



FLANDERS-CHINA CHAMBER OF COMMERCE  
VLAAMS-CHINESE KAMER VAN KOOPHANDEL

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## ALTERNATIVE ENERGY

### Chinese makers of solar panels turn to building solar farms

China's loss-making manufacturers of solar panels believe they may have found a way out of their nightmare – by becoming one-stop renewable energy shops with their own solar farms. Many of the country's panel makers are now looking to invest in solar farms to help them return to profitability. For manufacturers, generating projects mean a predictable source of demand for their panels and a more lucrative business than manufacturing panels. They offer an annual gross return of about 10%, depending on the proportion of debt financing and project location. JA Solar said in August it planned to develop 300 megawatt (MW) of generating projects in Hebei province, in what its Chief Executive, Jin Baofang, said was a major step "to increase the role project development plays in our overall revenue mix". Shunfeng Photovoltaic, a small Chinese solar cell maker listed in Hong Kong, has said it will enter agreements to develop 1,079 MW of solar power projects and have 600 MW in operation or under construction by the end of this year. Like their overseas peers, Chinese panel makers may eventually spin off their power plants by listing them or selling them to funds and insurers to take profit and alleviate potential funding strains, analysts say.

### China to have biggest absolute increase in renewable energy

China will see the biggest absolute increase in power generation from renewable energy in the next 20 years, more than the increase in the European Union, the United States and Japan combined as the country faces a serious battle against pollution, the International Energy Agency (IEA) said. China will be the strongest driver in the global trend where renewable energy will account for nearly half of the increase in global power generation by 2035, with variable sources, notably wind and solar making up 45% of the expansion, the IEA said in its annual World Energy Outlook report. "The good news for China playing an active role in developing renewable energy is that it will help decarbonize the global energy system," said Fatih Birol, IEA Chief Economist, in an interview with China Daily. "The main challenge for global renewable energy today is that it is costly. If China builds a lot of renewable energy projects, it will help bring down the cost and enable it to compete with traditional sources of energy, namely coal and gas," he said. Earlier reports said that China plans to invest CNY1.85 trillion in the renewable energy sector as part of its effort to curb the increasingly serious air pollution. The country has pledged to increase the non-fossil energy consumption to 15% of its energy mixture by 2020, according to the National Development and Reform Commission (NDRC). Nevertheless, the IEA report forecast that China will continue to dominate the global energy demand for traditional energy sources because it has become the world's largest oil importer. China's consumption of coal will peak in 2020 and become stable as a result of improved energy efficiency and stabilized economic growth. India will replace China as the world's largest importer of coal by the early 2020s, it added.

### Solar panel makers shift to new markets

Chinese solar panel manufacturers are selling more to new markets after trade disputes with the U.S. and the EU. Wang Guiqing, Vice President of the China Chamber of Commerce for the Import and Export of Machinery and Electronic Products, said that exports to Europe have fallen to less than 30% of the total now from 70% in 2012. Exports to the U.S., formerly the second-largest export destination, are down to about 10% of the total – half the previous level. Japan has taken the place of the U.S., making up the second-largest market and taking 20% of China's solar exports. The successful shift has helped many Chinese solar manufacturers by boosting their revenue, reducing capital-draining inventories and providing funds for research and development (R&D). Japan's high feed-in tariff rate has been a catalyst for that country's solar industry, and China's own goal of having 35 GW of installed solar capacity by 2015; and its policy support for solar plants has lifted sales of solar products in recent months, Wang Hao, Analyst with Orient Securities Co noted. "Sales to the European market have contracted sharply, but we are able to make up for the loss of market share by higher sales elsewhere," said Zhang Hanbin, Senior Market Director of Nasdaq-listed Canadian Solar, which is based in Jiangsu province. Higher sales to the fast-growing Japanese market helped Canadian Solar halve its second-quarter loss and prompted it to forecast profitability on a full-year basis in 2013. Exports to India approached USD700 million in the first nine months of this year, compared with USD100 million in the final four months of 2012, Zhang said. Zhang Longgen, Chief Financial Officer of Jiangxi Jinko Solar Co said that the potential for growth now lies in China and Japan, and that 40% of sales are likely to be within China next year, with Europe and the U.S. each taking up less than 20% of total shipments, the China Daily reports.

## China's reduced coal use ends golden decade for coal

China's drive to reduce coal consumption is having an impact on investments in the coal industry worldwide. "China is kicking its coal addiction," said Chen Yafei, Vice Director at the China Coal Research Institute. "With slower economic growth and a big push towards gas and renewables, the golden decade for coal is over." China's coal imports grew 17% in the first 10 months of the year, down nearly half from the 30% in the same period last year. With weak demand and high domestic output, inventories have been stuck at record-high levels of 300 million tons most of this year. China's massive jump in coal use – to 3.8 billion tons last year from 2.5 billion tons in 2006 – drove prices of benchmark Asian thermal coal to an average of USD121 a ton in 2011 from less than USD50 five years earlier. But a raft of mine expansions during the boom years and weak demand caused by the global slowdown in economic growth pushed prices to a three-year low near USD80 a ton in October last year, and they have stayed below USD100 since. Goldman Sachs expects seaborne coal trade to grow at just 1% until 2017, compared with 7% from 2007-12. Miners bullish on demand are planning projects in areas that need significant infrastructure investment, such as the Galilee basin in Australia and the Sumatra region in Indonesia, but they need high prices for the projects to make sense. India's GVK Power & Infrastructure and Adani Enterprises are among those spending billions of dollars on new mines in the remote Galilee Basin. In Mozambique massive spending is needed on railways and ports to allow companies like Rio Tinto and Vale to make the most of potential reserves. "The prospect of weaker demand growth and prices at near marginal production costs suggest that most thermal coal growth projects will struggle to earn a positive return for their owners," Goldman Sachs said in a report. Beijing is mulling proposals to scrap a 10% coal export tariff, a move that could easily cause shipments to jump fourfold as Chinese coal becomes more competitive. Plans by the Ministry of Railways (MOR) to double the volume of coal carried on dedicated railroads to 2.4 billion tons by 2015 will cut production costs, as will an ongoing mine consolidation, the South China Morning Post reports.

