according to consultancy NPD Solarbuzz. China and Japan together are forecast to account for more than 45% of global demand in the second half. The share of Europe, where governments have been scaling back subsidies for solar power, will decline to less than 30% from almost half the global demand during the second half of 2012. The sector has been hit hard by the excess capacity, falling government subsidies and trade disputes. Manufacturers have been hemorrhaging cash and

struggling with mounting debts as panel prices have fallen by two thirds over the past couple of years. The U.S. last year slapped anti-dumping duties on solar cells imported from China although an agreement has been reached with the European Union to avoid punitive tariffs, the Shanghai Daily reports.

### Greenpeace criticizes coal-to-liquid project

Environmental group Greenpeace accused Shenhua Group, China's largest coal producer, of causing "drastic drops" in groundwater levels near one of its projects and of illegally discharging toxic wastewater. A Greenpeace report said that a coal-to-liquid project operated near Ordos city in Inner Mongolia had drained 50 million tons of groundwater from the water-scarce Haolebaoji region since 2006, shrinking the nearby Subeinaoer lake by 62%. At least 13 coal-to-liquid projects were approved by the National Development and Reform Commission (NDRC) in the first half of this year with more than 100 others waiting for approval. "This project has been hailed as an industry model with its self-claimed 'low water consuming' and 'zero emission' technologies, but if this groundwater draining model is going to be copied, it would lead to rampant eco-disasters", said Greenpeace East Asia Campaigner Deng Ping. Greenpeace said it found the project was discharging wastewater containing high concentrations of toxic chemicals without proper treatment. Shenhua's coal-to-liquid project has a production capacity of 1.08 million tons a year, with plans to expand to 5 million tons. Greenpeace said the project's water use would triple to 41 million tons by 2017. An environmental protection officer with China Shenhua Coal to Liquid and Chemical, which owns the project, denied water extraction was the sole cause of ecological degradation in the region, pointing to reduced rainfall in the area. In the first half of this year, Shenhua Group has twice been fined for environmental violations, the South China Morning Post reports.

### China and EU solve solar panel trade dispute

China and the European Union on July 27 reached a deal to defuse the multi-billion euro dispute over Chinese solar panels that threatened a wider trade war. After six weeks of talks, EU Trade Commissioner Karel De Gucht and his Chinese counterpart agreed on a minimum price for panels from China near spot market prices of 0.56 per watt in Europe in July. European solar panel manufacturers had accused China of dumping €21 billion worth of solar panels in Europe last year below production costs, putting European solar panel manufacturers out of business. Europe planned to impose hefty tariffs from August 6, but a majority of EU governments – led by Germany – opposed the plan, which led to the compromise. The China Chamber of Commerce for Import and Export of Machinery and Electronic Products led the negotiations on behalf of 94 Chinese producers. "I am satisfied with the offer of a price undertaking submitted by China's solar panel exporters," De Gucht said. Chinese Commerce Ministry Spokesman Shen Danyang welcomed the deal as a "positive and highly constructive outcome". Under the deal, China is allowed to meet about half Europe's solar panel demand at last year's levels. EU consumption was 15 gigawatt (GW) in 2012, and Chinese manufacturers will be able to provide 7 GW without being subjected to tariffs. Imports above this quote, or by companies who did not agree to the deal, will be subject to an import tariff of 47.6%.

Chinese solar panel production quadrupled between 2009 and 2011 to more than the world's entire demand as it took advantage of a growing market for renewable energy, but meanwhile European governments withdrew generous subsidies for solar energy, the Shanghai Daily reports. In June, the European Commission imposed an emergency anti-dumping tariff of 11.8% on imports of Chinese solar panels, which was set to rise to 47% if no settlement had been reached by August 6. Lobby group EU ProSun, which pushed for the tariffs, was not satisfied with the agreement and said it would take the European Commission to court as the deal violated European law and sounded the death-knell for the industry by handing China some 70% of the market at existing prices. The final settlement of the dispute with the EU prevented the outbreak of a trade war, and it also provides a "new model" for solving trade disputes. The agreement expires at the end of 2015. The European Commission is continuing its anti-subsidy investigation but would not impose provisional anti-subsidy measures. The Commission will decide whether definitive anti-subsidy levies should be imposed no later than December 8, after issuing the final findings in both its anti-dumping and anti-subsidy investigations.

## Three quarters of polysilicon producers to close down

Three quarters of China's solar-grade polysilicon producers face closure as the government aims to overhaul the bloated and inefficient industry, resulting in fewer but better companies. The polysilicon sector, which has around 40 companies employing 30,000 people and has received investment of CNY100 billion, suffers from low quality and chronic over-capacity as local governments invested money to feed the fast-growing solar panel industry, for which polysilicon is a key feedstock. People in the polysilicon industry say the moves will halve China's production capacity to 100,000 tons a year, leaving around 10 relatively strong firms with better technology and cost efficiency. "Large amounts of ineffective, high-cost production capacity will exit the market," said Ma Haitian, Deputy Secretary General of the Silicon Industry of China Nonferrous Metals Industry Association, a Beijing-based industry lobby group. As smaller polysilicon producers, with average annual capacity of a few thousand tons, are pushed out, the likely winners will be larger producers such as GCL Poly, TBEA, China Silicon and Daqo New Energy. The shake-out is already under way as polysilicon prices have plunged to below USD20 per kg from a 2008 peak of almost USD400, forcing some producers to file for bankruptcy. Their plight is made worse by cheaper, and better quality imports from producers such as MEMC Pasadena and Michigan-based Hemlock Semiconductor Group – a venture of Dow Corning, Shin-Etsu Handotai and Mitsubishi Materials Corp – and Norway's Renewable Energy. Of the 69,000 tons of solar-grade polysilicon China consumed in the first half of the year, 41,000 tons were imported. Imported polysilicon has a higher purity that results in a higher energy conversion. Many of China's leading solar cell and module manufacturers – such as LDK Solar, Yingli Green Energy Holding, Suntech Power Holdings and JA Solar Holdings – have long-term take-or-pay contracts with foreign polysilicon producers, under which they import set amounts at fixed prices of around USD40-50/kg.

