The China Sustainable Energy Program
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CHINA CLIPPINGS

Issue 13 June 2002

Topping the news in the buildings and appliance sector, CSEP grantee China certification Center for Energy Conservation Products has completed a color TV energy efficiency endorsement label for "standby" power. This milestone label for China reflects international standards (p.2).

In the power sector, China plans to halve the value-added tax it levies on wind electricity generation equipment to make it cheaper (p.4). China's power sector reform will include a new price mechanism that encourages bidding by competing power suppliers and the development of clean energy. A State Power Regulatory Commission will be set up to serve as the industry regulator (p.5).

In the transportation sector, the government plans to invest US$106 million over the next few years to speed up the development of electric vehicles in time for the 2008 Olympics (p.6). Beijing is planning to tighten its auto emission standards to Euro II levels one year ahead of schedule to early next year (p.7). Several major magazines and newspapers, including Newsweek, the Far Eastern Economic Review, and the Washington Post, have featured articles on China's growing auto industry and the rush of middle-class Chinese to purchase cars (pp. 8, 9, 12).

A recent study in southern China found that rapid industrialization over the past two decades has resulted in concentrations of lead that exceed WHO limits in 65% of youngsters (p.15). Countries, such as the U.S., Japan, and Korea, are taking note as China's air pollution transcends political borders and affects their quality of life (pp.16, 18, 19). The world is watching China as its demand for oil accelerates far beyond domestic supply. China will soon be competing with other major energy importers in the region (p.20).

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Hot Market Expected for Cool Home Appliances

16 April 2002

Although almost every urban household in China has a refrigerator, future market demand will be far from cool.

Statistics from the China National Readership Survey (CNRS) revealed that almost 91 percent of urban Chinese families have refrigerators. However, analysts predict that many Chinese households will soon be upgrading their major home appliances including color televisions, washing machines and refrigerators.

The refrigerator industry, in particular, will experience a substantial demand. The statistics indicate that the market demand for refrigerators during the next three months would exceed 3.5 million units, according to the April 5 Zhongguo Jingji Shibao (China Economic Times).

Although a huge number of Chinese families already have refrigerators and the proportion of potential new purchases during the next six months is relatively low, almost 3 million families indicated that they plan to buy new products during this time.

A cooling trend

The majority of the households in Chinaís large and medium-sized cities have refrigerators, with the top three cities being Hangzhou, Beijing and Shenzhen. Almost all families living in these three have this appliance.

Approximately 10 percent of the families currently without refrigerators indicated that they intend to purchase one in the next six months. Additionally, 5 percent of the families that already have refrigerators intend to purchase new ones during the same period.

Consumers' demands generally vary according to city. In small and medium-sized cities such as Kunming and Nanning, the consumers expressed stronger desires to purchase new refrigerators than in the developed cities of Beijing and Guangzhou.

According to the survey, there is a relatively weak demand for refrigerators in Chinaís northeast cities of Changchun, Shenyang and Harbin, likely in response to the locally cold weather.

The demand for refrigerators was the greatest in the Shanghai and Beijing markets, with Shanghai taking the lead. Closely following the two cities were Wuhan, Tianjin and Guangzhou. These cities are expected to be the main markets for competition among refrigerator manufacturers in the future.

Brand new

The top five brands of refrigerators, among families with refrigerators, were all domestic brands. These five brands together currently hold a third of the market share.

Families without refrigerators, but planning to purchase them in the next six months, also classified domestic brands ahead of the foreign competitors. The top five brands ranked by this group account for more than 80 percent of the market.

The Haier brand of refrigerator was ranked first by both groups.

According to the survey, 48 percent of the people planning to buy refrigerators in the next six months are between the ages of 25 and 45. This age group will undoubtedly account for the majority of future purchases.

Based on the situation in China as a whole, 60 percent of the potential buyers have a monthly income of less than 1,000 yuan (US$120.82). The group that have monthly incomes over 1,500 yuan (US$181.22) and those that make between 1,000 yuan (US$120.82) and 1,499 yuan (US$181.10) each account for 20 percent of the potential buyers.

The China National Readership Survey (CNRS), a unit under CVSC-TNS Research Co., conducted its survey during the second half of 2001 in 36 major cities, provincial capitals and municipalities across China. There were 38,662 participants in the survey.

CVSC-TNS Research Co. is a joint venture between the China International Television Corporation (CITV) and the Taylor Nelson Sofres Group, one of the world's leading market research groups.

Energy Efficiency Endorsement Labels for Color TVs Established in China

May 31, 2002
Translated from "Beijing Evening News"

A reporter learnt recently that the China Certification Center for Energy Conservation Products (CECP) has completed the preparation for color TV energy efficiency endorsement labels. Haier color TV was the first to obtain the endorsement label.

CECP's technical specifications for the color TV's endorsement label is 3-watt energy consumption in standby or "off" modes. This is a common TV standard in many developed countries. The national endorsement label, which is in line with international standards, is a milestone for China's standards and labels. Developed countries, who are extremely strict on energy efficiency standards for color TVs (including standby power), will refuse to import TVs that are not energy efficient in standby mode.

Haier Color TV

China to Relocate 40 Polluting Enterprises out of Beijing

Sourced from Xinhua News Agency
24 April 2002

Beijing, 24 April: The Chinese capital plans to move another 40 polluting industrial enterprises out of the city proper this year as part of its drive to improve environment quality in the downtown area, a municipal government official said Tuesday [23 April].

The move will release some two million square meters of land and reduce pollutants by 5,000 tons a year, said Yang Anjiang, a member of the Standing Committee of the Beijing Municipal Committee of the Chinese Communist Party, at a workshop on relocating industrial enterprises.

The 40 enterprises to be relocated are mainly engaged in the chemical industry and the production of machine tools.

The relocation of polluting enterprises dates back to 1985. As of January this year, Beijing had approved 189 transfer contracts involving relocation of industrial enterprises, according to Yang.

As a result of the relocation, the ratio of land space occupied by industrial enterprises in the downtown area within the Fourth Ring Road dropped to 7.26 per cent from 8.74 per cent before the relocation project started more than 10 years ago.

Beijing Municipal government attaches great importance to the improvement of the local environment and in recent years, it has intensified its efforts in tackling environmental pollution.

In 1999, the city government put into effect measures on relocating polluting enterprises and speeding up the readjustment of the local industrial structure.

According to plan, the city will move another 150-plus enterprises out of the urban area by the end of 2005, releasing 4.2m sq.m. of land.

With a population of over 12 million, Beijing encourages the use of natural gas to replace traditional fuels like coal, for the purpose of reducing air pollution.

The first pipeline carrying gas from the northwestern province of Shaanxi to Beijing was completed in 1997 and construction on the second gas pipeline, from northwestern China to Beijing, will begin soon. Experts predict that by 2005, Beijing will consume 3bn cu.m. annually.

Artificially-made coal gas will cease to be used in Beijing three years after that.

Beijing has always dreamed of building itself into a green metropolis and it vowed to host a "green Olympics" in 2008.

According to plan, Beijing will have over 30 nature reserves, with the forest cover rate in mountainous areas reaching 70 per cent and exceeding 25 per cent in plain areas by 2005.

It is predicted that by 2007, more than 90 per cent of local waste water will be treated.

Beijing spent nearly 30bn yuan (3.6bn US dollars) on environmental protection from 1998 to 2001, according to statistics.

Authoritative sources said that pollutants discharged by more than 5,000 industrial enterprises in downtown Beijing had met the standards set by the government by the end of May 2000.

The ratio of land space occupied by industrial enterprises is expected to be below 6.6 per cent in downtown Beijing, with a total of 9m sq.m. of land freed up at the realization of all set targets regarding the relocation of enterprises.

Cogeneration Market Study

China Energy Efficiency Information Bulletin
March/April 2002, Vol. 8, No. 2

With the support of the Energy Foundation, the China Energy Conservation Investment Corporation (CECIC) and Energy Resources International, Inc. (ERI) completed a market study for cogeneration in China. The study provides background information and statistics on cogeneration use and government policies governing cogeneration. It then outlines the key barriers being faced by cogeneration. Finally, it analyzes each of the major market opportunities for cogeneration (i.e., petroleum, chemicals, non-ferrous, and light industries, as well as for centralized heating in the 3 northern regions and non-heating regions of the south) and summarizes the market potential of each. Finally, it discusses the potential for natural gas-based cogeneration. Copies of the report are available upon request by contacting Jack Siegel at siegel@energyresources.com.

China, U.S. Cooperate in Constructing Energy-saving Building

Xinhua
28 February 2002

China and the United States held a ground-breaking ceremony for construction of an energy-saving building in which the most advanced technologies will be employed. Located in western downtown Beijing, the eight-story office building, which will be owned by the Ministry of Science and Technology, contains more than 2,000 square meters of floor space and costs 62 million yuan (US$7.47 million). The building will also display a showcase of state-of-the-art energy efficiency technologies. The building's overall level of energy efficiency will be three times that of common buildings in China. The U.S. Department of Energy has encouraged U.S.-based manufacturers to provide energy-saving products including new kinds of external wall material, window glass and lighting systems. (More info at http://www.accord21.org/workshops/building_description.htm)

China Says to Promote Wind Power by Halving its VAT

Reuters
30 April 2002

BEIJING - Energy-hungry China plans to halve the value-added tax it levies on wind-generated electricity to make it cheaper to develop the alternative power source, state-run Xinhua said yesterday.

The planned move by one of the world's fastest growing economies, which is looking for a less polluting alternative to coal-fired electricity, would cut the average price for wind power by 0.05 to 0.06 yuan per kilowatt, the news agency said.

China, which based its successful bid for the 2008 Olympics in Beijing on reducing urban pollution, is seeking ways to cut down reliance on coal, which accounts for about 70 percent of the vast country's electricity generation. Hydropower makes up about 17 percent and thermal power account for much of the remainder.

The proposal had been approved by the State Council, China's cabinet, Xinhua said.

China had the world's largest wind energy resources but had not fully exploited them because coal and hydropower were cheaper to tap, it quoted the State Economic and Trade Commission as saying.

Analysts also expect liquefied natural gas (LNG) to gain ground in the world's most most populous country once state giant China National Offshore Oil Corp Ltd (CNOOC) has carried out plans to build the country's first LNG terminal.

CNOOC has shortlisted three bidders for the terminal set to be built in China's southern province of Guangdong.

Some analysts foresee wind power taking a big global market share over the coming decade as new countries adopt its use.

So far, the global wind power market has been driven by Germany, Spain and Denmark - accounting for more than 60 percent of all installed wind turbines in the world last year - while North America has 15 percent.

BP to Build Shenzhen Solar Power System

10 June 2002

BP China, along with its partner Beijing Kenuo Weiye Technology Co., has won the bid to provide a solar photovoltaic (PV) on-grid power system for the new Citizen Center in Shenzhen.

The new building includes a museum, a library, an exhibition center, and conference facilities, according to Zhongguo Shiyou Bao (China Petroleum News).

BP will supply the on-grid solar power generating system and other components as well as designing an integrated system.

The whole project, which will cost about US$7.5 million, is expected to generate 1MW of electric power once operational.

This project is BP's first new development in Shenzhen since being selected the foreign partner for the feasibility study for China's first liquefied natural gas terminal and pipeline.

Gary Dirks, CEO of BP China, said: "We are very glad to be able to participate in the second energy project for Shenzhen."

This is one of the biggest solar power projects BP has ever participated in, the company said.

BP service stations (left) can be fitted with solar systems capable of providing power for pumps and canopy lighting.

State Power: Desulfurisation Projects for Coal Burning Power Plants

EHS Review
May 2002

During the Tenth-five Year Plan Period (2001-2005), the State Power Company (State Power) has announced it will develop and implement desulphurisation projects at 37 coal-fuelled power plants located in China's 'Acid Rain and SO2 Control Areas'. It is hoped that this will reduce SO2 emissions by 1.05 million tonnes per year.

It is reported that current annual SO2 emissions are 19.95 million tonnes, half of which is produced by China's power industry, including 4.3 million tonnes from State Power's power plants.

By end of 2005, SO2 emissions will be reduced by 10~20% from 2000 levels. To achieve this, State Power is focusing pollution prevention on SO2 concentrations and mass loading controls.

It was also noted that one of the key reasons for the low utilisation of desulphurisation technologies are the high capital and operational costs. For this reason, Chinese experts are calling for financial support, and favourable polices for desulphurisation projects.

China Approves Plan to Break Up Electricity Giant

16 April 2002

China has announced a plan to break up the State Power Corp., which holds 50 percent of China's power-generating assets, separating electricity generation and transmission and setting prices through open bidding by 2005.

Sources from the State Development Planning Commission (SDPC) told Xinhuashe (Xinhua News Agency) that under the plan approved by the State Council, the generating assets of State Power, except for those under the control of one unit Huaneng Group Power Co., will be split into three or four independent companies similar in size.

Huaneng will also become an independent power producer.

Two grid operators will be established, the National Grid Co. and the Southern Grid Co, according to the plan. Wholly state-owned National Grid will control five regional limited-liability or shareholding companies in northern, northeast, northwest, eastern and central China, and oversee power assets in Tibet, said the April 11 report.

Pictured is a power plant for generating electricity situated in the outskirts of Beijing.

Southern Grid will be formed on the provincial grids in Guangdong and Hainan and State Power's grids in Yunnan, Guizhou and Guangxi. The party with the largest proportion of net assets will be the majority shareholder of Southern Grid.

In the new pricing mechanism, electricity price will be determined through bidding by competing power suppliers and end-users, and power plants that pollute less will be favored in the mechanism to encourage the development of clean energy, said SDPC.