## Premier Li Keqiang encourages private and foreign investment in green industries

China will open its energy conservation and environmental protection industries to foreign and private investment, Premier Li Keqiang at a meeting in Beijing. Li's remarks may signal a change in China's approach to the clean-energy sector, which has used government subsidies to create national champions and been criticized as protectionist in nature. He told foreign members of the China Council for International Cooperation on Environment and Development that China is willing to work with the international community to strengthen technology and other forms of cooperation to improve the environment. "We encourage private capital to enter the field," the China Daily quoted Li as saying. At present, foreign companies can invest in equipment manufacturing but can only have limited stakes in clean-energy projects like wind farms. "We also hope China's energy conservation and environmental protection products will enter the overseas market, and we will open the industry to the international market", Premier Li Keqiang said. The government's strategy of using subsidies to create national champions in wind and solar energy was partly successful in that it spawned some of the world's largest manufacturers of solar panels and wind turbines, but it also created an investment glut as local governments rushed to jump on the investment bandwagon. Many solar power and wind farms remain disconnected from the main power grid, and the country still remains overwhelmingly dependent on domestic coal and imported fossil fuels.

## Agricultural waste turned into bio-ethanol

Commercial manufacturing of cellulosic bio-ethanol from agricultural residue is expected to be given further impetus after commercial production begins in China next year, experts say. Chemicals firm Chemtex Engineering Co said work on a new plant that uses second-generation production technologies will start soon in Fuyang, Anhui province. The company will produce two kinds of biofuel: fuel ethanol and mono-ethylene glycol. The company, a part of Mossi Ghisolfi Group of Italy, is a pioneer in second-generation technologies and has a cellulosic bio-ethanol plant in Italy. "We plan to invest USD500 million in China for the conversion of 1 million metric tons of biomass into bio-ethanol and bio-glycols," said Sean Ma, President and Chief Executive of Chemtex China. Bio-ethanol can be added to petrol to boost fuel quality and reduce carbon emissions. Cellulosic biofuels are normally made from biomass such as wood waste, sugarcane and bagasse, a byproduct of sugarcane or sorghum production. They are regarded as sustainable options to corn-based ethanol and petroleum-based diesel. Beta Renewables, a joint venture between the Mossi Ghisolfi Group of Italy and

biochemical company Novozymes of Denmark, which set up the first cellulosic bio-ethanol plant in Italy last year, has already indicated that it expects output to rise significantly in the long run. There are two kinds of technology for making bio-ethanol, the first generation involving crop cultivation, which is widely used in China, and the second generation that uses agricultural residue, Ma said. China has seven big bio-ethanol facilities, and four of them, including Jilin Ethanol Co and Henan Tianguan, use first generation technology or grains as feedstock, says Michael Christiansen, President of Novozymes China. Two factories use the 1.5-generation technology or cassava and sweet sorghum for fuel output, while only one factory, Shandong Longlive, uses corn-cob residue or second-generation technology. A production of 4 million tons of bio-ethanol is envisaged in the 12<sup>th</sup> Five Year Plan (2011-15) by 2015. Although only 3% of China's petrol consumption has been replaced by ethanol fuels, the country is the third largest adaptor of ethanol in the world after the U.S. and Brazil.

## EU slaps duties on Chinese solar glass

The European Union imposed tariffs of up to 42.1% on solar glass from China to curb import competition for EU producers, heightening trade tensions over renewable energy. The duties punish Chinese exporters such as Zhejiang Jiafu Glass and Xinyi PV Products (Anhui) for allegedly selling glass in the EU below cost. The glass is used in solar panels, which are themselves the focus of two European trade probes affecting China. EU producers suffered "material injury" as a result of dumped imports from China, the European Commission said. The levies, which took effect on November 28, are for six months and may be prolonged for five years. The duties are the preliminary outcome of an investigation that the Commission opened in February after a dumping complaint by a European group on behalf of producers that account for more than a quarter of the production of solar glass in the EU. The EU solar-glass market was valued at less than €200 million, the Commission said when it opened the inquiry. Chinese exporters increased their share of the EU solar-glass market to 28.8% last year from 6.2% in 2009, the Commission said. The provisional levies range from 17.1% to 42.1%, depending on the Chinese exporter. Jiafu Glass faces the maximum rate, while Xinyi PV Products is subject to a 39.3% duty. EU governments must decide within six months whether to turn the provisional duties into "definitive" levies lasting for five years.