- The Chinese government has taken a series of measures to support the photovoltaic (PV) sector. China will take more initiatives to promote distributed solar PV power projects and power suppliers are urged to buy all available solar power. The government emphasized that transmission lines and solar power projects must be put into operation at the same time to ensure that power can be transmitted to the grid. The renewable energy fund will be expanded to ensure that more distributed PV projects receive government subsidies in time.
- Shanghai will increase subsidies for energy-saving projects in construction and transportation, two major sources of energy consumption. Each building qualified as a "green" energy saver will be eligible for subsidies of CNY60 per square meter. Subsidies for transport projects have amounted to over CNY75 million in the past three years and will increase. Air conditioning systems in the Shanghai Metro will be renovated.
- Liaoning-based Solargiga Energy Holdings is pinning its hopes on the Japanese market to revive its fortunes. Its long-time customer Sharp Corp has agreed to buy 370 megawatt (MW) of solar modules in the 12 months to March 31 next year. "Given European governments have been cutting subsidies and raising tariffs, we need to further diversify our markets", Solargiga Executive Director Hsu You-yuan said. Japan accounted for 28% of Solargiga's sales last year, and China 54%, but its Chinese customers were highly reliant on the European market. Solargiga last year sold 78 MW of ingots, 245 MW of wafers, 91 MW of cells and 57 MW of panels. It also developed and installed 35 MW of solar farms in China and Germany. Solargiga had a net loss of CNY1.28 billion last year.
- The Chinese wind turbine maker Sinovel Wind and two of its employees have been charged with stealing trade secrets from AMSC, a Massachusetts-based company that provided wind turbine design, engineering services and power electronics and controls to Sinovel, by a federal grand jury in Wisconsin. Authorities said the theft allegedly cost AMSC USD800 million. Sinovel, once AMSC's largest customer, contracted with an AMSC employee in Austria to get the software designed for Sinovel's turbines. Sinovel Wind Group Co also announced it will divest four foreign units, including in the United States, Canada, Belgium and Italy.
- The World Bank has barred China Energy Conservation and Environmental Protection Group Technology and Investment Co New Hope & Talroad (Beijing) Environmental Technology (CECEP New Hope) from work on projects financed by the lender after the company admitted to fraud in the World Bank-financed Shandong Flue Gas Desulphurisation Project in China. The ban applies for two years. Parent company CECEP is the only state-owned company directly sponsored by the central

government that specializes in energy conservation, emission reduction and environmental protection. CECEP is responsible for the investment of CNY23 billion in national energy conservation projects, with 172 subsidiaries and 30,000 employees.

- Solar and wind generation is reaching the market faster than nuclear power under Beijing's latest five-year plan, according to Karsten Sach, Deputy Director General for European and International Environment Policy at the German Ministry for the Environment, Nature Conservation and Nuclear Safety. Sach emphasized the importance of wind and solar energy: "If you read Chinese projections a decade ago on how nuclear and renewables would develop over the next decade, you would have seen nuclear far ahead of renewables. If you look at what happened and the projections of what will happen in the most recent five-year plan, you see renewables in front of nuclear," he said.
- Many listed Chinese solar companies experienced a turnaround in the first half. Of 22 listed companies, 10 have released interim statements indicating a recovery based on expansion in new markets and in the domestic market. The other 12, including Hareon Solar Technology Co and Xian LONGI Silicon Materials Corp, warned of profit declines or outright losses in their interim statements, according to data provider Wind Information. Chinese solar manufacturers account for 70% of the global output of solar panels, and 90% of the products were for export in 2010.
- China's Ministry of Commerce (MOFCOM) imposed provisional anti-dumping duties on imported solar-grade polysilicon from the United States and South Korea. Exporters from the U.S. will be required to pay deposits with Chinese customs ranging from 53.3% to 57%, depending on the dumping margin. Exporters from South Korea will have to pay deposit rates from 2.4% to 48.7%.
- Beijing Jingneng Clean Energy, the largest natural-gas-fired power generation firm in the Chinese capital and 13.4% owned by its sole gas supplier, Beijing Enterprises, faces uncertainty over earnings despite the management's confidence that the municipal government will compensate it for higher gas costs in the next few years. From July 10, China raised the natural gas price for non-residential users by an average 15.4%.
- China's investment in renewable energy during the 12<sup>th</sup> Five Year Plan (2011-15) will reach CNY1.8 trillion in addition to CNY2.3 trillion being spent on energy-saving and reduction of harmful emissions to realize a commitment to cope with climate change, Xie Zhenhua, Deputy Chairman of the National Development and Reform Commission (NDRC), said during the Caring for Climate China Summit held by the Global Compact Network China in Beijing. From 2006 to 2012, China's energy consumption per unit of gross domestic product (GDP) was reduced by 23.6%, which is equal to a reduction of 1.8 billion metric tons of carbon emissions, Xie said.
- The value of solar cell and module exports plunged 31% year-on-year to USD6.5 billion in the first six months of the year, according to the Photovoltaic Product Branch of the China Chamber of Commerce for the Import and Export of Machinery and Electronic Products. Prices were down 41%, while the export volume increased 17%. Shipments to the European Union fell about 58%, in contrast to a sharp rise in sales to Japan (up 150%), India (100%) and South Africa (2,200%). Solar panel sales to the EU reached €21 billion last year.
- Yingli Green Energy Holding Co, the world's largest photovoltaic module manufacturer in terms of shipments, said that its wholly-owned subsidiary, Yingli Green Energy Americas, has achieved the milestone of more than 1 gigawatt (GW) of PV modules delivered to over 30,000 projects in the Americas and the Caribbean. 1 GW of installed PV facilities could meet the energy needs of more than 200,000 average American households.
- Suntech Power said three Directors, including the former Chairwoman, quit. The departing Directors said the company had no business plan. Susan Wang, Julian Worley and Qiu Zhizhong resigned on August 21, saying they were not provided with information they needed to fulfill their responsibilities, the Wuxi-based company said. Michael Nacson was appointed Chairman. Insolvency proceedings against the company's biggest unit, Wuxi Suntech Power, were ongoing. It missed a debt repayment in March, opening the way for bondholders to sue the company in the U.S.
- China will raise subsidies for cleaner forms of electricity from September 25 to help thermal power plants meet the country's tough new air pollution standards. China's power plants have lobbied the government for more subsidies, saying they cannot