Some power producers will sell electricity directly to major customers instead of via grids, currently the only direct buyers of electricity.

A State Power Regulatory Commission will be set up as the industry regulator.

Sources from State Power said the company expects to complete major restructuring tasks within the year, but the report didn't specify what the tasks would be.

China Briefing: Power Loan

Far Eastern Economic Review
4 July 2002

The World Bank approved a $105 million loan to expand electric power generation in China. The project aims to improve economic growth and reduce poverty in Hubei province, the bank said.

Government to Push Electric Car Development

2 April 2002

The government will invest 880 million yuan (US$106 million) over the next few years to speed up the development of electric vehicles as a new springboard to profitability for China's auto industry.

The move reflects the government's drive to help ease the country's oil energy bottleneck and maintain a sustainable, environmentally friendly growth of the economy, said sources from the Ministry of Science and Technology.

Air pollution in major cities has become a serious problem with tail gases from cars being a major contributor. The ministry has listed the commercialization of pollution-free electric vehicles as an important part of its scientific plan for the next few years.

Commercialization of electric vehicles, which are powered by both high-performance, low-cost batteries and a mix of cleaner burning fuels, is likely to be realized by the end of the 10th Five-Year Plan period (2001-05), according to Li Jian, director of the ministry's Department of High-Tech Development and Industrialization.

Also, patented technology will be developed to produce fuel cell-powered vehicles by that time, he added.

Electric vehicles, that produce much less or even zero pollution compared with conventional petrol- or diesel-powered vehicles, will be put into special transport service for the 2008 Olympic Games in Beijing, said Li.

China first attached importance to electric vehicles in 1996 when the country staged an international seminar and exhibition on electric and clean-fueled vehicles.

The country has made a technology breakthrough in developing high-performance batteries. The Leitian Company in Shenzhen, for example, has developed a kind of lithium battery which can power a vehicle for a distance of 300 kilometres.

Li said the government encourages all domestic companies, regardless of their ownership, to take part in the production of electric vehicles or other low-pollution power sources.

Specific projects will be opened to bids, and those who win the bids will receive governmental funding.

He added that a new system for granting awards to companies that undertake such projects will be introduced to stimulate research, for example, rewarding technicians who come up with new ideas with options such as shareholding rights.

According to the ministry's information department, China has conducted technological exchanges involving electric vehicles with the United States, Germany, Japan, France and Italy, to help push domestic development of such vehicles.

China, which has to import oil to satisfy its growing demands for energy, relies on coal to provide 75 per cent of its energy requirements. Coal will continue to make up a large part of the country's energy supply for the foreseeable future, experts predict.

"Developing electric vehicles is significant in the effort to save oil energy, minimize air pollution, and to give an impetus to the development of the country's auto industry," said Li.

Metro to Link 3 Cities

Zheng Caixiong
1 April 2002

GUANGZHOU: A new metro project linking Guangzhou, capital of South China's Guangdong Province, to Foshan and Nanhai will officially begin before the end of the year.

The 22-kilometre subway, slated to be in operation in 2005, will be the first to connect three cities in the country.

Huang Weihong, director-general of the Guangdong Provincial Development Planning Commission, yesterday revealed that feasibility studies for the project had been completed.

Addressing a work conference, Huang said the Guangdong provincial capital, along with Foshan and Nanhai, two prosperous cities in the Pearl River Delta, will share equally in the construction fund of more than 10 billion yuan (US$1.2 billion).

The subway line will begin at the Fangchun District of Guangzhou, via Nanhai, and end in Foshan.

It will connect with the current Guangzhou Metro Line One, and a subway station will be located every two kilometres.

The project is expected to help further improve economic ties among the cities in the Pearl River Delta that border the Hong Kong and Macao Special Administrative regions.

The Guangzhou-Nanhai-Foshan metro project is just one part of Guangdong's subway network that will be constructed during the 10th Five-Year-Plan period (2001-05).

Huang said that the government is planning to build a metro network that consists of more than 900 kilometers of subway track to link major cities in the Pearl River Delta and further improve the province's environment.

More than 90 billion yuan (US$10.84 billion) will be needed for its construction.

The huge construction funds needed for the subway network in Guangdong will be raised mainly from the market, Huang said.

Various government officials and departments are also negotiating with their counterparts in Hong Kong and Macao to connect Guangdong's metro network with the transportation systems in the two special administrative regions.

In Guangzhou, which already has one subway line in operation, several others are under construction or being planned.

The city's Metro Line 2, which started construction in 1999, will be in operation next year.

Construction of the 23.27-kilometre Metro Line 2 consists of 16 stops and will cost a total of 10.67 billion yuan (US$1.3 billion).

And construction on the Metro Line 3 began late last year.

Continued next page

Delphi Earns U.S. $60 Million Contract for EMS Motorcycle Business in China

PRNewswire
9 May 2002

SHANGHAI, China -- Delphi Corp. has been awarded a U.S. $60 million contract over five years for Engine Management Systems (EMS) motorcycle technology with Chongqing Zongsheng Motorcycle Group, one of the leading motorcycle manufacturers in China. This is Delphi's first production motorcycle business win in China.

Approximately 50 million motorcycles are manufactured annually in the Asia Pacific region, 10 million of which are manufactured in China, and 4.5 million are manufactured in India.

"It is a natural evolution to provide Delphi's EMS technology for non- automotive applications," said Herman Chang, regional director, Dynamics & Propulsion Sector, Delphi. "We are leveraging our extensive EMS expertise and tailoring our systems to design them specifically for the motorcycle market. These solutions, which address both regulatory and consumer requirements, help reduce emissions and improve fuel economy."

Engine management is the science of equipping and calibrating an engine to achieve clean exhaust emissions while providing the best possible performance, fuel economy and drivability. EMS is generally used on all modern cars that meet Euro II emission norms or equivalent.

High pollution levels in China and India have been an issue of concern for the governments, manufacturers, environmentalists and consumers alike who are committed to bringing in more fuel-efficient vehicles that also help protect the environment.

Worldwide in 2001, Delphi booked new orders for EMS worth more than U.S. $500 million. The Asia Pacific region generated much of this new business driven by evolving concern for improved emissions in high density, developing economies.

The technology essentially entails the control of the engine air and fuel inflow and ignition by an onboard microcomputer also known as an engine control module (ECM). The ECM in turn controls a fuel injector and an ignition coil connected to the spark plug. Fuel injection and ignition is timed precisely to provide an optimal combustion situation for a wide variety of external variants like the load on the engine, air temperature and barometric pressure. Data on these variants is then coupled with additional input from sensors which measure the position of the crankshaft, engine temperature and throttle position to determine and create optimal combustion.

The EMS replaces the existing carburetor and the ignition electronics. Multi-dimensional control of the fuel inflow for every conceivable driving condition results in lower emissions, better drivability, and improved acceleration, cold start performance and fuel consumption.

'Metro' continued

The 32.4-kilometre Metro Line 3, which has 23 stations, will run from the city's Tianhe Railway Station and cross the Pearl River, ending at Guangzhou's Panyu District located at the mouth of the Pearl River.

The Metro Line 3 that is expected to be in operation before 2005, and will benefit more than 100,000 residents living along the line.

Another metro project is also well under way in the Shenzhen Special Economic Zone.

The 18-station subway line, which began construction last year, will ultimately cost 10.6 billion yuan (US$1.28 billion) and is expected to be completed in four years.

Beijing: Tighten Automobile Emission

ERM China/EHS Review
June 2002

Beijing may tighten its automobile-emission standards to the Euro II level from the beginning of next year, one year ahead of schedule, according to sources with the Beijing Environmental Protection Bureau. However cars registered before that time will not be forced to meet the standard.

Beijing started to implement Euro I emission standards in January 1999. The standards are based on the regulations for new heavy-duty diesel engines that were first introduced in 1992 by the European Parliament and the Council of Environment Ministers.

Vehicle emissions are currently one of the major sources of pollution in the capital's atmosphere. About 60 per cent of the city's nitrogen dioxide and 70 per cent of hydrocarbons in air come from automobile emissions, according to environmental experts. Tougher standards help limit emissions of harmful gases such as carbon monoxide, hydrocarbons and nitrogen oxide.

Euro II standards demand a 60 per cent reduction of such harmful emissions on average compared with Euro I standards. For instance, Euro II standards stipulate that hydrocarbon discharges should not exceed 0.5 grams per kilometre for a petrol-powered vehicle, 0.63 grams lower than Euro I standards.

Carbon monoxide emissions should not exceed 2.2 grams per kilometre under Euro II standards. This is 0.96 grams lower than Euro I standards demand.

Beijing authorities hope to improve the environment for the 2008 Summer Olympics and the city is looking at the introduction of Euro III standards by 2005.

Polluting diesel truck in Beijing

The Washington Post

In China, a Rush to Get Behind the Wheel

7 June 2002

SHANGHAI -- The line of bidders begins to form just after sunrise. By midafternoon, when security police throw open the glass doors to the cavernous auction hall, the line snakes down the entrance ramp, loops around the parking lot and spills into the street.

"One at a time! One at a time!" barks a guard inspecting registration papers at the entrance. "Don't shove! You'll all get in."

But not all will leave with what they've come for: license plates for their cars.

The municipal government instituted monthly plate auctions in 1999 to stem the tide of private vehicles flooding city streets. As demand races far ahead of the monthly quota, a Shanghai tag has become akin to precious metals.

At the May auction, the minimum bid for one of 2,350 new plates soared to a record 17,800 yuan, about $2,150, making the tin squares worth far more, ounce for ounce, than gold.

Shanghai's would-be drivers decry the auctions as tantamount to highway robbery. And yet they pay.

"Of course I think it's too expensive, but what am I going to do?" commercial sculptor Ding Xiaofeng, 28, said as he jostled fellow car owners outside the auction hall. "If I bid too low, I don't get on the road."

Car craze spreading

Ding's eagerness to start driving is shared by a growing number of Chinese. With incomes rising and new-car prices falling, more and more of the country's 1.3 billion people are sliding off their bicycles and behind steering wheels -- transforming established rhythms of life at home and creating new business opportunities for trading partners overseas.

Private car ownership remains a novelty in this burgeoning economy: One in every 100 Chinese owns a car, compared with 1 in 2 Americans. And even the lowest-priced new passenger car still exceeds a decade's pay for a typical worker.

But industry experts see vast potential.

China's admission into the World Trade Organization in November has helped to fuel the auto craze. Membership terms oblige Beijing to slash tariffs on auto imports to less than 51 percent from 80 percent over the next five years.

New-vehicle sales in China, which grew at double-digit rates for much of the past decade, topped 2.3 million last year. Passenger cars accounted for just under a third of that total. Many analysts put the proportion of vehicles sold now for private use at 50 percent, up from less than 10 percent a decade ago.

And the boom is just beginning. As China's economy balloons, annual household incomes in the major cities are passing the $4,000 milestone regarded by manufacturers as a takeoff point for private car purchases.

Automotive Resources Asia Ltd., a consulting company with offices in Beijing, predicts total sales will reach 3.7 million by 2006, with passenger-car sales exceeding 1.2 million units. China is widely expected to emerge as the world's largest car market in the next two decades.

Chinese banks are plunging into the auto-loan business, and competition among the global auto giants--not to mention 120 domestic manufacturers--has sparked a series of price wars. It has moved car ownership within the reach of this country's prospering middle class.

In major cities, car ownership has spawned a new breed of commuters who motor proudly to downtown office towers from luxury housing developments in the suburbs. Among them: Shanghai accountant Sun Linlan, who recently purchased a second car: a compact model built by General Motors Corp. and its state-owned Chinese partner.

"I just got tired of standing in taxi lines on rainy days," she explained.

New cultural revolution

The zeal for wheels is behind a new kind of cultural revolution. For centuries, inhabitants of this vast land of 3.6 million square miles have remained largely rooted to their native village or town. Under Mao's communism, individual mobility was limited by poverty, bad roads and a rigid household registration system.

Now, prosperous young professionals in Beijing form four-wheeling clubs to traverse the hinterlands of Yunan and Tibet, and Chinese of even ordinary means can contemplate the freedom of the open road.

Not surprisingly, giant conglomerates from the United States, Japan and Europe are vying for a piece of the action. U.S. automakers GM and Ford Motor Co. along with their Japanese rivals of Honda Motor Co., Toyota Motor Corp. and Nissan Motor Co. have formed joint ventures with Chinese partners. They are scrambling to catch up with Volkswagen AG of Germany, which has built cars in China for more than a decade and claimed about half of all passenger-car sales in 2001.

But once the car is purchased, the task of obtaining a license plate can be formidable. The scene at the Shanghai auction resembled the crowded start of an auto race as residents dashed inside to two dozen old computer terminals to enter their registration number, password and bidding price. When the bidding stops a few hours later, dealers and customers shuffled out into the lobby to smoke and await the announcement of the minimum bid: "17,800 yuan."

There was a chorus of cheers but many groans as well. Ding, the sculptor, went home glad with his last-minute decision to bid 18,000 yuan--1,000 more than he had planned.

But another bidder, Li Kun, stuck by his decision to bid no more than 12,800 yuan.

"I have to try again next month," he said with dejection.