## Synthetic gas from coal also causing environmental damage

Environmental experts say a green project to convert dirty coal to cleaner natural gas is draining scarce water from grasslands, causing irreparable damage. Beijing is anxiously awaiting its first batch of synthetic natural gas – a material converted from coal and piped 300 kilometers from Heshigten Banner in Inner Mongolia. The gas will power some of Beijing's central heating systems, replacing coal to cut harmful emissions of particulate pollutants. When the pipes are fully pumping next year, Beijing will receive 4 billion cubic meters of synthetic gas a year – nearly half of last year's natural gas consumption. But environmental experts say the water-intensive conversion process could drain already scarce water resources in the country's drylands in the northwest, eroding land and causing more sandstorms. "If water depletion continues, not only will the local people suffer, the environmental impact could be profound," Chinese Academy of Sciences Ecology Researcher Xie Yan said. Nationwide, replacing dirty coal with cleaner natural gas is a key measure in reducing smog. Because of the country's limited conventional natural gas and abundant coal reserves, converting coal to natural gas seemed a convenient choice. Beijing's demand for natural gas is expected to rise rapidly, reaching 18 billion tons in 2015 and 28 billion tons in 2020, as all its heating systems and industrial boilers make the switch from coal to gas. Beijing Gas Group, which is fully-owned by the municipal government, has invested in the coal-to-gas project in Inner Mongolia to meet the demand. The conversion of coal into gas requires vast quantities of water not just for production, but also for cooling and the removal of contaminants. On average, one cubic meter of synthetic natural gas needs six to 10 tons of freshwater. Moreover, China's northwest, where coal is abundant, is already experiencing chronic water shortages. Five provinces – Shanxi, Shaanxi, Ningxia, Inner Mongolia and Xinjiang – which possess 76% of the country's coal reserves, have just 6.14% of its total water resources. The National Development and Reform Commission (NDRC) has approved 18 coal-to-gas projects, most of them in Xinjiang and Inner Mongolia, the South China Morning Post reports.

- At the 2013 China International Green Innovative Products and Technologies Show in November in Guangzhou, more than 400 enterprises from more than 10 countries

showcased their new green products and technologies. Launched in 2011, it is the country's most influential international exhibition of green industries. The exhibition area has grown to 50,000 sq m this year, and there has been a comparable increase in the number of overseas visitors.

- Creditors of solar panel maker Wuxi Suntech approved an acquisition and restructuring plan offered by smaller rival Shunfeng Photovoltaic International. It will offer CNY3 billion for the take-over and part payment of Wuxi Suntech's CNY9.46 billion of debts. Under the plan, Shunfeng also pledged to invest no less than CNY3 billion on technology innovation and production expansion over a two-year period after the proposal gets approval from a local court. Wuxi Suntech is likely to sell 1.5 gigawatt (GW) of photovoltaic products in 2014 and as the solar market grows, it could return to the top ranks in the global clean-energy industry.
- China is estimated to have added 10 gigawatt (GW) of installed photovoltaic power (PV) capacity in 2013, including 7 GW from PV power stations and 3 GW from distributed PV power projects. Liang Zhipeng, an official with the National Energy Administration (NEA), said distributed PV power capacity is likely to account for about 60% of next year's new solar capacity target. China's cumulative installed capacity of solar PV power reached 10 GW by the end of October this year. In the first 10 months of 2013, China added 3.5 GW of solar capacity.

## POLLUTION

### NPC approves restrictions or bans on 10 chemicals

China is staging a renewed battle against chemical pollution after the National People's Congress (NPC) passed two amendments to an international environmental treaty. Included in the amendments are 10 polluting substances to be restricted or banned under the Stockholm Convention on Persistent Organic Pollutants. The convention, signed in 2001 and effective from May 2004, aims to eliminate or restrict the production and use of organic pollutants including DDT. 179 countries and regions had signed the convention by May 2013. Of the 10 newly-added environment-threatening chemicals, China still produces and uses chemicals related to perfluorooctanesulfonic acid (PFOS), perfluorooctanesulfonyl fluoride (PFOSF) and endosulfan. PFOS is a fluorosurfactant created by U.S. company 3M in 1952 that is used in coatings. According to a study by the Environmental Directorate of the Organization for European Economic Development, "PFOS is persistent, bio-accumulative and toxic to mammalian species". Though 3M announced the phase-out of its production in 2000, PFOS and PFOSF-related products are still made in China. Endosulfan was extensively used as an agri-chemical to control insect pests. It later became controversial due to its acute toxicity, its potential for bio-accumulation and its role as an endocrine disruptor. Second to India, China produces around a quarter of the world's endosulfan even though it has about 70 substitutes that can be used as pesticides. The use and production of the chemicals will now be strictly controlled.

### Foreign investors target China's surging water desalination sector

In a country where water shortages have already crippled economic development, processing seawater for drinking and industrial use offers a future not only to the country but also to global investors. More than 300 specialists and businessmen from across the world flocked to Tianjin recently, looking for opportunities at the five-day congress of the International Desalination Association. Jeff Green, Founder and CEO of NanoH2O, announced at the congress that a desalination plant with a CNY45 million investment will be set up in Liyang, Jiangsu province, next year, the biggest investment that the company has made abroad. Green said the plant will supply high-quality reverse osmosis membranes to both domestic and overseas markets. The new products are expected to largely reduce desalination costs. The company believes the Chinese water desalination market will be worth CNY6 billion by 2020 and that at least 100 million people in the country will be drinking desalinated water by then. Reverse osmosis membranes are an essential material used during the desalination process. The water-processing costs are largely decided by the quality of the membranes. Those with higher permeability rates are able to effectively reduce energy consumption when seawater is pumped through the membranes to distill fresh water. Energy consumption accounts for about half of the total costs of desalination plants in China, said Wang Shichang, Desalination Expert at Tianjin University and a Co-chair of the International Desalination Association's Congress. Tianjin has two desalination plants, supplying more than 6 million tons of water into the



distribution network since 2010. China's seawater processing capacity has reached about 760,000 tons per day, and the average cost has decreased from more than CNY20 per metric ton to about CNY7 a ton, a price similar to ordinary industrial water. As one of 13 countries across the world with a severe shortage of freshwater, China's per capita freshwater reserves are only one-fourth of the global average. About 447 out of 600 cities in China suffer from water shortages, and 147 cities are seeing severe shortages, the China Daily reports.