afford to install new equipment to cut emissions because fixed power prices do not allow them to pass on the cost to consumers. The National Development and Reform Commission (NDRC) will raise subsidies for electricity generated by renewable sources to CNY0.015 per kilowatt hour (KWh) from CNY0.008. It will also raise subsidies for thermal power plants that have installed equipment designed to cut nitrogen oxide emissions and particulate matter to mandatory levels, providing CNY0.01 per KWh, up from CNY0.008 at present.

- Solar panel producer China Singyes Solar Technologies announced that its first-half profit climbed 26% to CNY171 million as sales jumped 32% to CNY1.7 billion. Much of that increase in sales came from a 61% surge in revenue from the company's building-integrated photovoltaics (BIPV) unit. BIPVs are building materials with solar power functions. BIPV accounted for nearly half of revenue, compared with 40% last year. The gross profit margin of the product remained high at 32%. Singyes expects to complete 195 MW of solar projects this year, of which 115 MW have already been built. Singyes also signed a conditional agreement for the sale of a 100 MW rooftop solar-power plant in Hunan to Fujian-based Goldpoly New Energy for an undisclosed amount.
- China Datang Corp Renewable Power plans to expand more rapidly in the second half of the year after first-half profits doubled thanks to an increase in electricity sales. The Beijing wind-farm operator posted net profit of CNY286 million compared to CNY147 million in the same period last year. Electricity sales climbed 34% to CNY2.7 billion, boosted by a 38% increase in power generation and lower grid curtailment. President Hu Yongsheng said Datang Renewable, a subsidiary of Datang Corp, added 12 MW of production capacity in the first half, and he was confident the target of 500 MW for the year would be reached.

## POLLUTION

### Land Ministry to map the extent of soil contamination

The Ministry of Land and Resources is compiling a nationwide "pollution map" to gauge the level of heavy-metal contamination in soil due to human activities, including collecting soil samples from across the country and testing levels of 78 chemical elements found in both topsoil – less than 25 cm deep – and in samples from at least a meter underground. No timetable for the survey was given, nor whether the map would be publicly released. Recent reports said that almost half of the rice in Guangzhou was found to be tainted with cadmium, a heavy metal that can damage kidneys and bones. Researchers have found that soil collected in parts of the mid- and lower reaches of the Yangtze River contained high levels of cadmium, mercury, lead and arsenic. Some cities were found to have "abnormal levels of radiation". Heavy-metal pollution in soil has been expanding in densely populated eastern China, compared with samples collected in the 1990s. But some analysts have voiced doubts about the new survey. Authorities have kept under wraps soil-pollution data gathered during a five-year nationwide investigation, dubbing them a "state secret". Chinese consumers are becoming increasingly worried about the safety of crops and vegetables grown in contaminated soil. A study published last year in the *Journal of Immigrant & Refugee Studies*, which said that immigrants to New York from mainland China had higher levels of lead, cadmium and mercury in their blood than those from other Asian countries, went viral online. Xinhua and CCTV posted a link to the study. Statistics from the Ministry of Environmental Protection (MEP) released in 2011 show 10 million hectares of farmland, or 8.3% of arable land in the country, were polluted. Farmland in some prosperous coastal regions and industrial areas on higher ground were more seriously polluted.

### Coal-fired power stations causing deaths and illness

Consumption of fossil fuel is the biggest cause of early deaths and chronic diseases like asthma. Air pollution from 196 coal-fired power stations in Beijing, Tianjin and Hebei caused 9,900 premature deaths in 2011, with the province, a big coal consumer, deserving most of the blame, according to a new study by Greenpeace and American air pollution experts. It also found that coal consumption in the region had led to chronic diseases, including 11,110 cases of asthma and 12,100 cases of bronchitis. Among the deaths, 850 were due to lung cancer linked to carcinogenic heavy metals – including arsenic, lead, cadmium and nickel – from the burning of coal, while the rest were attributed to stroke, heart disease and chronic lung problems. Hebei is the country's third biggest consumer of coal. Beijing's efforts to cut coal

consumption in recent years had been easily offset by the enormous amount of the fuel burned by its neighboring regions, particularly Hebei, Greenpeace climate and energy campaigner Huang Wei said. While Beijing is struggling to reduce its annual coal consumption from 27 million tons in 2010 to 20 million tons in 2015, Hebei alone consumed 307 million tons in 2011. "The findings show that Beijing, Tianjin and Hebei are interdependent in terms of air quality as well as public health," Huang said. "And each of the local governments should start to do something", he added.