Road Warriors

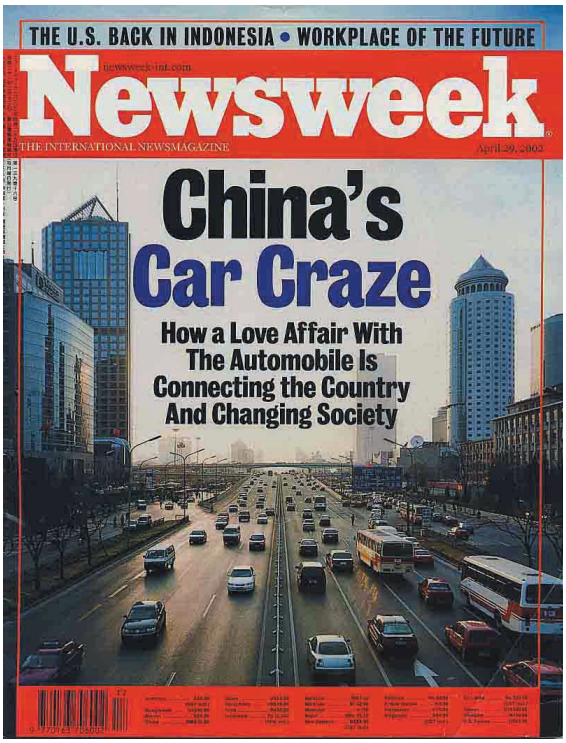
Middle-class Chinese are going car crazy, buying autos and hitting the road as never before

Melinda Liu
Newsweek International
29 April 2002

His love affair with the car began when Wang Qishun was just a toddler. In 1966 he caught a glimpse of flag-waving Red Guards crammed into green Army trucks. Even at the uncomprehending age of 4, he thought the spectacle was "grand." Now 39 and living in Beijing, Wang's been driving his own cars since 1985. Just two months ago he bundled his wife and son into his Cherokee Jeep for a family vacation, which wound up becoming a hair-raising 17-hour journey to Shanghai in a blinding snowstorm. Never mind, Wang loves his wheels. He happens to be the founder of China's first—and only—drive-in theater, located not far from Beijing's posh embassy district. "We're entering the automobile age," he told NEWSWEEK one evening in the drive-in's "clubhouse," where young Chinese sought refuge from their chilly cars to sip sodas and nibble popcorn. "Cars are bringing a new culture to China, and I want to explore it."

CHINESE ARE GOING crazy for cars. They're buying more private vehicles, driving farther in them and shaping their lives around them as never before. Sparked by China's entry into the World Trade Organization (WTO) last December, car prices are falling, and middle-income consumers are scrambling to snatch up the global, four-wheeled symbol of personal freedom. As recently as nine years ago, less than 10 percent of Chinese vehicle buyers were private individuals; by 2000 the figure had jumped to 50 percent (representing a total of about 7 million cars and trucks). Popular models cost less than $12,000, but even at that price, cars remain far out of economic reach for most Chinese. (Roughly one of every 100 Chinese people owns an auto, compared with one in two in the United States.) Nevertheless, the mood among a rising number of car purchasers these days is "giddy," says Tim Stratford, vice chairman and general counsel of General Motors-China, one of China's biggest automobile makers. Just like 1950s America, says Stratford, the debut of the private car is "influencing everything from popular culture to urban planning to commuter activity. China is truly the most interesting car country in the world."

Dating back to Imperial times, transportation was always a measure of the Middle Kingdom's technological (and territorial) ambitions. China's ancient Great Wall, for example, was not solely a defensive structure; it was also a sort of elevated roadway of its time for foot soldiers, horses and carts. Chinese cities were clogged with foreign-made automobiles in the 1930s, but after the communists swept to power in 1949, they nationalized the car industry. Under Mao Zedong's stultifying regime, the masses had little freedom or mobility; they were required to stick close to home under a stringent household registration system and were barred from owning private cars. The industry withered. While the Great Helmsman was collectivizing farms—and conducting state business in trains (box)—the West was rapidly building automobile plants and jet airplanes.



years ago, the most prestigious Chinese consumer item was a color TV, and "having wheels" meant owning a bicycle. No longer. After 25 years of economic liberalization, the Chinese middle class has arrived. More and more Chinese have breached the magic income threshold at which private-vehicle ownership becomes a possibility—about $4,000 a year. Most of these strivers live along the bustling coast, where the car craze has sparked a construction boom in country homes.

Photographer and designer Gao Bo bought his first car in 1996 because he wanted to move to the countryside. "My car was a substitute for my feet," he says. Now Gao Bo, 38, and several dozen Beijingers—most of them involved in art and culture—live in a rural village 40 kilometers north of Beijing. Their arrival in the village has helped spawn eight new stores and several taxi services—yet more wheels—run by villagers.

In the '90s, joint ventures between Chinese automakers and foreign partners such as Volkswagen and General Motors focused on making sleek luxury cars for ministers and commissars, who were chauffered around. But now—just as in post-WWII America—family cars are the rage. "Our market surveys show that buyers want to drive to work and go for leisure outings with the family," says Kevin Guan, 24, a senior specialist at Shanghai-General Motors. Guan himself is eager to buy a gray Buick SRV—a small recreational vehicle launched last November—so he can "go to the movies with my girlfriend."

Because car ownership is a new phenomenon, China's long-distance road system is a patchwork quilt. So-called national highways, or guodao , remain the most well traveled, but they can be treacherous. Some of the hazards: permafrost potholes, killer blind curves, endless stretches of Gobi Desert. Adventure drivers love the hairy Shanghai-to-Tibet Highway 318—a twisting, landslide-prone snake of a road slithering through some of the country's loneliest and most exotic scenery. "It's like China's Route 66," says a member of Beijing's Off Roader 4WD Club, a group of Beijing four-wheel-drive

'Road Warriors' continued

enthusiasts who organize yearly trips from Beijing to the Tibetan capital of Lhasa, a grueling three-week expedition. "We all used to want to be rich and successful," says off-roader Pan Li, who works for a venture-capital firm. "But after two journeys to Tibet, I've found a new lifestyle."

Thanks to the construction of modern expressways, even comfort-loving yuppies will soon be driving to funky corners of China. Over the past six years, China's highway network has jumped from 3,000 kilometers in total length to 20,000 kilometers. In December the country's longest expressway—six or more lanes wide, stretching 1,262 kilometers from Beijing to Shanghai—opened for business. It's cut the travel time between the two cities from more than 20 hours to roughly 12 (if the weather if decent). Yale Zhang of Automotive Resources Asia, a marketing and communications company, claims that "China's expressway [network] has just surpassed Japan's and is now the second biggest in the world, after the United States."

China's current car-buying frenzy is part and parcel of the country's commitment to fair trade. China joined the WTO last December, and one of the prices of new membership is a requirement to cut its automobile-import tariffs from more than 80 percent to 25 percent or less by 2006. The first tariff reductions came into force on Jan. 1, when the cost of a top-of-the-line imported BMW dropped $13,000 to a still-hefty $127,582. In January and February, vehicle sales of all types jumped 13.5 percent.

"Sticker delight" has also helped trigger a cutthroat price war among top Chinese car-makers. In January an inexpensive mini-sedan called the Alto, made by Changan-Suzuki, dropped nearly 25 percent in price (to 30,000 RMB , or about $3,650). Its year-on-year sales in February soared 70 percent. The China First Automobile Group, one of China's biggest carmakers, dropped the price of all four of its prestigious Hongqi (Red Flag) models by $3,600 per vehicle—a savings of between 9 percent and 14 percent. In January alone, Chinese buyers snapped up more than 4,000 discounted Shangai-GM Sails (a sedan priced at about $11,000)—one-seventh of the total number sold last year. Keve Guan of Shanghai-GM calls the sales surge "earth shattering." Inside Shanghai-GM's gleaming showroom, American images resonate. Shanghai GM is best known for its luxurious black Buicks. (The company's reps are quick to remind visitors that in the 1930s, one of every six autos on Chinese roads was a Buick. There is a vintage 1913 Buick on the showroom floor.)

In Mao's time, local governments lobbied to get car factories, and nearly all did. As a result, China today has a mind-boggling 120 auto plants nationwide, though most are losing money and only a handful produce more than 100,000 vehicles a year. Just as the crowded U.S. car industry faced consolidation in the early part of the 20th century, so will the Chinese industry undergo a Darwinian culling in the early part of the 21st. China's already got its version of the Big Three: Shanghai Automotive Industry Corporation (SAIC) and its joint ventures with General Motors and Volkswagen control nearly half the market. The Jilin-based First Automobile Group (also partners with VW), and Dongfeng-Citroen (in Hubei province) are also strong. The Chinese depend on their foreign joint-venture partners for high technology and R&D. Foreign firms have had mixed success: the Shanghai-Volkswagen Santana is omnipresent, but Beijing Jeep, a lagging venture between American Motors Corp. and Beijing Automotive, is a symbol of how not to do business in China.

Over the next several years, most of the laggards are expected to merge, switch production to more profitable products or go out of business. Already Chinese officials are jittery about fast-rising urban unemployment and labor unrest. Last month hundreds of laid-off employees of Beijing Automobile Works, a foundering manufacturer, held a protest in front of the company. "This is some of the toughest competition in the world," says Stratford.

For foreign automakers, the booming market offers new opportunities—but also the specter of a nationalistic backlash. Last December, in a blaze of publicity, dissatisfied Chinese consumers in Wuhan took up sledgehammers and demolished a Mercedes-Benz S-230. They claimed the car suffered from frequent oil leaks and other defects. (Mercedes-Benz believes the use of poor-quality fuel was to blame. In China substandard fuel, poor maintenance and dicey spare parts are common.)

Despite great expectations about the Chinese market, foreign carmakers have traveled a bumpy road. Peugeot sank $450 million into China, helped produce a poor-selling gas-guzzler, then pulled out. (Fuel, about 28 cents a liter, is more expensive than in the United States.) True, Chinese labor is cheap and abundant. But automobiles are a capital-intensive industry, and in China auto parts and other materials are expensive. So, surprisingly, making a car in China costs more than in the United States. While China is arguably the fastest-growing car market in the world, the country is still working off a very low consumer base. By 2010, total vehicle sales are expected to approach 5 million a year; by comparison, this year about 17 million cars will be sold in America.

Chinese leaders recognize that car sales can be a powerful economic catalyst, but they don't welcome uncontrolled auto buying. Pollution levels (already up to 10 times the Western norm in some places) and traffic jams are a growing urban headache. That's one reason Shanghai and other cities charge onerous auto-registration fees. When U.S. President George W. Bush visited Beijing in February, U.S. and Chinese officials trumpeted the city's purchase of 2,000 U.S.-built bus engines that burn clean compressed natural gas. Beijing, which already owns one of the largest natural-gas bus fleets in the world, is also poised to adopt tough European standards to limit vehicle emissions.

But most new car buyers don't think about pollution. They're too busy reveling in the latest form of self-expression. That's especially true in Beijing, where many cars are decked out with decals, curtains or window-hugging suction-cupped plush toys. One proud car owner wears black-and-white cowskin jumpsuits to complement her leopard-skin-print seat covers. Nightly, more than 30 vehicles pull into Wang Qishun's drive-in theater, which shows movies until dawn on weekends. Wang says that while a third of his customers come to "court their sweethearts," they're much more discreet than in the United States, "where I'm told many Americans have been conceived in the back seat of a car." Wang's dream is to launch a nationwide drive-in-theater franchise, replete with auxiliary services

China's Auto Market to Become World's 4th Largest

16 May 2002

While global auto sales will decline this year, China's will grow by 15 percent to reach more than 2.7 million units, making it the fourth-largest auto market in the world, according to the International Organization of Motor Vehicle Manufacturers (OICA).

Close to 2.4 million motor vehicles were sold in China in 2001, Jiefang Ribao (Liberation Daily) reported Wednesday.

Traditional automobile markets such as North America, Japan and Germany have seen falling production and sales, while China's auto output grew 13 percent and its output of heavy trucks soared 92 percent last year.

Auto output in the Asia-Pacific region surpassed that of North America in 2001, but within the region, Japan and South Korea are seeing declining production and limited room for growth.

China will become the major driving force for the growth of the region's auto industry, according to the OICA.

Traffic proceeds along Beijing's Second Ring Road. The city's roads are becoming increasingly congested due to the reduction in car prices and the government's ecouragement of its citizens to buy cars to stimulate the conomy.

'Road Warriors' continued

such as car washes, parts and repair shops, and even fast food.

Beijing residents love the open road. The Chinese capital has no fewer than 30 automobile clubs. Feng Yan, a 28-year-old marketing manager, had to buy a new Cherokee after joining the Off Roader 4WD Club. His old one wasn't up to the twice monthly rough rides. (Chinese buyers sometimes spend half a year doing research before purchasing their first car.) Last year he bought his own four-wheel-drive vehicle. Zheng Jianjun, a 31-year-old ad-agency employee, is leading a group of women on an off-road adventure—a 23-province, 30,000-kilometer pilgrimage around China's far-flung borders, from the coast all the way to Central Asia. She says the trip will take six months. "My whole life changed after I got my own car," she told NEWSWEEK at her send-off ceremony in early March, "Now if I don't drive for a while I feel something's missing."

Pan Shiyi of Redstone International, one of Beijing's top real-estate developers, believes China's car craze will help prompt many affluent city residents to move to China's version of the suburbs. Pan claims to dislike cities, so he and his wife built a weekend home. Around the same time, Redstone invited 11 of Asia's hottest young architects to each build "dream homes" in the Beijing countryside, near the Great Wall. It's the first stage of a planned 48-home rural enclave. "After 10 years as a developer," says Pan, "I found that building in the city involves many rules and regulations. But here in the mountains, we can finally build houses we like. I'm liberated!" Pan, 38, couldn't have done it all without his trusty Beijing-made Cherokee. It gets him out of the city and into a more harmonious frame of mind. And if his new development proves a hit, say Pan, he's got even bigger dreams. He may splurge and buy a Jaguar.