### Hunan river polluted 10 years after plant closure

Toxic waste from a plant that produced arsenic is polluting waterways in Hunan province, 10 years after the business was closed down. Some 150,000 tons of arsenic-tainted waste is stored in the abandoned plant on a hillside in Lanshan County, and run-off is severely polluting local tributaries of the Xiangjiang, the largest river in Hunan. Stones submerged in tainted river water have turned a creamy yellow from sulfide pollution. Tests in a river just 300 meters from the plant showed the arsenic content was nearly 2.42 times higher than the standard. A private plant, using the mineral pyrite and mine waste to produce arsenic, was approved to be built in 1998. But it was found to have caused severe pollution due to substandard environmental facilities and was ordered to close in 2003. While machines were removed and workshops pulled down, waste material was left behind. The local Environmental Protection Bureau spent CNY240,000 in 2010 to clean the surrounding area, but due to insufficient funds and a lack of available technology, waste remained unprocessed. The county announced in November that CNY984,600 would be spent tackling the pollution.

### Medical waste posing serious pollution problems

Although China has regulations on disposal of medical waste, the danger of pollution from such waste remains very real, experts said. While the law requires all medical scrap to be treated collectively, many hospitals and clinics are not complying. In 2002, total production of medical waste stood at about 650,000 tons, averaging 1,780 tons per day. The figure has increased by 10% every year since then, and now stands at roughly three times that amount. Although many local governments are building disposal centers, many hospitals and clinics are still disposing of their own medical waste. Some is burnt using diesel oil without any decontamination, causing air and water pollution. Another issue is poor management of disposal centers. Regulations state that the material should be disposed of within 24 hours, but waste has been found lying in the open air for months without any treatment at a disposal center, the Shanghai Daily reports.

### Pearl River Delta has the worst air pollution

Ozone and particulate matter worsened air quality in the Pearl River Delta region in October, making it the most polluted area in the country, the Ministry of Environmental Protection (MEP) reported. In the Pearl River Delta region, only 22.2% of the days in October had good air quality. The number in September was 77.6%. Though there was no severe pollution in October, the nine major cities in the region had good air quality for fewer than 15 days, according to the report. Ozone remained the top pollutant, accounting for 20 days of the 24 polluted days. The average level of ozone in the region rose by almost 40% compared with the level in September. Particulate matter also significantly contributed to the region's heavy pollution, with the level of PM2.5 rising by almost 90% and the PM10 level rising by more than 70% compared with the previous month. The Ministry attributed the cause of the severe pollution in the region to the shortage of precipitation and the increase of solar radiation intensity in October. Nationwide, almost half of the 74 cities mentioned in the report by the MEP had good air quality in fewer than 15 days in October. The number of such cities was only 19 in September. Levels of all types of pollutants, except for ozone, rose in October due to the change of season from autumn to winter, the report said. Aside from the Pearl River Delta region, air quality in the Yangtze River Delta region and the Beijing, Tianjin and Hebei province cluster also worsened. The major pollutant in the Yangtze River Delta region shifted from ozone in September to PM2.5 in October. Six cities in Hebei province ranked in the top 10 most polluted cities, the China Daily reports.

### Polluters still flouting law: inspection

Enterprises in suburban Beijing and nearby areas are still illegally discharging airborne pollutants on a large scale, an investigation by the Ministry of Environmental Protection (MEP)

discovered. Twenty-one of the 65 companies and factories checked were found to be carrying out illegal activities, such as excessive emissions of pollutants, or to have poor environmental management, inspection results show. Dust also worsened air pollution in the region, with no effective dust proof measures taken at construction sites, coal yards and rubbish dumps. Punishments for the companies are still pending, but nine of them from Hebei have already been fined up to CNY100,000. Zou Shoumin, Director of the Ministry's Environmental Supervision Bureau, said that "under the current laws and regulations, people can be investigated for legal responsibility only when found to have violated relevant laws more than twice a year and to have caused a certain level of damage to the environment. We have high expectations for the environmental law that is being amended and hope that harsher penalties, such as fines based on the number of days of pollution, can be included."

## Shanghai and other cities suffer from heavy smog

Shanghai suffered heavy air pollution on several days in the past month. The air quality index (AQI) measuring pollution levels on some days rose to more than 340. The Shanghai Education Commission asked schools to cancel outdoor activities on heavily polluted days. People remarked online they were shocked Shanghai was "catching up" with Beijing, which has suffered from heavy air pollution for years. Shanghai's environmental watchdog is working on adjustments to the city air quality warning system, after it took 27 hours to report heavy pollution. Shanghai also suffered several days of severe smog in the beginning of December with the air quality index surging past 400. A total of 104 cities in 20 provinces in and near China's two largest industrial clusters – the Beijing-Tianjin-Hebei region and the Yangtze River Delta region – fell victim to heavy smog that reduced visibility to less than 10 meters in some places, according to the Environmental Protection Ministry (MEP). This was the second time heavy smog has covered so many cities this year. Thick haze shrouded many cities for more than 20 days in January, affecting more than 600 million people in 17 provinces, municipalities and autonomous regions. China is experiencing what developed countries experienced about 20 to 30 years ago, when smoggy and hazy weather caused by fast urbanization and an unreasonable urban layout frequently occurred, said Peng Yingdeng from the Ministry of Environmental Protection. "If urban planning does not take the diffusion of pollutants into consideration, smog will plague China for at least another 10 to 20 years," he told Beijing News. The latest wave of smog first swept into Shanghai and Jiangsu province on December 1. PM2.5 levels in Shanghai hit a record on December 1: an average of 582 micrograms per cubic meter for the whole city, with the highest level exceeding 700 in the Putuo district. Wu Xiaoping, Vice Minister of Environmental Protection, said the Ministry was working on a system to punish government officials for environmental degradation and to toughen environmental protection standards. "Emissions from motor vehicles contribute a significant part to air pollution, sometimes as high as 50%, especially in such foggy weather when the air is stagnant," said Lu Shize, Air Pollution Section Chief from the Pollution Prevention and Control Department of the Ministry.