## Heavy metals poison vegetables in Pearl River Delta

An agriculture official says one-fifth of the Pearl River Delta's vegetables contain poisons like arsenic, cadmium, copper and mercury, even as worries over May's cadmium-tainted rice revelations still linger. A provincial agriculture official, Yu Jiame, said the spread of heavy metals used in manufacturing, such as arsenic, cadmium, copper and mercury, was a "regional problem, covering a large area" after Guangdong's decades-long industrial boom. "As a result, about 10% to 20% of vegetables grown in nine vegetable production centers, including Dongguan, Conghua and Panyu, were tested to contain more heavy metals than the country's safety levels allow." Traces of lead, chromium, zinc and nickel were also found in some vegetables. Such heavy metals can accumulate in the body over years, causing organ and nerve damage, and even cancer. In May, anger erupted after the Guangzhou government said nearly half of rice samples collected from local markets in the first three months of the year tested positive for cadmium. Ma Jun, Director of the Institute of Public and Environmental Affairs, said pollution in the Pearl River Delta (PRD) was among the worst in the country due to its large concentration of electronics manufacturers, electroplating plants, and leather and textile workshops. A study by Guangzhou-based Sun Yat-sen University found that using polluted water for agricultural irrigation, as well as emissions from cars and industrial sources, were major contributors to the problem. A report released by the State Oceanic Administration (SOA) found that the Pearl river discharged more than 3,700 tons of heavy metals into the South China Sea last year. Contaminated land is still used for crop growing, which can be harmful to public health, Ma Jun said. Heavy metal contamination is exacerbated by severe acid rain caused by factory and car emissions, Yu added. Almost half of the precipitation that falls in the province is acidic, with the highest concentrations in Foshan, Qingyuan and Shaoguan. the South China Morning Post reports.

## Official media argue paraxylene (PX) is harmless

The People's Daily published a lengthy article in June saying paraxylene (PX) is no more harmful to people than coffee in terms of cancer risks, in an apparent bid to persuade the public that the controversial chemical that has led to several protests is not harmful. The newspaper said PX is an indispensable component of many necessities, including clothes, plastic bottles, capsules and building materials. When mixed with petroleum, PX can help enhance fuel quality and offer an essential solution to worsening smog problems in many cities. Citing Sinopec, the newspaper said China produces 63% of the PX it consumes, and if planned projects were scrapped, the rate would drop to less than 50% by 2015. In May, CCTV said the chemical was less dangerous than natural gas. The reports came after protests in May over plans to build PX projects in Yunnan and Sichuan provinces. Some microblogs questioned why the People's Daily failed to mention the fact that the production process of PX and some of its byproducts involve carcinogenic or highly toxic chemicals such as benzene, ethylacetate and acetic acid. They accused the Party newspaper of speaking for petrochemical interest groups. Li Bo, Senior Adviser to the environmental advocacy group Friends of Nature, said the article obviously failed to address concerns over PX projects. "Empty words about how safe the product is, without giving the public a say, will not help solve the problem," he said. An Associate Professor specializing in environmental protection at Peking University said PX was still classified as a hazardous chemical, despite its low toxicity, and the production process poses risks that require high-level safety management.

## Air pollution cut life expectancy by 5.5 years

China's air pollution has cut life expectancy by an average of 5.5 years in the north of the country and caused higher rates of lung cancer, heart attacks and strokes, according to a new study, co-authored by Professors from the Massachusetts Institute of Technology (MIT) in the U.S., Tsinghua University and Peking University in Beijing, and the Hebrew University of Jerusalem. They calculated that air pollution in the north caused the loss of 2.5 billion years of aggregate human life expectancy during the 1990s. "This is the first time anyone has got the

data to show how severe long-term pollution affects human health, both in terms of life expectancy and the types of disease,” said Li Hongbin, Economics Professor at Tsinghua University and a co-author of the study. “It shows how high the cost of pollution is in terms of human life – and that it is worth it for the government to spend more money to solve the pollution issue, even if we have to sacrifice growth.” Professor Li estimates the shorter life expectancy identified by the study in northern China is equivalent to reducing the workforce there by one-eighth. The study, published in U.S. Proceedings of the National Academy of Sciences, compares populations north and south of the Huai river, which runs through central China. Air pollution is much worse north of the river because of coal distribution for heating in winter. The study found that an increase of 100 micrograms of total particulate matter per cubic meter corresponded to a three-year reduction in average life expectancy. The difference between the north and south of the river was about 185 micrograms per cu m. “Part of the novelty of this study is that this was conducted with data on actual pollution measurements in China, and actual health and life expectancy in China. It is not an extrapolation,” said Michael Greenstone, Professor of Environmental Economics at MIT and a co-author of the study. Most previous calculations of the health cost of Chinese pollution are extrapolated from research conducted in the U.S., where overall pollution levels are much lower.

The Chinese government discredited the study in an attempt to ease public concern. “There is no medical study proving a direct link between environmental pollution and mortality from cardiovascular diseases and shorter life expectancy,” a doctor from a government institution said.

### Protests scupper uranium enrichment project

Nuclear experts and green activists have called for more information from the Guangdong provincial government after limited details were released about its proposal for a CNY37 billion uranium processing plant in Jiangmen, about 100 kilometers from Hong Kong. The 230-hectare plant in the Longwan industrial district of Zhishanzhen would carry out uranium conversion, enrichment and fuel fabrication. More than 2,000 people staged two protests in July outside the Jiangmen municipal government building against the uranium processing plant. The local government has meanwhile scrapped the plan. Heshan Deputy Mayor Wu Guojie personally announced the decision to scrap the China National Nuclear Corp (CNNC) project. The project would have been able to produce 1,000 tons of uranium a year by 2020, including facilities for uranium conversion and enrichment, as well as the manufacturing of nuclear fuel equipment. Opposition from Hong Kong and Macao contributed to the local government's decision to cancel the plan. Jiangmen residents also feared a drop in real estate prices if the project went ahead. On the other hand, residents who stood to gain from relocation and compensation were angry that protests succeeded in halting the project. Apart from an up-front payment of CNY220,000 to be distributed among the families, villagers were expected to receive construction subsidies and farmland compensation and be moved to a new site the same size as their current village near their town government headquarters. Professor Gu Zhongmao at the China Institute of Atomic Energy said fears of radiation poisoning from such a plant were unfounded, as the nuclear fuel rods produced contained mostly uranium-238 – the most stable uranium isotope. “A nuclear power plant emits less radiation than a coal-fired power plant, and a nuclear fuel plant is safer still,” Gu said.