News in Brief

CBU-AutoEnews
9 May 2002

The number of registered motor vehicles in Beijing has been soaring after the country joined the WTO. Currently, each 100 families in Beijing own 12 units of cars, which indicates that the city of Beijing is into the threshold of motorization by international standard. In the first quarter of the year, more than 50,000 units of new motor vehicles were registered, up 36 percent over the same period of last year. By now the motor vehicle parc in the city has reached 1.73 million units, up 241 percent from the 507,000 units in 1990. Of the total, 1.04 million units belong to individuals and 545,000 units are passenger vehicles with less than nine seats. It is estimated that Beijing's total vehicle parc may exceed three million by 2008 if the city continues with the current growth rate of 10-15 percent.

Beijing and Shanghai Promote Natural Gas-Powered Vehicles

China Environmental Review
April 2002 Vol: 4 Issue: 13

As part of Beijing`s Environmental Strategy for the 2008 Olympics, Beijing is planning to promote the use of natural gas-powered vehicles. Over the last few years, Beijing reportedly has retrofitted roughly 30,000 public transportation vehicles and taxies to accommodate natural gas fuel. According to a plan developed by the Beijing municipal government, by 2008, all public transportation vehicles and taxies operating in Beijing will use natural gas as fuel. This plan has already influenced similar programs elsewhere in China. For example, cities in Sichuan, Shandong, and Guangdong provinces and the Shanghai municipality have launched programs to expand the use of natural gas vehicles.

CBU-AutoEnews
June 20, 2002

Shanghai will put 500 units of CNG buses into service in the city by the end of next year and the number of natural gas stations will be increased to 8 for this purpose, according to a recent report in Xinmin Evening News.

FAR EASTERN ECONOMIC REVIEW

CAR INDUSTRY
Time for A Tune-Up

Foreign car giants have long dreamed of ruling the potentially massive China market. But as sales finally take off a new brood of small, local makers is grabbing market share

David Murphy and David Lague
4 July 2002

THE PREDICTION is finally coming true: After years of dashing the expectations of the world's big car makers, the China market is booming. Passenger-car sales jumped 18% last year and are up 37% in the first five months of this year. In a depressed and highly competitive global car market, that's welcome news for the world's leading car makers, all of which have invested heavily to build a manufacturing presence in China since they first started arriving in the 1980s.

But the long-awaited upswing in market fortunes isn't panning out exactly as planned. New Chinese companies are emerging in key growth areas and are carving out market share in the economy-car segment. Instead of dominating "the world's largest potential market," foreign car executives face intense competition on three fronts in China. As demand rises, they are battling for market share with their international peers, their large state-owned partners and a rash of small but aggressive new car makers, some of which are keen to partner with foreign players while others are determined to make it on their own.

"The number of entrants is so great that it's difficult to see where the profits could accrue," says Joe Studwell, author of China Dream, an analysis of foreign investment in China.

Still, the market is growing. Passenger-vehicle sales topped 720,000 units in 2001 and are expected to reach 900,000 this year, according to Automotive Resources Asia, a consultancy. Much of that healthy growth was spurred by deep price cuts introduced in the wake of tariff reductions related to China's entry into the World Trade Organization and increased consumer pressure for lower prices.

Adding to the excitement among industry analysts is the fact that sales of passenger cars account for only a quarter of total vehicle sales in China, way short of the proportion sold in Western markets. This is at a time when all indications suggest that upwardly mobile and newly prosperous Chinese have the same powerful urge to own a car as consumers in the United States, Japan and Western Europe.

Car makers are betting the market will grow in volume and maturity and are salivating at the prospect of China's economic boom continuing apace until 70% of all sales are passenger cars, as in developed Western markets.

Short-term estimates of market growth are alluring. Analysts expect passenger-car sales to reach 2 million units by the end of the decade. In a new variation of an old dream, industry executives now gush about the prospect that some day one in two of China's 1.3 billion people could own a car, just like Americans or Germans. For now, only one in 100 Chinese has a car.

For foreign car executives China has always been a strategic investment. It is the market potential, not the market reality,that is used to justify the big bets. "Making a Commitment Today for a Better Tomorrow" was the theme of the General Motors exhibition at this month's Beijing motor show. After all, the China market is still significantly smaller than, say, Spain, where 1.4 million cars were sold last year.

But that hasn't dampened foreign executives' spirits. "China today is our No. 1 geographic priority in terms of market development," Nissan Chief Executive Officer Carlos Ghosn said in a keynote address at the Beijing motor show on June 5. Nissan is part of a wave of Japanese car investment in China that began with the launch of Honda production in Guangzhou in 1999 and has been gathering pace. Nissan is currently negotiating with Dongfeng Motor Co., one of China's big-three car makers, to begin production of passenger cars in Hubei province. Honda and Toyota are aggressively expanding their existing capacity.

Major foreign car makers have pumped well over $5 billion into joint ventures and are eagerly transferring technology, design know-how and marketing skills to their Chinese partners, says Singapore-based industry analyst Graeme Maxton. The money has been flowing in since the first half of the 1980s when Volkswagen, Chrysler and Peugeot set up manufacturing joint ventures in China. Since then the rest of the world's heavyweights have paraded into the market, with General Motors making the largest single investment of $750 million for its share of a 50-50 joint venture in Shanghai.

In all, 10 foreign car makers have entered joint ventures and are now competing for market share. And they continue to lay investment plans. "GM is intent on continually introducing new products and quality services that meet the growing needs of the China market," said Philip Murtaugh, chairman and CEO of the GM China Group, in a recent statement. Mei Wei Cheng, chairman and chief executive of Ford Motor (China), expects Chinese to buy 5 million cars annually by 2010.

But even the most optimistic predictions of market growth hardly warrant the attention car makers are lavishing on China, says Maxton. Even if sales reach 2 million units a year by 2010--the best guess of most companies including General Motors--China would still only account for 2% of today's global new-car market. "That makes it the fastest growing market in the world but the extent of the opportunity is really pretty small in global terms. It is going to be a very tough market," he says. In the U.S. more than 17 million new cars are sold each year. Given the large number of domestic and foreign makers competing in China the potential rewards are quite small, contrary to manufacturers' public statements.

Foreign car makers built their China investments on two strategic pillars: joint-venture partnerships with state-owned car makers and products aimed at fleet sales to state companies and government affiliates.

Now those pillars are starting to crumble. Private buyers are playing an increasingly important role in the market. Estimates suggest that between 25% and 30% of all cars sold in China now go to private buyers, up from almost none a decade ago. But Yale Zhang of Automotive 'Resources Asia says a true figure is almost impossible to calculate because

Tune-Up' continued

many privately purchased vehicles are also used for commercial purposes.

What is clear is that many private buyers are opting for lower-end cars. That is a real challenge for big foreign makers that remain wedded to their state-owned partners and the production of mainly high-end vehicles. The central government has control over the kind of assembly platforms car makers use and has for years blocked foreign makers' efforts to enter the small-car market. It is only recently, through some complicated tie-ups, that foreign players have been able to take a stake in the low end of the market.

Entering that new market means taking on a growing band of small, Chinese car makers that are posting strong sales with less-expensive vehicles. These new companies cannot match the global players in terms of experience, capital or technical resources and many may be forced to seek alliances with foreign multinationals eventually. They can produce cars cheaply because they spend virtually nothing on research and design. One of the most popular of the new brands, the Chery, looks remarkably like the best selling brand in the country, the VW Jetta. "They definitely mean more competition in the market," says Kenneth Hsu, a spokesman for Ford Motor (China).

The Chery, which is produced in Anhui province, is the top seller among the new brands so far this year. Chery sold 18,500 cars in the first five months of the year, up 220% on the same period last year. Geely, a Zhejiang-based company that was founded in 1998, is also rising fast. It sold 30,000 cars last year. Ding Shaohua, a company spokesman, says Geely aims to sell 50,000 cars this year, an ambition that's fed by the company's ability to attract qualified engineers and line workers from the big established players. He says the company needs to work on improving its network of service and sales outlets but reckons that companies like his "could hold 30% of the domestic market five years from now," up from just under 10% currently.

In the 1990s Beijing said it wanted to merge or shut down almost all of China's small domestic makers, leaving the market to a handful of large companies, most of which were already in joint ventures with foreigners. But the rise of Geely and Chery is instructive. Both companies ignored Beijing's restrictions on new car ventures and with protection from their provincial governments went into production without an official licence. Once they were employing people and selling cars the central government had no option but to formally approve them, though Chery was forced to let domestic giant Shanghai Industrial Automotive Corporation take a 20% stake in the company.

Maxton and other analysts say foreign car makers, blinded by steep sales-projection graphs, have failed to make a proper strategic analysis of the market and the intentions of China's economic planners. But General Motors believes that China will be the third-biggest car market in the world by 2025 and is betting on a corporate bloodbath in the meantime that will result in domination by two or three companies. Then, says Daphne Zhang, director of communications for GM China, "we want to be one of the top players."

Recent manufacturing history in Japan and South Korea demonstrates that car industries are vital for developing economies with ambition.

In advanced economies, car production, sales, financing, maintenance and ancillary transport services can account for up to 10% of total economic activity. A healthy car industry also assures plenty of orders for other pillars of a strong developed economy including steel, plastics, glass and rubber industries. That is why a world-class car industry is a key plank of China's economic plans. In June 2000 the State Economic and Trade Commission unveiled a plan to fundamentally restructure 13 industries including the car industry. In a new version of an old plan, the government now wants to push most of China's 120-odd car companies towards mergers with the three big domestic car companies.

China, along with India, is one of the few developing nations with a realistic prospect of developing a car industry to rival the established international players because of the economies of scale arising from such a big domestic market. "In another generation, it is certainly conceivable that one of the big manufacturers could be Chinese," says Maxton.

Unfortunately, China lacked the technology and know-how to build a competitive industry from scratch. That's where the foreigners came in. Now sceptics point out that rather than foreign companies establishing a foothold, it is their domestic joint-venture partners that are growing in power.

When pointing out success stories in China's car industry, most analysts tend to concentrate on the strides Volkswagen has made to grab about 50% of the passenger-vehicle market since it began local manufacturing in 1985 while carefully guarding its technology. "It's the one clear winner in this business," says Studwell.

However, its joint-venture partner, Shanghai Automotive Industry Group, has since added a big joint venture with General Motors to its portfolio. That puts it in an extremely powerful position to play the two giants off against each other. New models and the latest technology are now flowing into the joint ventures.

Geely, Chery and other upstart makers show that fast-moving new players are also able to take advantage of technology transfers. "The Chinese are playing a very clever game and they will win every hand," says Maxton. "The plan is all laid out. They will leach technology from their partners and then they will compete with them."

Indeed, some analysts express surprise at the apparent belief among foreign players that the Chinese would allow them to become major players in such a key industry when Japan and South Korea made it a national priority to ensure domestic car makers became dominant.

In recognition of the problems looming for foreign companies, Paul Gao, a Shanghai-based associate principal at McKinsey & Co., advises foreign car makers to contract out component making and assembly of vehicles to local firms.

That way, foreigners could concentrate on developing products and brands. Gao notes that Volkswagen, Honda and GM report that their car making has been profitable to date. "How long can that profit continue is the question," he says.

Economist.com

9 May 2002

Urban Air Pollution: A Great Leap Forward

Poor cities can afford clean air, and cannot afford dirty air

"WE WANT to turn Taiyuan into a civilised place!" So proclaims Yuan Gaosuo, deputy mayor of this grimy industrial city in the north-east of China. At first blush, this seems an odd aspiration. After all, Taiyuan and the neighbouring bits of Shanxi province are one of the earliest centres of Chinese civilisation. Architectural treasures, such as the Shuanglin Si monastery and the Jinci Si temple, abound. Wutai Shan, one of Buddhism's most sacred sites, draws visitors from all over the world.

Whatever its other deficiencies, civilisation ought thus to be the one thing that Taiyuan does not lack. Mr Yuan disagrees. When air pollution levels in China's 47 biggest cities were measured in 1999 and 2000, Taiyuan came last. "Without clean air, we simply cannot consider our city civilised," he says. In fact, with pollution at nearly nine times the level deemed safe, Taiyuan probably had the filthiest air in the world. Uncivilised, indeed.

That embarrassing report (which merely confirmed what local people knew all along) has at least wrought some good. It has spurred the city's officials to start tackling the soot, smoke and sulphur dioxide spewing from Taiyuan's many coal-fired hearths and industrial boilers. Their motive is the same as the one driving clean-air legislation in other industrialising cities, such as London and Los Angeles, in the past. Their methods, though, are intriguingly different.

Let the market decide

Both London and Los Angeles adopted classic command-and-control measures to deal with their problems. In Britain, burning coal was banned in cities. California did not go so far as to ban cars. That would probably have caused riots on the streets (assuming Angelenos could remember how to walk on them). But the regulations imposed on car design were every bit as intrusive and prescriptive as anything dreamed up by a Comecon government.

It is something of an irony, therefore, that the city government of Taiyuan, which is located in what is, officially at least, still a communist country, should be looking to the market to solve its pollution problem. But that is exactly what it is doing: it proposes to use emissions trading in an attempt to achieve a 50% reduction in sulphur-dioxide output within five years.

In April, local and provincial officials struck a deal with the Asian Development Bank (ADB) to develop such an emissions-trading system. Permits to pollute will be issued to the worst offenders. Those permits will be tradable, so that a polluter will be able either to retain the right to release his own sulphur dioxide, or restrain his own pollution and sell the right to somebody else. By reducing the total permitted tonnage of gas each year, overall pollution levels can be reduced in the most economically efficient manner.