## Ripple effects of air pollution felt in many sectors

Heavy air pollution took its toll on Shanghai's department stores and shopping malls as people reduced their outdoor activities. By contrast, the number of tourists opting for vacations on islands and in forests that promise fresh air away from the suffocating haze is on the rise. Catering businesses in Shanghai saw a big increase in their food-delivery services, for example, while restaurants saw a rise in the consumption of mu'er, or fungus, which is believed to moisten lungs and alleviate the effects of inhaled pollutants. In the tourism sector, air pollution is significantly influencing travelers' choice of vacation destinations. People canceled trips to cities with severe pollution, like Nanjing, and switched to destinations with relatively clear air – such as Xiamen, in Fujian province, Sanya, in Hainan, and Lijiang, in Yunnan. Large areas of China's Yangtze River Delta region have been affected by the longest-lasting, most widespread smog weather since authorities began to monitor the levels of PM2.5. Many schools in Jiangsu province were ordered to close as local governments issued the highest level pollution alarm, and flag-raising ceremonies were moved indoors. Sales of air purifiers and face masks have gone through the roof. The index for searches for air purifiers on e-commerce platform Taobao.com saw a 1,431.2% increase in seven days early this month compared to the same period last year, data by Taobao shows, while the sales index increased 1,264.4%. Similarly, interest in face masks has spiked, with the index on searches increasing 267.8% in a seven day period, compared to the preceding seven days. The index on sales increased 173.1%. Sales of face masks were highest in coastal China, peaking in Shanghai and the surrounding provinces of Jiangsu and Zhejiang, followed by Beijing and

Tianjin, according to Taobao data from the October 1 to December 9 period. Shanghai also tops the ranking in sales of air purifiers, followed by Beijing, Zhejiang, Jiangsu and Tianjin.

### Poor lead battery recycling raises fears

The government should improve policies and formulate measures to better regulate the network for recycling lead-acid storage batteries, a major source of lead pollution, according to a report by the Policy Research Center for Environment and Economy. "China is the biggest producer, consumer and exporter of lead-acid storage batteries in the world. More than 2.6 million metric tons of waste lead-acid storage batteries are generated in China every year, but less than 30% are reclaimed and processed under official standards," said Shen Xiaoyue, Senior Engineer at the think tank. At least 10 lead poisoning scandals took place across China from 2007 to 2009, with more than 6,000 children suffering excessive blood lead levels. Almost 900,000 tons of waste acid containing lead from lead-acid storage batteries entered the environment untreated from 2008 to 2012, polluting the air, water and soil, said Cao Guoqing, Deputy Secretary General of the China Battery Industry Association. "Of the 40-some companies qualified to handle hazardous waste nationwide, only five are authorized to transport and dispose of waste lead-acid storage batteries," Cao said. "But more than half of the waste batteries go to illegal dealers, polluting the environment after they are dismantled haphazardly." Yang Xiaoming, another Senior Engineer from the Center, said the main problem is not the small number of legal recyclers, but the huge price difference between legal and illegal dealers, which prompts most waste batteries to be sold to the latter. Beijing Eco-island Science and Technology Co, the only qualified battery collector in Beijing, was built to treat 20,000 tons of waste batteries a year, but can only access 7,000 tons to recycle. The central government wants 90% of waste lead-acid storage batteries to be recycled by 2015, the China Daily reports.

### Beijing considers banning fireworks during Lunar New Year

Revelers in Beijing could be disappointed this Lunar New Year after the authorities said they might ban the use of fireworks if the city issues "red" or "orange" air pollution alerts, signifying severe levels of air pollution. Residents will receive text messages reminding them of alerts. Containing sulphur-coal compounds and toxic chemicals, fireworks are considered a key contributor to air pollution and each Lunar New Year sees a spike in PM2.5 particles. Beijing will also promote the sales of "environmentally friendly fireworks", which contain no sulphur and produce less smoke, but are priced slightly higher than conventional ones. Firework sales in Beijing are expected to start on January 25, with authorities saying 643,000 cartons of fireworks are in stock, down from 750,000 cartons stocked for this year's festival, according to Xinhua news agency. Fireworks were prohibited in Beijing for 13 years before the ban was lifted in 2006 for the 15 day Lunar New Year period. To many Chinese fireworks and firecrackers are an integral part of the Lunar New Year celebrations.

- A cancer hospital in Jiangsu province has denied media reports that an 8-year-old girl became China's youngest lung cancer patient due to worsening air pollution. Last month, China News Service reported that the hospital had recently taken in an 8-year-old lung cancer patient and, citing a doctor named Feng Dongjie at the hospital, the article suggested that smog could be the direct cause of the disease. Afterwards, the doctor said that lung cancer is a disease that can be caused by multiple factors, so the conclusion cannot be drawn that tiny particles in the air are the direct cause of the disease.
- Guangdong province will allow cars on the road only on alternate days during red alerts for air pollution. In addition, 30% of government cars will remain off the roads, and key enterprises will have to cut 30% of their emissions during a red alert, the highest level. A red alert will be issued when the air quality index is forecast to exceed 300 at more than half of the city's 10 monitoring stations. But in the past three years, the city's air quality has never deteriorated to a level that would today prompt a red alert.
- Achim Steiner, UN Under Secretary General, who also serves as Executive Director of the UN Environment Program, said he is confident that China's air pollution problems will be alleviated as the country embarks on a transition toward a greener economy. "China has already proved in recent years that once it accepts a problem as scientifically and empirically founded, there are solutions to be implemented," he said.