### Guangzhou to clean up its rivers, appoints “river chiefs”

Guangzhou plans to spend CNY14 billion to clean up its black and putrid-smelling rivers over three years, according to Mayor Chen Jianhua. Under the scheme, a total of 12 new sewage- and rainwater-treatment projects will be completed by 2016. All sewage from 283 villages is earmarked to be treated before it is discharged and 16 main waterways will be thoroughly cleaned. Chen said more cash would be invested between 2016 and 2020, without giving an estimate. By 2020, he said, the water in the Guangzhou section of the Pearl river would be clean enough to meet drinking-water standards during rainy seasons, and an additional 27 waterways in the city would be cleaned. Chen also announced that a senior official from every district and county-level city administered by Guangzhou would be named a “river chief” and held accountable for the water quality in their respective administrative regions. There was no information how they would be punished if the waterways were not cleaned up by the project's deadline. More than a third of Guangzhou's rivers remain contaminated. There are now more than 200 small waterways in Guangzhou's urban areas – and most are used for residential sewage. Chen's plan is the city's second water-cleaning undertaking since it set aside CNY48.6 billion to clean up rivers during the three years before the provincial capital hosted

the 2010 Asian Games. By the end of 2008, then Mayor Zhang Guangning promised the public that the city's waterways would be made clean enough for district leaders to swim in all year round. But Xiong Yang, an official with Green River, a China-based non-governmental environmental organization, said since the factories have gone to the north and west of Guangdong, the money should be used upstream where the pollutants come from.

## Chinese government approves tough air emissions plan

The Ministry of Environmental Protection (MEP) issued its most comprehensive and toughest plan to control and in some regions reduce air pollution by the year 2017, setting stricter limits on the levels of PM 2.5 particles. The Airborne Pollution Prevention and Control Action Plan (2013-17) is the second plan to tackle pollution in the past two years and will be backed by CNY1,7 trillion in total investments from the central government. The approval of the plan by the central government was announced during the 13<sup>th</sup> China International Environmental Protection Exhibition and Conference in Beijing. Wang Jinnan, Vice President of the Chinese Academy for Environmental Planning, who participated in drafting the plan, said the new program will give priority to regions that have heavy air pollution and high levels of PM2.5. The new plan specifically targets North China, particularly Beijing, Tianjin and Hebei province. The region suffered the worst air quality in China in the first six months of the year with all cities recording excessive PM2.5 pollution. Poor air quality was experienced for more than a fifth of the days in June in Beijing, as well as neighboring Tianjin and Hebei province. During the first half of the year, air quality was rated "severely polluted" in the Beijing-Tianjin-Hebei region for 26% of all the days in the period. The Pearl River Delta in south China had good air quality for nearly 90% of June. The average reading for PM2.5 in 74 cities in the first half was 76 micrograms per cubic meter, but in Beijing and its surrounding areas, the average reading was 115 mg per cu m.

The plan's goal by 2017 is for a 25% reduction in air emissions from 2012 levels in that region. A previous prevention plan on airborne pollution in 13 key areas of China was released in late 2012. Wang said that although eliminating outmoded methods of industrial production may have negative effects on local economies, the plan will boost the green industry and boost GDP growth. The target for Beijing is keeping the concentration of PM2.5 at around 60 micrograms per cubic meter by 2017, a level about 25% lower than 2012 levels, said Beijing Vice Mayor Zhang Gong. Officials from Shanghai and Tianjin have vowed that by 2017 their PM2.5 levels will be reduced by 20% compared with 2012 levels. Shijiazhuang, capital of Hebei, has promised to reduce emissions by 30% from 2012 levels. Apart from sulfur dioxide and nitrogen oxides, more harmful volatile organic compounds will also be targeted. The government plans to issue two more plans to address water pollution and improvements to the rural environment over the next five years.

## Shanghai's rivers and lakes heavily polluted

More than half of Shanghai's rivers and lakes are heavily polluted and much of their soil beds seriously contaminated, according to the city's first water census. Some 53% of the local surface water was below Grade V, the worst of five water quality levels, the Shanghai Water Authority said. Only 3% of the water in the city's rivers and lakes was better than Grade III, a level that indicates the water can be used by residents as well as fish and shrimp farms. Some 23% of water is Grade IV, meaning it is not drinkable but can be used for industry or in scenic areas, such as in fountains. The remaining 20% is Grade V, meaning it can only be used for irrigation. 5% of the bottom of the rivers and lakes was seriously polluted with heavy metal elements, 28% was either slightly or heavily polluted while just 27% had no traces of heavy metals. The city government examined the quality of over 2,500 major rivers and lakes and tested soil samples from 309 rivers and lakes during the census between 2010 and 2012. The total length of Shanghai's rivers is put at around 25,000 kilometers and there about 527.84 square kilometers of lakes. Downstream Suzhou Creek and some small creeks in suburban areas were the worst polluted. Dianshan Lake, the biggest lake in the city, is under threat from eutrophication and its water quality is worsening. Water in the downstream Huangpu river is Grade IV, the Shanghai Daily reports.

## Number of waste incinerators to increase

The number of waste incinerators will rise sharply under a national plan to boost investment in environmental protection industries, but environmental activists warn the move could lead to more mass protests as the public grows increasingly concerned about the health impact. The

central government said the environmental sector would become a “pillar industry”. It set a 15% annual growth target for energy-saving and environmental protection industries that would see turnover reach CNY4.5 trillion by 2015. Large-scale incinerators with a daily burning capacity above 300 tons are on the shopping list to tackle a looming garbage crisis in many cities. The central government aims to incinerate up to 35% of household waste by 2015, up from about 18% in 2011. The urban rubbish treatment capacity will be expanded to 870,000 tons a day by 2015, from 513,000 tons per day at the end of 2011, according to the Ministry of Housing and Urban-Rural Development. The number of incinerators in China could double to about 300 to meet such targets. However, incinerators have been the subject of protests in China. Residents living close to planned incinerators are concerned about emissions of toxic gases, even though operators insist they are using technologies on par with developed countries. In order to attain the objectives of the plan, authorities will have to address the concerns of the public.