A couple walks toward the haze of a polluted, gray Beijing. Indoor chemical, physical and biological pollution has been increasing in China in the past few years.

Taiyuan will not be the first Chinese city to experiment with sulphur-dioxide trading. Nantong has already carried out a preliminary trial with the help of Environmental Defence, an American lobby group. But Richard Morgenstern, of Resources for the Future (RFF), a think-tank (also American) that is advising Taiyuan's government, thinks that such trading is particularly suitable for the city. First, its problem is concentrated: a small number of large polluters (about two dozen) emit half the gas. Second, those firms face hugely divergent clean-up costs. According to RFF, these range from $60 to $1,200 per tonne of gas emitted. There is therefore something real to trade.

The rewards of virtue

Until recently, conventional thinking has held that poor cities such as Taiyuan cannot afford rich-world environmental standards: greenery, according to this theory, is a luxury good that comes only with wealth. Over the past few years, though, economists have realised that, besides being bad for individuals, pollution is bad for the economy. In a report that proved influential in converting China's leaders to the virtues of pollution control, the World Bank has estimated that in the late 1990s China lost between 3.5% and 7.7% of its potential economic output as a result of the health effects of pollution on the country's workforce. Similarly, Louisa and Mario Molina, who work at the Massachusetts Institute of Technology, argue that Mexico city could see benefits of perhaps $2 billion a year, if officials reduced the concentrations of particulate matter in the air by just 10%.

Once the true costs of air pollution are recognised, argues Piya Abeygunawardena of the ADB, the case for action becomes clear. He accepts that today's new megacities have a more challenging task in tackling pollution than London or Los Angeles did, since they are both bigger and poorer. But he points to several factors that make the task easier, too. One is better science. Another is hindsight: studies of past policies elsewhere can point to what works and what does not. And there is also more institutional support and money from outfits such as his bank.

Such outside support may not, however, be needed forever, for there are growing environmental movements—such as the Grupo de Cien in Mexico city and Friends of Nature in Beijing—in many developing countries. In Delhi, noisy activism by an organisation called the Centre for Science and Environment led to a recent Supreme Court ruling that forced recalcitrant government officials to scrap dirty old diesel buses in favour of cleaner ones that run on compressed natural gas. Effective pollution control certainly needs grand plans. But civilisation also needs a myriad nitty-gritty decisions.

Los Angeles Times latimes.com

China Is Passing Pollution to a New Generation

Henry Chu
19 June 2002

SHENZHEN, China -- Paying for the environmental sins of their parents' generation, nearly two-thirds of the children in this southern Chinese boomtown suffer from lead poisoning, a recent study has shown.

The survey of more than 11,000 local schoolchildren--one of the largest of its kind in China--adds to the mounting evidence of the toll that pollution is taking on the world's most populous country, even as officials in Shenzhen spend millions of dollars promoting the city as an environmental model.

After 20 years of breakneck development, China has become a land of major ecological damage, a nation where millions of residents gasp for breath, where rivers flow with harmful chemicals and where green spaces are shrinking at an alarming rate. Rapid industrialization and market reforms have pulled hundreds of millions of Chinese out of abject poverty. But they have also given rise to one of the most polluted nations in the history of the planet.

The long-term effects of such pollution are now coming into focus. The study in Shenzhen demonstrates how the nation's children are often most at risk and how the negative consequences of dirty air and water extend beyond the present generation to the next.

From October to December last year, researchers with the Shenzhen branch of the Chinese Medical Assn. conducted lead tests on 11,348 local children.

They discovered that 65% of the youngsters had concentrations of lead in their systems that exceeded the level considered safe by the World Health Organization.

Left unchecked, lead poisoning can damage a person's nervous and reproductive systems, and cause anemia and high blood pressure.

In children, the effects can be worse, including irreversible brain damage, mental retardation, behavioral problems and stunted growth. Anecdotal evidence suggests that such problems are on the rise among Chinese youth, although there are no hard data yet. Extremely severe cases of lead poisoning can result in convulsions, coma or death.

Children are particularly susceptible to lead poisoning because of their height: Lead is more heavily concentrated in the air near the ground. They also breathe in high amounts of car exhaust. And they are more likely to put objects tainted with lead in their mouths.

"It's easy for it to accumulate and develop into lead poisoning," said Wu Yulin, one of the directors of the Shenzhen study. "And because it's a slow process, it's hard for people to detect right away."

The cumulative effect was apparent in Wu's study, which showed that the older the children, who ranged in age from 3 to 15, the more lead in their bodies.

The results of his survey follow similarly grim findings in recent years in cities around China.

In Beijing, experts found excessive lead levels in about 20% of the city's youngsters last year. An earlier study in Taiyuan, the gritty, industrial capital of central Shanxi province, uncovered a lead-poisoning rate of 64%.

And in Guangzhou, one of Shenzhen's fellow cities in Guangdong province--China's richest, most developed region--a survey two years ago indicated that up to 83% of youngsters were suffering from excessive lead.

Extrapolating from various studies, experts estimate that lead poisoning could afflict half of all urban Chinese youth, the official Life Times newspaper reported Friday.

Alarmed by the gathering weight of evidence, the Chinese government is embarking on an investigation of 8 million to 10 million children nationwide to determine the extent of the problem.

"The government needs to stress ... prevention of lead poisoning as soon as possible," Wu said.

The World Bank has identified lead poisoning as the No. 1 environmental disease among children in the developing world. But the problem isn't confined to poor nations. In the late 1970s, nearly 90% of American children had elevated lead levels in their blood. That has dropped to less than 5% in the last decade, according to the Centers for Disease Control and Prevention. The dramatic reduction in the U.S. was attributed in large part to the switch to unleaded gasoline.

In China's rapidly developing cities, exhaust fumes remain one of the biggest sources of lead in the air. The country has been phasing in unleaded gas over the past five years, but in spotty fashion: In Beijing, 30% of the gas used is estimated to fall short of the government's environmental standards.

Shenzhen is home to more than half a million automobiles, up from practically zero two decades ago. Anointed by the late leader Deng Xiaoping as one of China's "special economic zones," Shenzhen has exploded from a sleepy fishing village of 30,000 people into a bustling metropolis of 3 million.

Its environment has suffered in the process.

Power plants and textile factories in some parts of the city sully the air, belching out toxic fumes from their smokestacks. Sewage, dyes and other chemicals get dumped directly into the Pearl River estuary.

Yet at the same time, China nominated Shenzhen this year to the U.N. Environmental Program's Global 500 Roll of Honor, a showcase of the world's 500 most environmentally progressive cities.

It was accepted. The UNEP said that Shenzhen had made great strides in cleaning up its act; it congratulated the city government on vetoing 3,619 projects that failed to meet environmental requirements and on investing $461 million in protection measures.

Zhang Xiaobin, publicity director of the Shenzhen Environmental Protection Bureau, acknowledged that his city is not perfect. But he insisted that Shenzhen had distinguished itself as a model for others.

"When you judge the environment of a place," he said, "you should look at the overall situation."

Asia's Wind-Borne Pollution a Hazardous Export to U.S.
Dust, Chemicals Travel a Long Way

'We're a small world,' one scientist says.

Gary Polkavic
26 April 2002

Wind-borne pollution from China and neighboring countries is spreading to California and other parts of the nation and Canada as a result of surging economic activity and destructive farming practices half a world away, according to new scientific studies.

The research shows that a mix of pollutants, from dust to ozone to toxic chemicals, travels farther than once realized.

Federal air quality officials fear that the foreign-born pollution will complicate efforts to cut smog and haze, and make it more difficult to meet federal air quality standards in California and other parts of the West.

Although most of the pollutants are similar to ones already found in North America, they do add to health concerns by slightly increasing year-round concentrations of gases and tiny particles in the air, according to the U.S. Environmental Protection Agency.

During peak winds, however, dust and smoke levels can approach or exceed health-based standards. Federal scientists, too, are beginning to probe the dust for bacteria and viruses that may be attached.

The made-in-China label on haze over North America is partly due to increased productivity of consumer goods ranging from patio furniture to CDs to toys. But it also is a result of deforestation, over-grazing and intensive cultivation of fragile soils.

Researchers at universities on both sides of the Pacific have been tracking the haze for a number of years along its 6,000-mile journey, using satellites and aircraft, land-based sensors and computer models.

In one severe dust storm in spring 1998, particle pollution levels in Oregon, Washington and British Columbia soared. In Seattle, air quality officials could not identify a local source of the pollution, but measurements showed that 75% of it came from China, researchers at the University of Washington found.

"A larger fraction of the haze we see is Asian, far more than we ever dreamed," said Tom Cahill, professor of atmospheric science and physics at UC Davis. "We're a small world. We're all breathing each other's effluent."

The amount of pollution reaching North America from Asia does not equal that produced by the United States. But the impact of foreign- born pollution is becoming more widely visible.

The imported haze has recently been spotted at ski resorts from Lake Tahoe to Aspen, Colo., and above Los Angeles and Vancouver, Canada. At its worst, it can cast a faint, yellow hue across a 1,200- mile front from Arizona to Calgary, Canada, and beyond before it peters out somewhere over Greenland, studies show.

"We may need to be more engaged in countries in Asia in helping them clean up their industries and reduce pollution to protect the health of Americans," said John Beale, deputy assistant administrator for air programs at the Environmental Protection Agency.

This week, scientists are launching a major new research project to better understand the problem. Based in Monterey, dozens of scientists plan to track pollutants reaching the West Coast. They have installed wind and pollution sensors at coastal outposts from Goleta and Trinidad in California to the Olympic Peninsula in Washington.

They will compare data with researchers in Japan, and study satellite images from space and data from lasers aboard an airplane flying between Seattle and Los Angeles.

Called the Intercontinental Transport and Chemical Transformation 2002 Project, the research effort will collect and analyze air pollution samples through late May.

What researchers don't fully understand yet is just how much pollution drifts across the Pacific, its exact chemical composition, how it changes once it reaches North America and how it affects the environment. They also want to know how much air pollution comes from thousands of cargo ships plying the Pacific to service the global economy.

What they do know is that deserts in China and Mongolia are a major source of pollution. Wind storms rake the Taklimakan and Gobi deserts, where soil erosion is increasing, whipping towering clouds of dust miles into the air. High-speed winds whisk them along at up to 1,500 miles per day.

"Once the pollution gets on that conveyor belt, it often doesn't run into clouds or weather systems and doesn't mix or fall out of the air, so you have largely undiluted pollution arriving in North America," said Rudolf Husar, director of the Center for Air Pollution Impact and Trend Analysis at Washington University in St. Louis.

A process called desertification has intensified in China, home to about 100 million peasant farms. As a result of drought, forest- clearing, overgrazing and intensive cultivation, huge tracts have been stripped of the vegetation that held the soil in place.

Desertification affects one of every four acres in China today, Cahill said.

Numerous studies have linked microscopic airborne particles with a host of health problems, including heart attacks, respiratory failure, asthma and premature death. The smallest particles are too tiny to be filtered by the body and penetrate deep into the lungs.

Mixed with all the dust is another menace: Toxic and industrial pollutants from farms, factories and power plants. China's coal- burning power plants and factories emit roughly 40 million tons per year of sulfur oxides, the most in the world and double the U.S. emissions of that pollutant. "We're not breathing just dust, but dust and whatever else has been deposited on it, like hundreds of compounds from man-made pollution," said David Parrish, atmospheric chemist for the National Oceanic and Atmospheric Administration.

About one-third of all the mercury--a toxic metal--released in the United States comes from fossil-fuel burning in Asia, said Daniel Jacob, professor of atmospheric chemistry at Harvard University. Mercury is found in some coal deposits and is released into the air primarily by

'Hazardous Export' continued

power plants.

Also, pesticides that have been banned in the United States are part of the fallout from dust blowing off farmland in China, said Dan Jaffe, atmospheric chemist at the University of Washington. Among the pesticides detected are DDT, toxaphene and dieldrin, he said.

"In the United States, many of these pollutants are decreasing, yet in these countries, the pollution is increasing," Jaffe said.

Spring is when most of the pollution blows across the Pacific. For example, after the 1998 dust storm, particle pollution levels across much of the interior West tripled. An additional 20 to 50 micrograms of particles were detected in valleys along the West Coast--equivalent to one-third to three-quarters of the allowable particulate matter under EPA pollution standards.

Ozone also has been tracked moving across the North Pacific. In one instance, concentrations at Cheeka Peak on the Olympic Peninsula in Washington reached 70 parts per billion, 60% of the U.S. one-hour ozone standard, Jaffe said.

Ozone, a gaseous pollutant formed chemically in the air as emissions from smokestacks, tailpipes and cleaning solvents react with sunlight, is the common ingredient in smog, and highly destructive to lung tissue.

Most of the year, however, pollution from Asia is less severe. Winds wane in summer and the smog-conveyor belt slows down. Still, a steady trickle of pollutants reaches North America throughout the year, adding 5 to 15 parts per billion of ozone, Jacob said.

Scientists are unsure how the pollution affects the marine environment. Dust can benefit marine ecosystems as minerals falling on water enhance plankton. But dust blowing over the North Pacific sometimes blocks about one-third of the sunlight reaching the ocean, reducing energy available for biological productivity."We know it [haze] can affect the weather in the North Pacific by cooling the air, but we are trying to figure out what it means for climate and plankton," Cahill said.