Xie Zhenhua, China's top climate-change negotiator, said last week that China's air pollution problems will be eased in five to 10 years.

- The city of Baoding in Hebei province has performed a two-day trial of allowing only cars with odd or even number plates on the road on alternate days to see if the number of cars could be cut in half, and what the effect would be on air pollution. There are currently 1.92 million cars in the city. Some residents and experts thought the trial would make little difference in air quality and instead would make life more difficult. Like Baoding, the cities of Handan and Xingtai are listed among the top 10 Chinese cities with the worst air pollution in 2013, according to the Ministry of Environmental Protection.
- Scientists say the eruption of volcanic ash near Kagoshima in August is what caused pollution to spike recently in Japan. Earlier, elevated levels of toxic PM2.5 particles in the air above parts of Japan were blamed on pollution from China. A study by Japan's Meteorological Research Unit determined that the most recent wave of PM2.5 was caused by volcanic gas carrying sulphur dioxide from Mount Sakurajima in southern Kyushu.
- Lanzhou has become the first Chinese city to introduce an odd-even license plate restriction to prevent severe air pollution in winter. The measure was launched on November 17 after the city pollution levels exceeded 101 on the official air quality index (AQI) for three consecutive days. The restrictions will remain in place until January 10. The model is similar to one Beijing used to clean the air ahead of the 2008 Olympic Games, and it has been an idea considered in several major cities. In 2011, Lanzhou ranked as the worst Chinese city in the World Health Organization's survey tracking air pollution by the levels of airborne particles smaller than 10 micrometers in 1,086 cities across the world, but Lanzhou later dropped off the list of the top 10 most polluted cities in China through stiff anti-pollution measures.
- Vehicles in Shanghai found discharging black smoke face a fine of up to CNY500 when the draft amendment to the environmental protection law comes into force. The amendment aims to curb the city's deteriorating environment and lower the density of PM2.5 by 20% by 2017, said Zhang Quan, Director of the Shanghai Environmental Protection Bureau.
- Local villagers said sausage casing manufacturing plants along the Qijie river in Shunping County, Hebei province, had been dumping unprocessed water into the river over the past decade. They also claimed underground water extracted from as deep as 100 meters wasn't safe to drink. Shi Guotian, Deputy Director of the Shunping Environmental Protection Bureau, said the local water processing plant could only purify 12,000 to 13,000 tons of waste water a day while the county was producing nearly 16,000 tons. Factories and other facilities will now be closed until the local waste water processing plant is fitted with new equipment to cope with demand.
- For the first time in China, the prevention and control of volatile compounds that make up PM2.5, such as carbon dioxide, have been written into a draft regulation. A draft of a Shanghai measure to curb air pollution focused on eliminating PM2.5 was discussed at a meeting of the Standing Committee of Shanghai People's Congress. The Shanghai Environmental Protection Bureau said PM2.5 is the main pollutant on nearly 95% of the days on which substandard air quality is recorded in the city.
- Lawmakers said that a new measure in Beijing's air pollution prevention and treatment draft regulation, asking drivers to turn off their engines when idling for more than three minutes, is not compulsory but rather a move to raise environmental protection awareness. Drivers will be encouraged to turn off their car engines, especially around schools, hotels, shopping malls, parks, communities and hospitals, when the car isn't moving for a number of minutes, according to the draft.
- Public health experts have raised doubts over claims air pollution can cause infertility, citing a lack of research to support the link. The Green Book of Climate Change released by the Chinese Academy of Social Sciences and the China Meteorological Administration had blamed smoggy weather for the spike in male infertility. The finding triggered much discussion, especially among people of childbearing age. However, independent experts are skeptical, saying more concrete research is needed to confirm the link.
- Over 500 illegal barbecue grills in Beijing were destroyed following a three-month operation amid the city's efforts to fight air pollution and fog. Open air barbecues cause serious air pollution by releasing PM2.5 particles, the Beijing Environmental

Protection Bureau said.