## Calls to halt building coal-fired power stations in the PRD

Emissions from new coal-fired power stations planned in Guangdong could cause as many as 16,000 deaths in the next 40 years. There are plans to build 22 additional stations. The estimates were made by Dr Andrew Gray, an American private air quality consultant commissioned by Greenpeace to study the health impact of the new plants' emissions of PM2.5 particles. The extra deaths would add to an already heavy health toll – put at 3,600 deaths and 4,000 cases of child asthma in 2011 alone – from the 96 coal-fired plants already in operation in the province and Hong Kong. “The Pearl River Delta (PRD) region should strictly enforce the policy of no more new coal-fired power plants published in 2009. Guangdong has ignored its earlier pledge to ban new coal-fired power plants in order to feed its hunger for energy,” Greenpeace climate and energy campaigner Zhou Rong said. For his study, Gray used the CALPUFF computer model, endorsed by the United States Environmental Protection Agency for trans-boundary air pollution, as well as emission data from the Ministry of Environmental Protection (MEP) and power companies. The health impact estimates were also based on a model developed by the World Health Organization (WHO) on mortality risks from human exposure to fine particles. Half of the additional power stations, with a total capacity of 26,000 megawatt (MW), are under construction and the rest are in the planning stage. Of the predicted 16,000 premature deaths in the next four decades, two-thirds would be related to strokes, while the rest would be from lung cancer and heart disease, the South China Morning Post reports.

- The Environmental Protection Bureau of Anqing, Anhui province, has fined Sinopec CNY90,000 for causing air pollution. The rare move sets a good example in regional governments' battle against large state-owned polluters, experts said. “Sinopec breached the law, so we have the right to punish it,” a city official said. It marks a victory for local law enforcement, as large state-owned enterprises (SOEs) can have administrative rankings even higher than those of regional governments. This makes punishing them difficult, although regional environment authorities have the power to supervise branches of state-owned companies. Wang Biao, General Manager of Sinopec's Anqing subsidiary, also serves as a Standing Committee Member of Anqing's Party Committee.
- The central government in June announced 10 new measures to fight air pollution in urban areas. It will strictly control highly energy-intensive and polluting industries, adjust its energy structure and enhance control of PM2.5 particles in populated regions and cities. The government would also eliminate overcapacity in heavily polluting industries, such as iron and steel, cement, aluminum and flat glass, earlier than the target originally set in the latest five-year plan. It also vowed to reduce major emissions by some heavily polluting industries by more than 30% by the end of 2017. During periods of heavy pollution, local governments should enact emergency management response measures, such as traffic restrictions or emissions limits for polluting industries, the central government said. Air quality would be included in appraising the performance of local officials.
- Li Ka-shing's Cheung Kong Holdings and partners agreed to buy AVR Afvalverwerking from Van Gansewinkel Groep for €943.7 million to add energy-from-waste (EfW) processing activities in Europe. Eindhoven-based Van Gansewinkel is owned by private equity firms CVC Capital Partners and KKR & Co. AVR Afvalverwerking gives Li control of the company with the largest waste treatment capacity in Europe. Net profit at AVR was €42.3 million in 2012, up from €20.7 million in 2011. Cheung Kong

Infrastructure (CKI) and Cheung Kong (Holdings) will each take a 3% stake, while Power Assets will own a 2% stake and Li Ka Shing Foundation 10%.

- The poisoning of more than 30 people or causing the evacuation of over 5,000 as a result of pollution will lead to criminal charges, as China announced harsher punishments for breaches of environmental protection rules. The environment is still getting worse and pollutants discharged in some regions far exceeded the environment's ability to cope, said Wan Bentai, Chief Engineer of the Ministry of Environmental Protection (MEP). China's Supreme People's Court and Procuratorate jointly issued a new judicial explanation listing 14 sorts of environmental pollution that will be considered crimes. Environmental pollution is a major cause of the high incidence of cancers in China. The top prison sentence for environmental crimes is 10 years.
- A draft amendment to the Environmental Protection Law would restrict the filing of public interest lawsuits to a government-affiliated body, the All-China Environment Federation. The amendment received the second of three scheduled reviews at the end of June. Beijing-based lawyer Xia Jun said the clause would "effectively close the door on civil efforts to fight polluters. Designating a single claimant by law is unprecedented." The All-China Environment Federation lodged dozens of lawsuits against polluters on behalf of victims since 2009 and had won several of them.
- Apples in the infamously polluted coal town of Huailai county, Zhangjiakou, Hebei province, sometimes known as "Coal City", have "genetically" adopted a permanent blackish hue due to years of exposure to the city's dirty, soot-filled air, according to CCTV. According to the Ministry of Environmental Protection (MEP), seven of the nation's ten most polluted cities are located in Hebei province – a major center for China's steel and coal industry. Zhangjiakou is perpetually enshrouded in a thick black haze and everything is permanently covered in layers of coal dust.
- More than 200 villagers have died from cancer in the past 10 years in Xiawan village near a heavily polluted river in Anhui province. The village, with a population of just 1,000, is one of a number of so-called "cancer villages" near the Huaihe river. Experts said it would be another 10 years, even with water quality improvements, before the incidence of cancer dropped to normal levels. Factories making paper, glass and chemical fertilizers are polluting the river.
- The seas off Qingdao were hit by their largest ever growth of algae in early July. The State Oceanic Administration (SOA) said the algae had spread across an area of 28,900 square kilometers. The previous largest bloom was in 2008, when it affected around 13,000 sq km. Algae are not toxic but create extreme imbalances in marine ecosystems. Scientists are pointing to the expansion of seaweed farming along the coast of Jiangsu province as a possible culprit. The massive algal bloom, consisting of the seaweed species *Ulva prolifera*, usually forms in the Yellow Sea about 300 kilometers south of Qingdao in mid-April, and arrives on the city's coast between mid-June and late July. Another scientist said the algae growth could be caused by an increase in the use of fermented chicken manure as fertilizer in the area.
- Excessive amounts of the dangerous chemicals thallium and cadmium have been found in a section of the Hejiang river in Guangdong province after dead fish turned up in the water. The river is used as a drinking water source.
- Hundreds of large factories along the coast of Hangzhou Bay have built underground pipelines to discharge pollutants directly into the water and fish populations have been decimated due to the heavy pollution. The Environmental Protection Bureau last year found that more than 90% of the water in the bay is now at the country's worst quality level. More than 200 chemical factories, including those in the Shanghai Chemical Industry Park, are located along the bay. Fishermen can earn only about one-third of what they did in the past. About 56 tons of polluted water was discharged last year into the sea nationwide, the 2012 China Environment Status Report said.
- Illegal sewage discharged from mines is suspected to be the source of river pollution in Guangxi. 112 enterprises along the Hejiang river in Hezhou city were forced to suspend operations after dead fish had been found in a section of the river since July 1. An investigation found thallium and cadmium in the river. Resources such as manganese, tungsten, rare earths, cadmium and thallium are found in Hezhou.
- China's Environment Minister Zhou Shengxian said his Ministry ranked among the world's "four major embarrassing departments" but defended the agency, saying it was hampered by overlapping functions in government, adding that water, land and carbon