Green Groups Want Bolder Plans to Clear China's Air

Tan Ee Lyn
Reuters
1 May 2002

HONG KONG - Environmentalists yesterday criticised plans by Hong Kong and the Chinese province of Guangdong to reduce worsening cross-border smog, saying they were not bold nor radical enough to clear the air.

"If we do not have emission caps that are binding on both sides, we will end up with nothing," said Mei Ng of Friends of the Earth, which wants the governments to commit to more renewable energy sources like wind and solar power.

Hong Kong and Guangdong, China's fastest growing province, unveiled aggressive targets on Monday to cut growing air pollution by 2010.

But they gave few concrete details on what action they will take, or when. Some critics questioned whether the governments have the political will to take on entrenched business interests.

Vast areas of southern China are now shrouded in smog many days of the year after decades of booming economic growth, choking cities and spooking foreign investors. Hong Kong's famous Victoria Harbour and skyline is often obscured by haze and respiratory complaints are common.

In a joint study, the governments blamed the pollution on the ever-rising numbers of cars, power stations and factories.

It recommended Hong Kong and Guangdong switch to less-polluting fuels for power generation, while Guangdong should study the use of alternative energy sources such as hydroelectricity, wind, solar and geothermal.

It also said Guangdong should tighten the quality of gasoline and diesel fuel and vehicle inspections.

Both governments agreed to cut emissions of sulphur dioxide by 40 percent from current levels by 2010, nitrogen oxides by 20 percent, respirable suspended particulates by 55 percent and volatile organic compounds by 55 percent.

Without additional control measures, emissions of those pollutants will grow by 36 to 75 percent in the region by 2015, the study said.

NOT GOOD ENOUGH

But the agreed limits are too vague and would not work unless governments on both sides enforced them, said Alex Chung, research coordinator for Friends of the Earth.

"We want the government to actively order various industries to set strict emission limits, so there would be better monitoring and control," Chung said.

"What we want to see is how good our air quality will be and what will be permissible by 2010, but not how much (each pollutant) will be reduced by," Ng added.

"A change of energy mix (by just swapping) fossil fuel is simply not enough. It simply is not a genuine solution to our air pollution problem."

Annie Ho, spokeswoman for green group Clear The Air, said governments on both sides of the border needed to pass tougher laws punishing polluters.

Up to 40 million people live in the Pearl River Delta, including about seven million in Hong Kong, the former British colony which returned to Chinese rule in 1997.

The Asian Development Bank warned in 2000 that worsening air pollution in Hong Kong posed health risks and hampered the territory's efforts to become a regional high-tech hub able to attract foreign talent.

In Hong Kong, visibility is sometimes as low as two km (1.3 miles) and authorities regularly issue advisories for those with health problems to stay indoors.

In 1999, US$462 million was spent in Hong Kong on treatment of respiratory ailments, most of which were aggravated by air pollution, according to medical sources.

Hong Kong fell to a distant sixth place - its lowest in recent years - in a recent business survey on the cities offering the best quality of life in Asia, while rival Singapore topped the list for the second year running.

Respondents to the survey, by the Political and Economic Risk Consultancy, criticised the territory for its pollution problems and expensive housing.

Beijing Aims to Breathe Easier:

Campaign Aims to Reduce Suspended Particles, contaminants' discharge

Liu Li and Xin Dingding
2 April 2002

Beijing on Monday launched a nine-month campaign to rid the city of air pollution.

The main tasks include bringing suspended particles under control and reducing discharge of contaminants by a big margin, according to sources from the Municipal Bureau of Environmental Protection.

It is expected that 55 per cent of days this year will reach Grade-2 on the air pollution index or better than the standard, five percentage points higher than last year.

By the end of October, Beijing should have finished renovations on 1,500 coal fired boilers to reduce an estimated 24,000 tons of pollutants.

Meanwhile, natural gas and electricity is to be installed on a greater level.

Regarding the problem of exhaust emissions from cars, various measures are to be adopted, officials with the bureau said.

Motor vehicles used for over 10 years and taxis of more than five years old are to be examined by the environmental protection and communications management departments.

Vehicles not able to reach the waste release standard even after repair are forbidden to be used again.

Around 40 factories from downtown areas that pollute the environment will be removed this year, including coking, sintering, cement and lime plants of the Capital Iron Steel (Shougang).

By the end of June, around 4 million square metres of unused land in Beijing will be transformed into a pollution-free zone, especially along the Chang'an Avenue, the airport road and the second, third and fourth ring roads.

A telephone line has also been set up for residents who want to voice opinions on areas that are not environmentally friendly.

In addition, Beijing's rivers are getting cleaner as the capital's sewage treatment is improving.

With four sewage treatment plants currently in operation, the capital is able to treat 1.28 million cubic metres of sewage per day, or 42 per cent of waste water.

In addition to this progress, the municipal government plans to invest 793 million yuan (US$95.5 million) this year to carry out seven sewage treatment projects.

According to sources from Beijing Drainage Group Co Ltd, these projects include building four sewage treatment plants and three sewage conveyance projects that guide sewage to treatment plants.

"By the end of this year, the city will be able to treat at least 45 per cent of the total waste water, an increase of 3 per cent," said Xuan Yongli, spokesman for the company.

Qinghe sewage treatment plant, with a designed capacity of treating 200,000 cubic metres of waste water per day, is expected to be completed in October and will be put into trial operation then, he said.

As a supplement to the Qinghe plant, 25-kilometre-long pipelines will also be completed to collect waste water from the Qinghe River and nearby areas for treatment, he said.

This year, there are three other sewage treatment plants listed in the construction plan.

Two Chinese women, standing on a main street to promote a shopping centre, cover their faces with scarves to protect themselves from a sand storm in Beijing April 16, 2002.
Reuters

Japanese-U.S. Team Studying Air Pollution

The Yomiuri Shimbun/Daily Yomiuri
22 April 2002

By comparing the data from Japan-located on the windward side of.

The National Space Development Agency of Japan, Tokyo University and the U.S. National Oceanic and Atmospheric Administration embarked Sunday on a joint investigation to learn how air contaminants, including nitrogen oxide from China-which is believed to be the cause of of acid rain in Japan-are spreading.

NASDA and Tokyo University sent up a plane Sunday from Nagoya airport to obtain pollutants and analyze them. The plane will conduct aerial surveys for about a month.

The amount of air contaminants coming from factories in China and other East Asian nations have been increasing in pace with their rapid economic development.

Such pollutants are said to be diffused by temperate westerlies, to the detriment of the environment and peoples of Japan and the United States. But to date, no concrete data have been collected to support this assumption.

In the joint investigation, both countries will use equipment mounted on planes to detect the presence of gases such as nitrogen oxides and ozone, which are greenhouse-effect gases. temperate westerlies-and that from the United States-which is located on the downwind side-the team hopes to chart how airborne pollutants migrate across the Pacific Ocean.

The Japanese team is using a four-seater plane chartered from a private company to collect data. The plane will make 10 reconnaissance flights over the Pacific Ocean, covering an area from 1,200 kilometers off Tokyo to waters off Miyako Island, Okinawa Prefecture.

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The New York Times ON THE WEB

China's Growing Deserts Are Suffocating Korea

Howard W. French
14 April 2002

SEOUL, South Korea, April 12 -- School was called off throughout much of this sprawling city last Monday because of inclement weather.

It was not a freak spring snow storm, a heat wave or torrential rains.

Rather, it was an immense cloud of dust that blew in from China's fast-spreading deserts, about 750 miles away.

It hid Seoul from view throughout the morning, obscuring the sunrise just as surely as the heaviest of fogs. Clinics overflowed with patients complaining of breathing problems, drugstores experienced a run on cough medicines and face masks that supposedly filter the air, and parks and outdoor malls were nearly empty of pedestrians.

With the arrival of the huge dust storms for the third consecutive year, Koreans have begun to grimly resign themselves to the addition of an unwelcome fifth season -- already dubbed the season of yellow dust -- to the usual four seasons that any temperate country knows.

Like the harmattan in West Africa, when skies throughout that region turn a soupy gray for weeks at a time because of seasonal wind patterns that bring airborne dust southward from the Sahara, Korea's new season is a disturbing reminder for Asians of global interconnectedness and the perils of environmental degradation.

''There is no way for us to deter this,'' said Kim Seung Bae, deputy director of South Korea's national weather service. ''All we can do is try to forecast the yellow dust storms as early as possible, but with the current technology we can only detect it one day ahead of time at best. For now, our main innovation will be to add predictions of the intensity of the dust to our weather reports.''

In Seoul, a measurement of 70 micrograms of dust per cubic meter of air is considered normal during most of the year. At 1,000 micrograms, experts say, serious health warnings are indicated. Earlier this week, in the fourth storm of the season, a record measurement of 2,070 micrograms was reached in this city. Mr. Kim said two or three more storms could hit Korea this month.

Scientists say the dust storms, which are distinctly visible on regional satellite weather maps as gigantic yellow blobs, are the result of the rapid desertification in China and a prolonged drought affecting that country and other parts of Northeast Asia.

The term yellow dust refers to the color of the sand when it coats parked cars and windows rather than the color of the skies, which all this last week were a thick, acrid gray.

According to China's Environmental Protection Agency, the Gobi grew by 20,000 square miles from 1994 to 1999, and its steadily advancing edge now sits a mere 150 miles north of Beijing. As in West Africa, which weather experts say is the world's leading source of dust, China's environmental changes are accelerating because of overfarming, overgrazing and the widespread destruction of forests.

But unlike West Africa's dust, which is carried to the southern United States by winds known as the tropical easterlies, dust from the Gobi and Taklimakan deserts in rapidly industrializing China is binding with toxic industrial pollutants, including arsenic, cadmium and lead, increasing the health threat.

Changes like these have long made springtime synonymous with respiratory distress in Beijing.

But as the dust storms have grown, their impact has been spreading rapidly eastward, blighting the air over the Korean peninsula and beyond.

This has been an unusually dusty spring in Tokyo, for example, and fingerlike plumes of the airborne sand now travel 7,000 miles aboard the jet stream reaching Portland, Ore., and San Francisco, where the main effect so far has been to create breathtaking sunsets.

''There is no smoking gun yet that proves that man is causing this,'' said Charles S. Zender, a professor of earth system science at the University of California at Irvine, ''but rather lots of anecdotal evidence.''

''The puzzle of Asian dust is a huge question in weather science right now,'' he said, ''and if human activity is proven to be the cause, it stands to reason that this problem is going to keep getting worse.''

As a mood of resignation has set in over the persistence of this phenomenon, Koreans have already begun to focus on the economic costs. What was only recently regarded here as a minor nuisance is now seen as posing a serious threat in areas as diverse as public health, travel, retail shopping and even high-tech manufacturing.

This last week, for example, in addition to the school closures, scores of domestic flights have been canceled because of poor visibility. Workplace absenteeism has risen, too, and retail sales have dipped, as a result of people staying indoors.

''I've had a little bit of a cough,'' said Choi Byoung Su, 30, a businessman who was at a downtown pharmacy stocking up on medicine for a sore throat, which he said was caused by the dust storms. ''I'm not too concerned about my health for now, but it is really a hassle for my car,'' he said, explaining that he needed to have it washed at least once a day now.

Even South Korea's major industries are suddenly complaining about the worsening effects of the storms. Semiconductor manufacturers, for example, which are highly sensitive to contaminants, have reportedly had to change their sophisticated air filters much more frequently and require workers to take longer showers before beginning assembly work. Workers are also being discouraged from entering and exiting the factories any more than is strictly necessary.

Hyundai Motor, meanwhile, a major automobile manufacturer, has reportedly begun to wax its cars differently and shrink wrap them in plastic sheeting before export to protect them from the dust.

A Chinese Mongolian woman carries water to her home during a sand storm at the village of Liang Mianjing in Inner Mongolia, April 13, 2002. *Reuters*

FAR EASTERN ECONOMIC REVIEW

CHINA: The Quest for Energy to Grow

China is mounting a determined effort to safeguard the energy supplies that are vital to its development. It won't be easy, with demand for oil now outstripping stagnant domestic output

David Lague
20 June 2002

IT WAS NEVER MEANT to be this way. More than two decades into China's dizzying economic boom and a steady stream of giant oil tankers riding low in the water sails thousands of miles from terminals in the Middle East to the mainland's booming coastal ports.

Despite a long-standing determination to be energy self-sufficient, demand for oil in China is accelerating far beyond domestic output, and increasingly it is Middle East suppliers, including Iran, Oman, Yemen and Saudi Arabia, that make up the difference.

For industry analysts, this is one key reason why Beijing, in preparing to negotiate its first big offshore energy deal, on April 21 invited bids from Indonesia and Australia, in competition with Middle East producer Qatar, to supply liquefied natural gas (LNG) worth $13 billion over two decades for power plants in southern China's Guangdong province.

"This sends a message to the world that China wants to diversify its energy supplies away from the Middle East," says HSBC oil-and-gas analyst Gordon Kwan from his Hong Kong office. "They have identified targets in Asia than can be stable sources, including Australia and Indonesia."

Cleaner-burning, if more expensive, LNG also has clear environmental benefits in a country that still relies on coal for 70% of its energy needs. China's major cities are choking under dense clouds of pollution from coal-fired power plants. However, boosting energy security is now a top foreign and economic priority for the Beijing leadership.

To pessimists, this is the early phase of emerging competition for energy in East Asia that has the potential to bring China into conflict with other major energy importers in the region, including Japan and Taiwan, particularly if the United States decides at some time in the future to wind back its security presence. They point out that it was insecurity over energy and rubber that drove Japan to invade energy-rich Southeast Asia in 1941, triggering a disastrous conflict with Britain and the U.S.