- Hebei province will set limits on industrial air pollution and spend CNY291 million to build a real-time digital monitoring system the coming year. The system will target the four major heavy-polluting industries – iron, cement, electricity and glass. They produced the majority of air pollutants in Hebei, emitting at least 60% of the province's sulfur dioxide, nitrogen oxide and dust, and accounting for 53% of the province's use of coal – 167 million metric tons – in 2012. Hebei's industries are also contributing to pollution in Beijing.
- Local governments in eight cities in Liaoning province have been fined a total of CNY54.2 million by the provincial government for air pollution. The Liaoning provincial government evaluates 14 cities on indicators of PM10, sulfur dioxide and nitrogen dioxide. Shenyang, capital of Liaoning, was ordered to pay a fine of CNY34.6 million. All the fines would be used in the fight against severe air pollution.
- Heavier taxes to punish polluters could take at least a year to introduce as government departments argue over the details and the scheme is discussed in the National People's Congress (NPC). A plan was submitted to the State Council in October, said Su Ming, a senior official at the Ministry of Finance. But government agencies and industrial associations are still negotiating aspects of the draft laws, and experts say many areas have yet to be agreed upon, including how high to make the levies. The levies would initially apply to companies responsible for water and air pollution, including sulphur dioxide and nitrogen oxides produced from burning coal.
- All commercial pilots flying between Beijing and the country's busiest airports must be prepared for instrument-guided landings due to the prevalence of smog. Starting on January 1, the Civil Aviation Administration of China (CAAC) will require pilots of even small commercial aircraft to be certified for instrument-guided landings when traveling between Beijing and other big cities, such as Guangzhou, Shanghai and Shenzhen. "Smog has become frequent in the country and blind landings will increasingly be used," a CAAC official said. The latest round of smog led to the cancellation or delay of hundreds of flights.
- Beijing will replace 80% of its buses with new-energy and clean-fuel vehicles by the end of 2017 in an attempt to reduce vehicle emissions and ease pollution. A total of 13,825 buses, including 4,058 electrically powered and 7,185 running on natural gas, will replace gas and diesel ones, the Beijing Commission of Transport said. "The aim is to continuously reduce automobile emissions in downtown areas of the capital, while easing traffic congestion," said Wang Hao, an official with the Commission's Transport Bureau. The Commission estimates that by the end of 2017, the city will have 65% of its buses powered by clean energy, with 20% of them fueled by electricity and 50% by natural gas.
- Smog-filled Beijing strikes a close resemblance to Los Angeles at its polluted worst in the 1960s, the U.S. Environmental Protection Agency Administrator Gina McCarthy said in Hong Kong. She said it was important both countries worked hand-in-hand to solve problems with air quality. "What I saw in Beijing was a geology and weather pattern that looked like Los Angeles and the air pollution challenges they were facing in the 1950s to 1970s," McCarthy said. "But LA has been able to make significant progress," she said. The city, however, continues to top the list as one of the worst cities in the U.S. for ozone pollution, according to the American Lung Association.
- China's livestock industry has become a growing pollution and public health hazard in some rural areas. Sometimes bodies of dead animals are dumped in remote places. The Animal Epidemic Prevention Law states that farm animals which die of disease must be burned at appointed treatment stations, but in many places such facilities are outdated and inadequate. Disease-ridden carcasses dumped in reservoirs could lead to epidemics or transmit bacterial infections to both humans and other animals.

## **GREENHOUSE GAS EMISSIONS**

### **China could join legally-binding climate treaty**

China will participate in a legally-binding global climate treaty for the post-2020 period if consensus can be reached among all parties. "If the international community manages to agree on a legally-binding treaty, China will certainly be on board," Su Wei, Deputy Chief of the Chinese delegation, said on the sidelines of the annual United Nations climate change

conference in Warsaw last month. China has promised to voluntarily cut emissions per unit of economic output by between 40% and 45% on 2005 levels by 2020, although it is exempt from cutting emission targets under the Kyoto Protocol. Su Wei said the recent Super Typhoon Haiyan “should be a wake-up call for the world to take immediate action in slowing down and adapting to climate change.” “Finance holds the key to the success of the Warsaw conference,” Su said, urging developed countries to keep promises made in previous climate talks. Developed countries have agreed to jointly provide USD100 billion per year by 2020 for developing countries to better cope with climate change, the Shanghai Daily reports. But it is unclear whether developed economies have implemented their plans of granting USD10 billion to developing economies annually during 2010-12. It is also unknown how they plan to stick to their pledged USD100 billion from 2013 to 2020, Su Wei said. “We are almost at the end of 2013, so it is urgent that we have actual provisions of resources confirmed to achieve the financial goal set by the developed countries by 2020,” said Su. He suggested that the developed countries could start by allocating USD30 billion by 2015.

### Stricter assessment of cadres’ “green performance”

The Third Plenum of the Central Committee of the Chinese Communist Party last month pledged to launch stricter assessments of local authorities’ “green” performance, and vowed to give more weight to resource efficiency and environmental protection. Cadres will be held responsible for their stewardship of the ecosystem. The plenum resolution listed “environmental protection” for the first time among the government’s five top responsibilities, behind macro-economic management, job creation, market supervision and social management, according to National School of Administration Professor Zhang Zhanbin. The central government pledged to draw an “ecological red line” to limit exploitation of natural resources, and poorer counties in ecologically fragile areas will no longer be required to meet their growth targets. Dr Xia Guang, Director of the Policy Research Center for Environment and Economy under the Ministry of Environmental Protection, wrote in the People’s Daily that “red lines” would not only refer to geological areas that were off-limits to exploitation, but also to better control the use of natural resources and emissions of pollutants, including greenhouse gases. Ma Jun, Director of the Beijing-based Institute of Public and Environmental Affairs, said that although many of the ideas had been raised before, they showed leaders’ intention to strike a balance between economic growth and environmental protection, the South China Morning Post reports.

### China eyes green plan for 2030

The frequent occurrence of extreme weather conditions in China has caused an average of more than 2,000 deaths and up to CNY200 billion of direct economic loss every year since the 1990s, according to Beijing’s latest report on the nation’s climate change strategies. The report, released during the United Nations Warsaw climate talks, outlines Beijing’s efforts to reduce human and economic losses from the impact of climate change until 2020. The Chinese government has warned that if there are no adequate measures to mitigate the damage caused by climate change, the losses will increase in the years to come. “Facing that urgency, we will deliver our promises in addressing climate threats,” said the head of China’s delegation, Xie Zhenhua, at a seminar in Warsaw. Xie said China is considering a roadmap to address climate threats until 2030 and a leading group of Chinese experts has finished a research report. Xie added that China has made efforts to diversify its energy mix to meet the target of making non-fossil fuels account for 15% of its entire energy consumption by 2020. The current rate is 9.6% and it is likely to reach 11.4% by 2015. “To be honest, we have seen difficulties to reach that goal as we are facing challenges to further tap into nuclear and hydropower sources,” Xie said. However, he assured conference participants that China is committed to try and meet that target. “No matter what happens in international negotiations, China will spare no effort in transforming development patterns,” he said.