output were all managed by different ministries. Zhou received among the fewest votes from China's lawmakers at the National People's Congress (NPC) in March when the new government was confirmed. "The current challenge facing the environmental authorities is how to properly deal with the environmental problems caused by economic development," Zhou said.

- A study in 14 counties in four provinces – Anhui, Shandong, Jiangsu and Henan – along the Huai river and its tributaries since 1973, linked the mortality rate from cancer to increased pollution. In Shenqiu county, Henan, the mortality rate from liver cancer increased more than five-fold between 1973 and 2006, according to the joint study by the Chinese Center for Disease Control and Prevention, the Chinese Academy of Sciences (CAS), and the Chinese Academy of Medical Sciences. The Huai is one of the most polluted rivers in China. Malignant tumors of the stomach, liver and oesophagus were the most common types of deadly cancers reported.
- About 10,000 people protested in July in Shiling township under Huadu district, Guangzhou, against plans to build a refuse incinerator in what is a leather-goods manufacturing center. Last summer, hundreds of residents of Qingyuan and Guangzhou took to the streets to protest against the project even before site details were announced. It was one of the largest protests against government plans to build incinerators in Guangzhou. By 2015, Guangzhou plans to build five new incinerators, in addition to the existing one in Likeng in Baiyun district. The Likeng incinerator handles 1,000 tons of refuse a day. Most of the rest of the 18,000 tons of waste the city produces each day ends up in landfills which already contained 40 million tons last year.
- Some food containers and utensils sold in Shanghai, including at branches of Carrefour, Century Mart and RT-Mart, failed quality checks for excessive levels of a heavy metal, the Shanghai Industrial and Commercial Administrative Bureau said. All substandard products have been removed from the shelves.
- Thirteen people were jailed over a pollution incident in Guangxi that threatened the drinking water of 1.5 million people in the city of Liuzhou. Three of the culprits were environmental inspectors. They allowed plants to dodge pollution inspections and discharge industrial effluents containing cadmium into the Longjiang river.
- A subsidiary of CNOOC has said it had not caused a massive fish die-off in Daya Bay, some 40 kilometers east of Hong Kong. Seasonal oceanic currents were likely to blame, and not air and waste water emissions from CNOOC's Huizhou refinery, a representative of the Guangdong subsidiary said. Local residents also expressed concern over emissions from the nearby Daya Bay nuclear power plant. The CNOOC refinery is currently undergoing expansion to increase production to 24 million barrels per day (BPD), from 12 million barrels.
- China has asked the European Union to help tackle some of its most severe pollution problems, EU Environment Commissioner Janez Potocnik said, including tackling pollution related to heavy metals and water and waste treatment. He said that the EU was investing about €10 million in the EU China Environmental Sustainability Project, which was launched in July. "We are ready to help either from the point of view of sharing our experiences, be it from the legislative point of view or also the point of view on how to best address those issues," Potocnik said. He emphasized that monitoring and enforcement of solutions to pollution problems were critical.
- Wang Jiwei, Secretary General of the China Association of Resource Comprehensive Utilization, called on the government and public to reduce, reuse and recycle as much waste as possible. Only about 5% of some 1 billion tons of construction waste generated each year in the country is recycled or reused. The public should realize that waste is just misplaced resources, he said. The household garbage classification for collection has long been a headache for recycling. Dumped rubbish took up 50,000 hectares of land in China. Insufficient recycling has been blamed as a major reason behind the rising amount of garbage. China is aiming to offer non-hazardous treatment of more than 80% of the country's household garbage by 2015.
- China is to improve the monitoring of drinking water sources, control poisonous contaminants and step up early warning mechanisms to ensure drinking water safety. Although 95.3% of monitored drinking water sources in 113 major cities across China met national standards last year, testing was done on only about 20 indicators based on surface water standards. Some harmful and poisonous contaminants were not included. The Ministry also plans to take measures to get a clearer view of the quantity

and quality of the country's underground water and set up a pollution prevention mechanism for underground water within five years.