Kent Calder, a Japan specialist at Princeton University in the U.S., is probably the leading voice warning of the potential dangers of energy competition among increasingly heavily armed East Asian states.

To others, it is more likely that China's emergence as a major economic and trading power will lead to greater integration and cooperation. In the same way that joining the World Trade Organization is supposed to force China to observe international rules and norms, the argument goes that Beijing will find it must cooperate with energy suppliers and other major importers including the U.S and Japan if it wants to maintain economic growth.

This vulnerability is one reason why some students of international relations believe Beijing would be reluctant to attack Taiwan.

Some oil industry analysts also believe that burgeoning demand from China will have the effect of increasing international exploration and recovery of oil and gas, therefore reducing the potential for friction. The country currently produces only 70% of its oil needs and is searching for more of the fuel and other sources of power.

Whatever the eventual outcome, in the short term it's clear that Beijing is deeply concerned about depending on tankers that must cross the Indian Ocean and navigate narrow and easily-blockaded straits around the Indonesian archipelago before entering East Asia's shipping lanes. Of the 65 million tonnes of oil China imported last year, according to Chinese trade figures, about 60% followed this route.

Apart from the political uncertainty of relying on the troubled Middle East, what China most fears is the might of the U.S. Navy. Mindful that Washington has been prepared to enforce economic sanctions against defiant states, Beijing knows that without a blue-water navy it would be unable to counter a U.S. move to interrupt its energy supplies in the event of a serious dispute or conflict.

"The United States is currently the most powerful country in the world and is perceived by many in China as uncomfortable with China's rising power," says a recent study by the U.S.-based Rand think-tank. "As a result, the Chinese government views the United States as the primary threat to China's energy security."

The challenge for China's security planners is that domestic demand is outstripping their efforts to diversify energy sources and the gap is likely to widen, assuming that Beijing can ensure continued economic growth through reforms of its debt-laden banking system and inefficient state-owned enterprises.

The U.S. Energy Information Administration, or EIA, predicts that China's oil consumption is likely to increase from 4.78 million barrels a day in 2000 to 10.5 million barrels a day by 2020. On the way, China will overtake Japan as the world's second-largest oil consumer behind the U.S. Some analysts believe that on current trends, China will need to import about 60% of this projected demand. That will make China a dominant player on world energy markets but also vulnerable to supply disruptions or political manipulation.

Beijing has employed a multifaceted strategy to minimize this exposure. The authorities have launched a drive to boost

'Quest for Energy' continued

domestic exploration and recovery in the most promising geological structures, particularly the Ordos Basin in northwest China. Offshore exploration is also a priority, with most activity now concentrated in the Bohai Sea east of the northern port city of Tianjin.

"If no effective measures are taken to strengthen petroleum exploration, China will become more dependent on importing petroleum and the risks to oil supply will be greatly increased," Land Resources Minister Tian Fengshan warned at an April 18 energy symposium in Beijing.

China has also invested heavily in foreign oilfields in a bid to guarantee supply. The state-owned China National Petroleum Corp. has negotiated oil deals in Venezuela, Peru, Iran, Iraq, Sudan, Indonesia, Azerbaijan and Kazakhstan. These deals have given China control over an estimated 2.7 billion barrels in foreign oil reserves.

The biggest of these agreements is a $4.6 billion commitment to buy 60% of Kazakh oil company Aktobemunaigaz, with undertakings to assist in development over two decades. This opens the possibility that China could pipe oil from Central Asia to domestic refineries, but the cost of this at current oil prices seems prohibitive to many industry analysts.

Russia's unexpectedly rapid re-emergence as a major player on world oil markets also offers an opportunity for China to minimize its dependence on the Middle East. Beijing and Moscow have been holding extensive talks on the feasibility of pipelines that could supply oil and gas from Siberia and offshore deposits.

Analysts note that there is also strategic risk in depending on Russia, a longstanding rival for influence in East Asia. Beijing's current leadership would well remember the severe energy shortages after the 1960 Sino-Soviet split when Moscow withdrew its experts and support from China's oil industry.

There are also plans to build a strategic petroleum reserve, like other major energy importers including Japan and the U.S., in a bid to buffer its economy against supply disruptions.

Shifting energy demand toward gas is another strategy to boost energy security, with demand for this fuel expected to rise sharply. According to the EIA publication International Energy Outlook 2002, natural gas accounted for 23% of world energy use in 1999 but only 3% of China's consumption. However, demand for gas is expected to expand at a whopping 10% per year over the next two decades until it accounts for almost 10% of consumption.

To meet this demand, Beijing is planning an $18-billion west-to-east pipeline to link Tarim Basin gas deposits in Xinjiang province to the coastal city of Shanghai. The Anglo-Dutch oil major, Shell, signed a nonbinding agreement

last year to take a 45% stake in the 3,800-kilometre pipeline that would also pick up additional gas from the Ordos Basin. However, there are serious doubts that the venture can turn a profit because of the size of Xinjiang's reserves.

Even if the pipeline and other projects go ahead, a sizeable proportion of demand will still need to be satisfied from imports, particularly for markets in southern China that are far from domestic gas fields and planned supply networks. That is why China invited British Petroleum's Tangguh oil project in Indonesia, Australia's North West Shelf partners and Qatar's Ras Laffan LNG Co. to put in bids to supply 3 million tonnes of LNG a year from December 2005. There has been speculation in the oil industry press that the size of the order will be increased. Industry analysts report that in negotiations with the bidders, China has been able to drive a hard bargain on price because international LNG capacity currently exceeds demand.

"There is just so much gas out there that needs to find a home, so these companies are highly motivated to do this deal," says Hong Kong-based Salomon Smith Barney oil-and-gas analyst Tom Hilboldt.

With bidders now awaiting a decision from Beijing, industry experts expect the contract to be split between the Indonesian and Australian bids. To boost security and income from these deals, China is also keen to take equity in the successful bidders' reserves.

The China National Offshore Oil Corp. has also signed an agreement with the Fujian authorities to build a 2 million-tonne LNG receiving terminal in that eastern coastal province. The facility is scheduled to begin operation by 2006 if the project wins approval in Beijing.

While demand for oil and gas rises sharply, the future of nuclear power in China is unclear. There is a substantial oversupply of electricity because too many plants--nuclear and conventional--have been built during the boom years. This oversupply is likely to be temporary as demand for electricity is expected to grow at about 5% a year in coming decades. But the increasing demand is likely to be met mostly by new LNG-fired plants.

Even if all these measures to diversify energy supplies are successful, some oil-and-gas industry observers believe China will have little choice but to remain a major customer for Middle East oil if its economy continues to expand. One sign that Beijing shares this view is the strenuous diplomatic effort that it is making to increase its influence in that region.

BusinessWeek

China's Big Bet on Gas

A new pipeline may wean the country off coal and oil

Dexter Roberts in Lunnan, with Catherine Belton
29 April 2002

In the arid reaches of China's northwestern Xinjiang region, the daytime temperatures can reach 48C. In spring, sandstorms swirl in, filling the eyes, ears, and throat with yellow grit. It's easy to see why locals call this desert Taklamakan, meaning "You can enter, but never leave." But despite the extreme heat and intolerable weather, a few kilometers outside the town of Lunnan, hundreds of workers in red overalls and matching hard hats are frantically welding together 10-meter-plus sections of pipe before the next sandstorm blows in and forces a retreat.

Their toil represents the starting point of a controversial Chinese megaproject that's second in scale only to Three Gorges Dam. When completed three years from now, the $18 billion West-East Gas Pipeline will stretch 4,200 kilometers--nearly two-thirds the length of the Great Wall--bringing natural gas from undeveloped Xinjiang to go-go Shanghai and, eventually, to countless villages and towns along the way. Beijing has great hopes for the pipeline. The government plans to double gas usage, to an annual 80 billion cubic meters, by 2005, and eventually use it to cut urban pollution by phasing out coal, wean China off imported oil, and jumpstart growth in the Far West. Says Chen Li, a deputy director at the Economic Restructuring Office of the State Council: "Development of gas will be extremely rapid."

Perhaps. But the challenges are as daunting as the Taklamakan itself. The pipeline's main builders--mainland oil and gas giant PetroChina, Royal Dutch Shell, and Russia's Gazprom--are betting that China's hunger for energy will increasingly be fed by natural gas. It won't happen overnight: Coal now meets 68% of energy needs, gas just 2.4%.

Moreover, the project has its share of critics, who are girding for battle. They include environmental groups, which complain that the pipeline will pass through fragile ecosystems, and human-rights activists who fear Xinjiang's Muslims will not share in the pipeline's spoils. "We tell multinationals that investment in China may be important," says Mei Ng, director of Friends of the Earth (Hong Kong). "But we hope they balance this with socially, culturally, and ethnically sensitive projects that truly benefit local people."

For the pipe's builders, the immediate concern is ensuring that the project will pay off as soon as possible. "We're very much in the seed phase of developing the gas market in China," acknowledges Martin Bradshaw, managing director of Shell Exploration China Ltd. But, he adds, "we're here for the long term."

Much depends on whether enough demand for natural gas materializes in time. At current prices, the clean-burning fuel can cost twice as much as average-quality coal in China. Consumers in wealthy cities such as Shanghai and Beijing can probably afford gas. But the bulk of it, if all goes as planned, would go to such large-scale users as power plants and chemical factories. They are already hurting because Beijing has been cutting their subsidies. "If the industrial users can't afford the price, there will be no market for this gas," says a director at Shanghai Natural Gas Pipeline Network Co., the city's largest distributor.

Moreover, consumers ready to pay for gas may find cheaper stocks elsewhere. Already, China National Offshore Oil Corp. (CNOOC) has begun selling gas to cities like Shanghai and Tianjin. The company is charging 11 cents per cubic meter--5 cents less than the expected price for West-East gas. CNOOC has a cost advantage, says chief financial officer Mark Qiu, because much of its gas lies a couple of hundred kilometers offshore.

Even if PetroChina and its partners find enough buyers, they may face higher costs than expected. Indeed, it was the project's price tag that prompted British Petroleum, which holds a 20% stake in PetroChina, to pull out last year. While PetroChina says its transparent bidding and procurement process has already shaved 20% off estimated steel costs, the project faces unpredictable construction challenges. For instance, some 700 km of the pipeline will run through uninhabited areas where the partners will be forced to build access roads for workers and equipment.

Cost is a matter not just for the builders but for the central and local governments, too. To meet its ambitious targets, China will have to spend tens of billions of dollars over the next few years building thousands of kilometers of pipe off the main artery to supply markets all over the country. The government also will have to foot much of the bill to switch over to gas in houses, factories, and power plants--another multibillion-dollar undertaking. "The real costs are downstream, with the marketing and development of distribution networks," says World Bank energy expert Noureddine Berrah, who notes that such outlays usually run three to four times those of construction costs. Ultimately, analysts say, gas conversion expenses could reach more than $100 billion, much of it paid by the central, provincial, and local governments.

Despite all the challenges, PetroChina insists the project will make money after 10 years. The mostly state-owned company, which says it has already signed up 45 big customers, vows a 12% return on investment. In any case, the price of gas will fall as new customers sign up. Says PetroChina President Huang Yan: "We have great confidence in this project." For Gazprom, the pipeline represents a chance to eventually sell China gas from its Siberian fields and, says company spokesman Igor Plotnikov, "gain a hold in the [Chinese] market."

Shell executives express similar enthusiasm, saying that over the long term they expect the project at least to match the 15% returns on other international operations. It doesn't hurt that Shell won a 45-year contract, instead of the 30 years PetroChina originally offered, meaning that Shell has more time to recoup its costs. Moreover, the company is betting that the new pipeline will eventually carry gas from Central Asia and Russia. "The West-East pipeline is a pathfinder for future pipelines and gas from farther afield," says Shell China's Bradshaw. "Shell has interests in Russia and Central Asia. This

Continued next page

China Fears Flood Toll Tops 500, More Rain to Come

Reuters
19 June 2002
Tamora Vidaillet
(additional reporting by Niu Shuping)

"Some oceanographers attribute this year's weather to El Nino, but I personally think it's something related to global warming," Zhang said.

BEIJING - China, bracing for more devastating floods, fears the death toll from some of its worst deluges in years has already risen to more than 500 people, official newspapers said yesterday.

Officials have confirmed more than 200 people have been killed so far and the China Daily quoted the top official in the worst hit province, Shaanxi, as saying there was little hope for hundreds more who were missing.

"Some 300 people are still missing and are not expected to be found alive," Jia Zhibang, the acting governor of the northwestern province, told the newspaper.

The first of a wave of floods that plague China every summer has struck huge swathes of the country from north to south, raising fears of a repeat of 1998 when the worst flooding in half a century killed more than 4,000 people.

Shaanxi has so far confirmed 152 deaths during floods that wrecked water supplies, highways and homes and is expecting more heavy rain and potential flooding this week, the paper said.

Southern China, where landslides and mudslides have killed scores of people and hundreds of thousands have been forced to evacuate their homes, was also expecting heavy rain in coming days, the official Xinhua news agency said.

The floods have ravaged the central province of Hunan and had destroyed hundreds of homes in the past few days, Xinhua said.

Floods this year appeared abnormal in that they had hit inland provinces like Shaanxi, Guizhou and Sichuan earlier than usual, weather expert Zhang Yan said.

"Shaanxi and Sichuan normally have rain and flooding in July and August. It is happening one month earlier this year," he said.

"Some oceanographers attribute this year's weather to El Nino, but I personally think it's something related to global warming," Zhang said.