### Beijing blames rich nations for disappointing Warsaw talks

China has blamed developed countries for lacking the “political will” to cut carbon emissions and keeping their promises to transfer technology and funds to developing countries as two-week UN climate talks concluded in Warsaw. The negotiations only led to a modest deal. More than 190 countries agreed to start preparing “contributions” to cut greenhouse gases for a post-2020 climate regime, which is supposed to be adopted in 2015. The term “contributions” was adopted after China and India objected to the word “commitments” in a stand-off with the United States and other developed countries. The head of the Chinese delegation, Xie

Zhenhua, described the outcome as merely “acceptable” and that there were “many issues we are actually not satisfied with”. “Despite the mounting challenges posed by climate change, some developed countries still lack the political will to honor their commitments on emission cuts and offering technology and funding to developing countries to tackle the challenges,” Xie said. U.S. chief negotiator Todd Stern accused Beijing of going back on a deal that the post-2020 regime should apply to all parties by saying in the final hours of talks that only developed nations should make binding reduction commitments. Green groups warned that the watered-down term “contribution” could dampen the global carbon-cutting goals needed to prevent the average global temperature rising more than 2 degrees Celsius. Climate scientists warn such an increase would unleash unstoppable climate change.

## Shanghai and Beijing launch carbon trading

Shanghai has launched its carbon trading platform in the Shanghai Environment and Energy Exchange in Hongkou district and a similar one was also inaugurated in Beijing. About 200 companies, including steel mill Baosteel and hotel operator Jin Jiang, will participate in Shanghai’s carbon trading initially. The two cities were among the seven provinces and municipalities chosen by the National Development and Reform Commission (NDRC) in late 2011 to launch trial carbon markets. Shenzhen became the first Chinese city to start carbon trading when its online platform started operating in June. The Shenzhen exchange covers 635 industrial firms and 197 government buildings, which accounted for about 40% of the city’s total emissions in 2010. According to Shanghai’s carbon trading rules signed by Mayor Yang Xiong in November, participating firms could face a fine of up to CNY100,000 and lose government subsidies on energy saving and emission cuts the next year for non-compliance. The country intends to create a national carbon trading system after 2015 following the regional trials. The first carbon emission permits in Shanghai traded at CNY27. Sinopec Shanghai Gaoqiao Co bought the first batch of 5,000 permits, known as Shanghai Emissions Allowances (SHEA), for 2013 compliance from Shanghai Waigaoqiao No 3 Power Generation Co. One SHEA confers the right to discharge 1 ton of carbon dioxide. The China Beijing Environment Exchange said two bilateral trades for a total of 40,000 permits had been registered at CNY50 per permit on the first day of operation. Each permit represents one ton of carbon dioxide. State-owned oil and gas firm Sinopec Corp and investment bank CITIC Securities each bought 20,000 permits. The Beijing emissions trading scheme will rein in emissions from 490 power and heat generators, manufacturers and large buildings. Guangdong is to launch a carbon permits market this month that will be the world’s second-biggest after the European Union. It will cap carbon dioxide emissions from 202 companies at 350 million tons for 2013. The Guangzhou-based China Emissions Exchange will open a secondary market for permits by the end of December.

## China poorly prepared to handle impact of climate change

China is poorly prepared to tackle the impact of climate change that presents a serious threat to the country, due to a lack of planning and public awareness, the government said. “Our country is a developing nation with a large population, complex climate conditions and a weak environment situation,” the National Development and Reform Commission (NDRC) said in a report. “Climate change is already a serious threat to food, water, ecological and energy security, and to people’s lives and property,” it added. The country is seeing more droughts in its northern region, with typhoons arriving earlier, wetlands drying up and sea levels rising, said the document, published in coordination with several ministries. “In the future the rising trend of temperatures will become even more obvious, there will be even more unfavorable impact from climate change, and if effective measures are not taken the losses from disasters caused by extreme weather will be even more serious,” the NDRC added. Government steps to mitigate climate change range from building more reservoirs, and providing better protection to forests and wetlands to improving weather warning systems, but the overall picture was not optimistic, the planner said.

- China may achieve its 2020 target of energy efficiency ahead of schedule and will make even more ambitious proposals to realize low-carbon development for the years after 2020, Du Xiangwan, Chairman of the National Expert Committee on Climate Change said.
- Complete reports on the environmental impact of construction projects with a high potential for polluting the environment will be disclosed to the public from January 1, the Ministry of Environmental Protection said. It will fully disclose a project’s



environmental impact assessment for public supervision, excluding matters that concern state secrets, business secrets and personal privacy. So far, only extracts of environmental impact assessment reports have been disclosed. All documents filed during an environmental impact assessment of a project should be disclosed, regardless of what the assessment finds.

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#### **Contact:**

Flanders-China Chamber of Commerce  
Lammerstraat 18, B-9000 Gent  
Tel.: +32 9 266 14 60/61 – Fax: +32 9 266 14 41  
E-mail: [info@flanders-china.be](mailto:info@flanders-china.be)  
Website: [www.flanders-china.be](http://www.flanders-china.be)

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The FCCC Newsletters are edited by Michel Lens, who is based in Beijing and can be contacted by e-mail [michel.jc.lens@gmail.com](mailto:michel.jc.lens@gmail.com). Disclaimer: the views expressed in this newsletter are not necessarily those of the FCCC or its Board of Directors.