- At least 26 villagers in Shuangqiao in Hunan province have died from cadmium poisoning and hundreds more have fallen ill since 2009 near a disused factory, the Xianghe Chemical plant, which used to produce indium. Villagers suffered from hydrohepatosis, phthisis and different types of cancer. Soil samples contained 300 times allowed cadmium levels and excess amounts were found in 500 of 3,000 villagers tested by health authorities. The chemical plant operated in the village until 2009, and a "huge" industrial waste pile remains in the factory grounds.
- Gas stations across Shanghai will start selling cleaner fuel in December as the city will start implementing the Shanghai V (5) standard for fuel, including the Shanghai V standard for petrol and "5<sup>th</sup>-phase" standard for diesel. These standards cap sulfur content below 10 parts per million – compared with the current 50 ppm. Manganese content will be cut to 2 milliliters per liter in the new standard from the current 6 milliliters per liter permitted. Fuel prices will stay almost the same. Stricter restrictions on banning highly polluting cars will be introduced in November.
- From January to June, the total number of foreign visitors, including business travelers and residents, entering China declined by 5% to just under 13 million compared with the same period last year. Rising levels of pollution are thought to be partly responsible for the drop. The number of foreign tourists visiting Beijing fell by 15% in the first six months of the year to 1.9 million. U.S. Embassy readings of PM2.5 show that this year's pollution is significantly worse than in the past three years.
- Western-funded green groups are wrongly accusing Chinese companies of causing environment destruction and creating social problems in Southeast Asia to restrain China's economic influence in countries along the Mekong River, the Chinese Academy of Social Sciences (CASS) said in its annual report on cooperation and development in the Greater Mekong sub-region, but it also acknowledged that Chinese companies were not doing enough to protect the local ecology.
- Hong Kong played a key role in the United States' first successful conviction in December of a recycling company for smuggling hazardous electronic waste. Hong Kong's Environmental Protection Department said it supplied evidence to the U.S. authorities after the interception of seven containers loaded with hundreds of cathode ray tubes in Hong Kong in 2008, which helped to convict Executive Recycling and its executives. Colorado-based firm Executive Recycling was found to have falsely claimed the electronic waste from businesses and the government would be handled locally. Instead, it shipped the waste overseas, with some of it ending up on the mainland. The firm was fined USD4.5 million and its owner and Chief Executive, Brandon Richter, was jailed for 2-1/2 years.
- The Ministry of Environmental Protection (MEP) has suspended approvals of new refining projects by China's two biggest oil firms – China National Petroleum Corp (CNPC) and Sinopec Group – for failing to achieve pollution reduction goals. The Ministry said it will assess the firms' measures to improve emission controls before the suspensions can be lifted. Refining capacity already under construction won't be affected.
- Beijing will place tougher restrictions on the number of new vehicles allowed on the roads each year, curbing annual growth to nearly zero. The city government aims to cap the number of vehicles in the city at 6 million by the end of 2017, compared with 5.35 million by the end of July, to limit air pollution. Beijing also aims to reduce total vehicle fuel consumption by at least 5% from 2012, by promoting the sale of new energy and small vehicles, and encouraging people to drive less frequently.
- Hundreds of thousands of dead fish were left floating in the Fu river in Wuhan after a chemical discharge. About 100,000 kilograms of fish were cleared from a 40 kilometer stretch of the river. An investigation found ammonia levels far in excess of the national standard at a drain outlet from the Hubei Shuanghuan Science and Technology Co, a chemical manufacturer.

## **GREENHOUSE GAS EMISSIONS**

### **China's carbon credit exchange likely delayed to 2016-2020**

China will not set up a national exchange to trade carbon emission rights until after 2015,

according to an official. It will take time for the nation's seven pilot exchanges to build up sufficient data-collection infrastructure and trading rules, let alone operate smoothly and come up with a model that works nationwide, said David Tang, Secretary of the Board of the Tianjin Climate Exchange. "China has committed to developing many different carbon markets over the next three years, and hopefully a national market sometime between 2016 and 2020," he told a climate-change investor forum. According to Tang, forming a national market before 2015 is not feasible. China has not signed binding international agreements on carbon emission reduction. It has said it would aim to reduce its energy intensity by 17% between 2011 and 2015. In late 2011, Beijing ordered carbon exchanges be set up in pilot form, but only the one in Shenzhen is up and running. Each of the exchanges will identify industries to be subject to emission quotas. Polluters that emit less than their quota will receive credits that they can sell on one of the exchanges to those which exceed theirs. Such "cap and trade" market systems have been operating abroad for decades and are believed to be the most efficient way to allocate responsibility and reduce pollution. The exchange in Tianjin aims to be the backbone of the national exchange. Tianjin has identified more than 100 firms in industries including power generation, oil, and steel as targets for the trade. In Shenzhen, about 635 companies accounted for about 38% of the city's total emissions, and they will be included in the experimental program. Using a 2012 baseline of carbon dioxide emissions of roughly 31.73 million tons, Shenzhen will issue 100 million tons of free emission allowances to companies complying with the program between 2013 and 2015. The 635 companies must achieve an average annual carbon intensity reduction of 6.68% by 2015. Cities such as Beijing might adopt absolute emission caps, said industrial experts. Most international carbon markets adopt absolute caps, but it still remains uncertain when China will reach an absolute peak in emissions. Various studies have yielded wide variations for China's carbon emissions peak, ranging from the year 2025 to 2040. China launched its first pilot carbon emissions exchange in Shenzhen on June 19.

- China and the U.S. agreed to five initiatives to cut carbon output from the largest sources, including heavy duty vehicles, manufacturing and coal-fired plants. The U.S.-China climate change working group will work with companies and non-governmental groups to develop plans by October. The initiatives are also aimed at improving energy efficiency, collection and management of greenhouse gas data, and promoting electric grids to carry more power from renewable energy. The agreements will concentrate on improving technologies, will not be binding and will not seek to cut emissions by specific volumes.
- China said it may miss its five-year energy efficiency targets as local governments continue to rely on energy intensive industries to boost growth, despite damage to the environment. The National Development and Reform Commission (NDRC) issued the warning in a report. It also admitted for the first time that energy data collected at the local level was found to be overly optimistic in comparison to national data. The government has targeted reducing energy intensity by 16% between 2011 and 2015. National statistics indicate that energy intensity dropped just 5.5% in 2011 and 2012, while local statistics put the decline at 7.7%. "Even if all local targets were met, the country may still fail to achieve its energy intensity target for 2015," the report said.

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