China has allocated $16.6 billion for flood control since the tragic floods in 1998, banned tree felling and urged farmers to plant trees to reduce the risk of serious flooding.

HIGH ALERT

State television showed soldiers and workers shifting rocks and sandbags to reinforce the banks of the Yellow River - dubbed "China's Sorrow" for disastrous floods over the centuries - and smaller rivers in several provinces, including Shaanxi and Gansu in the west.

State media have said the Yellow and Yangtze rivers, China's deadliest, have not yet spilled their banks.

Around 118 small and medium-sized reservoirs were being monitored in Shaanxi and some 45,000 people had been mobilised to reinforce key points of rivers, China Central Television reported.

Shaanxi officials had been on high alert since light rain began falling this week, a flood control official said.

"If we receive a forecast of any disastrous weather, we will promptly mobilise relevant personnel to inspect the dams and dykes for weak and dangerous points," he said.

Shaanxi had been unable to prevent extensive damage caused by the recent flooding due to a lack of manpower despite preparations that began at the end of May, he said.

'Bet on Gas' continued

is a strategic reason why we're interested in the pipeline."

In addition, PetroChina is virtually assured that Beijing will do just about anything to get the pipeline built. A measure of the government's commitment is its willingness to deal with--or at least pay lip service to--the environmental and social concerns swirling around the project. With Beijing's blessing, Shell and the U.N. Development Program will carry out an impact assessment aimed at making sure the pipeline will not harm people living along the route, including the Uighur Muslims of Xinjiang. Says Kerstin Leitner, the UNDP's Beijing rep: "The Chinese government wants to ensure the project really benefits" western China by providing jobs and other spin-offs.

Ultimately, Beijing sees the West-East Gas Pipeline as the backbone of its national energy plan. So the government is certain to offer PetroChina heaps of cheap financing, as well as waive land-use taxes in remote areas and tariffs on imported equipment. The pipeline "has enormous government support," says CNOOC's Qiu. The West-East pipeline is a fact of life--whether it is economically viable or not.

China Briefing: ADB Looks West

FAR EASTERN ECONOMIC REVIEW

Far Eastern Economic Review
18 April 2002

The Asian Development Bank will make public-sector loans for only a narrow range of infrastructure projects in developed cities along China's east coast, and will instead turn its attention to projects in the central and western parts of the country. Bruce Murray, the bank's China country manager, told a press conference that the ADB will only lend money to provincial or municipal governments along the coast for projects regarding air-pollution control, waste-water management and human-resource development. The bank does, however, make some private-sector loans and equity investments in ventures ranging from banks to power producers. In setting its lending priorities, the ADB, which lends around $1 billion per year to China, is turning its attention to lesser-developed areas in central and western China. Murray said about 70% of the bank's

World Bank Advises China to Clean Up its Economic Growth

10 April 2002

China is modernizing and becoming a powerful player in the world economy. Unfortunately, its economic growth is creating some major ecological problems.

Niu Wenyuan, who as chief scientist of the Chinese Academy of Sciences focuses on sustainable strategy research, said that according to a World Bank report, energy and natural resource consumption in China is very huge due to outdated technology and poor environmental management.

With a low natural resource utilization ratio and serious pollution discharge, economic losses resulting from environment pollution in recent years have been increasing.

According to World Bank estimates, environmental pollution resulted in 38.16 billion yuan (US$4.61 billion) in losses for China during 1986, equivalent to 6.75 percent of the country's gross domestic product that year.

Losses increased to 108.51 billion yuan (US$13.12 billion) in 1993 and accounted for 3.16 percent of GDP. According to statistics for 1997, economic losses resulting from air and water pollution reached as high as 54 billion yuan (US$6.53 billion), about 3 percent to 8 percent of GDP.

Quite a few people believe that China's ecological environment deterioration is related to its fragile ecological chain, but Niu thinks otherwise. Niu believes China's ecological environment deterioration is mostly caused by human activities.

Pollution caused by humans, not nature

Niu said coal smoke has always been the major contributor to China's air pollution. Coal-oriented energy consumption is the most important cause of air pollution in cities. Among the worldís top-10 polluted cities ranked by the United Nations in 1999, seven of them were from China.

Taiyuan, capital of Shanxi province and a typical coal-producing area, ranked first among the top-10 polluted cities in the world. Among more than 600 cities in China, fewer than 1 percent have first-class air quality, according to international standards.

Outdated production technologies result in continual discharges of industrial sewage. Poor living conditions have led to increases of urban waste at a rate of 10 percent a year.

Furthermore, due to outdated waste-disposal technologies, rubbish around urban areas keeps increasing. Primitive agricultural-production methods have put 400 million Chinese people under the threat of desertification.

According to World Bank statistics, strong dust-laden blasts extensively attacked northern China five times during the 1950s, eight times in the 1960s, 14 times in the 1980s and 23 times in the 1990s. China has suffered dust-laden blasts six times since the beginning of 2001.

In recent years, the desert has increased in size faster than the net decline of cultivated land across the country.

Losses resulting from natural disasters caused by ecological environment deterioration in China reached 300.7 billion yuan (US$36.36 billion) in 1998 alone. Economic losses resulting from eco-catastrophes in 1994 reached about 420.2 billion yuan (US$50.81 billion).

In recent years, China has bee reshaping its economy. Authorities at all levels across the country closed more than 65,000 outdated and polluting factories from 1997 to 1998. By the end of 1999, the Chinese government had closed small thermal power stations with a combined capacity of 2.9 million kilowatts and small cement plants with a combined capacity of 20 million tons.

More than 5,600 oil-refining plants have been eliminated, while a total of 4 million tons of iron purification capacity and 10 million tons of steel rolling capacity have been downsized. China's environmental-protection sector generated 108 billion yuan (US$13.06 billion) in output in 2000.

However, despite continuous efforts to protect the environment, human activities continue to inflict ecological damage, and things are getting worse.

The World Bank suggests that in an effort to improve environment quality, China should significantly increase spending on pollution prevention to more than 2 percent of GDP. The nation is currently spending about 1 percent of its GDP on this effort.

Niu noted that the Chinese government should not only increase investment in environmental protection, but also pay attention to fostering scientific research and establishing a technology support system.

It should not only strive to ease pollution by adjusting the industrial structure, but also pay attention to improving local people's awareness of the need to protect the environment.

China should not only work to boost economic growth, but also pay attention to improving the quality of economic growth, the article said.

CHINA ENVIRODATA WEEKLY

30 April.2002

Special Report: Energy Challenges to China's Sustainable Development

Energy is an important factor to affect the economic and social development and the environmental condition in China. Mr. Zhou Fengqi, former general directors of Energy Research Institute, State Planning Development Commission, is invited to analyze this issue.

Challenges

• Low per capita energy consumption

Though there is abundant energy resource in China, the population in China is so large that the per capita energy consumption is very low. In general, the per capita energy consumption increases accompanying with economic growth. Considering about the large population in China, any small growth in per capita energy consumption can demand the increase of total energy production at big margin.

• Energy structure dominated by coal

China over-depends on coal, which makes up 75% of its total energy consumption and which has resulted in low efficiency and heavy environmental pollution. In 1995, China's coal consumption amount was 29% of the total in the world. The coal burning produces 70% of TSP, 90% of SO2, 60% of NOx and 85% of CO2.

• Low energy efficiency

Viewed from the energy consumption of unit GDP, whatever calculation with the official exchange rate or purchase power parity (PPP), China's energy efficiency is among the lowest group in the world.

• Energy supply security

Since 1993 and 1996 China has listed in the net petroleum and the net crude oil import countries separately. It is estimated that the import dependence rate (ratio of import amount to consumption amount) of oil will be about 30% by 2010 and 40% by 2020. The import dependence rate of natural gas will reach 15% and 25%, respectively in 2010 and 2020.

Strategy

Creating higher energy efficiency than that of developed countries

Increasing the energy efficiency rather than supply is the prerequisite to ensure the balance of long and middle term energy demand and supply in China. It is estimated that if using the domestic existing advanced technologies and equipment to retrofit the backward equipment, the total energy saving potential will hit 30% of the present energy consumption.

Reducing the coal consumption

It is a necessary option for China. In a global view, since the last half-century, the coal consumption in the world decreased from 57.7% in 1950 to 30.5% in 1970 and further to 26.2% in 1998. While the oil consumption was 40.0% and that of natural gas was 23.8% in 1998,the sum reached 63.8%.

Developing clean coal technology

Despite the hard effort at adjusting the energy structure, coal still is a main energy in China in the next two decades. Thus promoting the clean coal technologies is one important task for energy industry.

Favorable policy for promoting renewable energy development

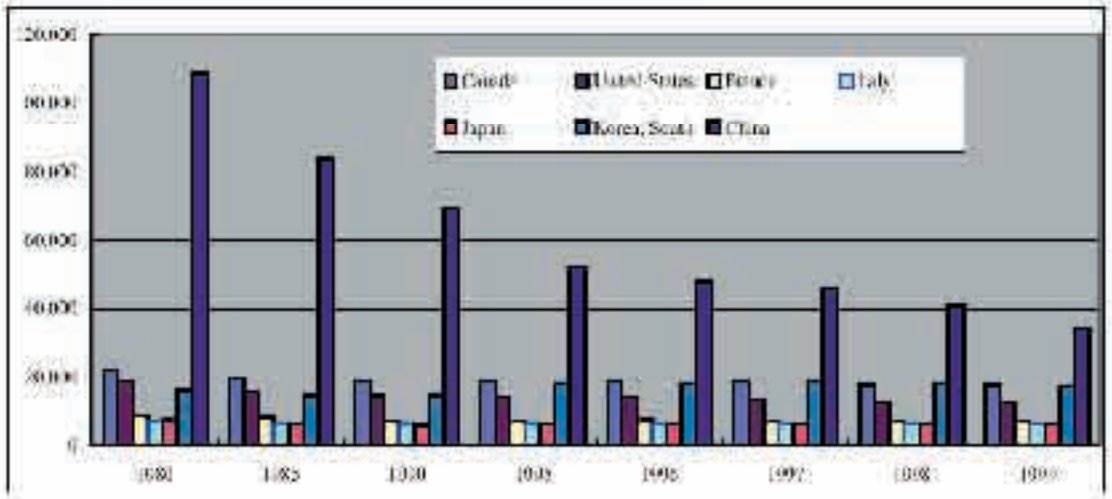
The Chinese government has formulated "New and Renewable Energy Development Outline from 1996 to 2010", The document requires that the actual renewable energy consumption will increase from 300 Mtce now to 390 Mtce in the future 15 years.

Build multiple energy, multi-lateral and multi-path energy supply system and setting up oil store system

Table Per Capita Energy Consumption by Different Countries

	China	Canada	U.S	France	U.K	Japan	Italy	Korea	Global Average
1980	17.52	395.92	344.42	157.18	156.95	130.34	109.09	53.96	64.26
1999	25.13	410.67	355.88	173.52	167.80	171.21	119.75	155.83	63.09

Figure World Primary Energy Consumption Per Dollar of Gross Domestic Product, 1980-1999



Beijing to Improve Environment, Traffic for Olympics

3 April 2002

Beijing will improve its environment—both natural and cultural—and traffic to ensure the success of the 2008 Olympic Games, according to the Beijing Olympic Action Plan unveiled by the municipal government and the organizing committee for the 2008 Games, Zhongguo Huanjing Bao (China Environment News) reported March 30.

Protection of environment

Beijing will eliminate local sources of sand hazards by 2005, according to the plan. By 2007, a green barrier, consisting of afforested mountains and plains as well as urban green space, will be erected, boosting the city's forest coverage to 50 percent, according to Beijing Mayor Liu Qi.

In addition, electricity and natural gas will become the capital city's main source of energy by 2008, said Yu Xiaoxuan, deputy director of the municipal environmental-protection bureau. As a result, the proportion of coals and cokes in its energy consumption will drop to below 20 percent from more than 50 percent currently.

To reduce air pollution caused by car emissions, Beijing will introduce emission standards equivalent to the Euro II ones for new cars in 2003.

According to Yu, Beijing started March 1 a program focusing on exhaust-emission monitoring. It will build 10 sites conducting annual auto checks and install 31 checking lines to screen out cars failing to reach the emission standards.

To prevent water pollution and ensure drinking-water quality, seven water treatment plants will be built to increase the urban waste-water recycle rate to 50 percent and treatment rate to above 90 percent before 2008, according to the plan.

Cooperation with neighboring regions is necessary to ensure that all the environmental-protection measures will work, said Yu.

Earlier this year, Beijing signed with Hebei province five environment-protection agreements, which cover cooperation on ecological monitoring and improvements in such areas as afforestation and preservation of water sources.

In addition, the environmental-protection bureau will participate in a national plan to build a forest shelter in northern, northwestern and northeastern China to deter desertification and conduct exchanges with western provinces and regions on funding, technology and personnel.

Beijing Mayor Liu Qi speaks at a press conference regarding the 2008 Summer Olympic Games

Preservation of ancient capital

The bureau will soon launch a massive cultural-relics-restoration project, the largest over more than a decade.

In the next few years, restoration efforts will focus on the protection of Bejing's original layout as an ancient capital, preserving its spaciousness and the harmony between cultural relics and their surroundings.

Shan Jixiang, director of the Beijing Municipal Development Planning Commission, said that the municipal government has invested 330 million yuan (US$39.86 million) in the protection and restoration of more than 100 cultural relics over the past three years.

In addition, construction and make-overs of a number of modern cultural facilities are also being planned, he added.

The projects include the National Grand Theater, the second phase of the National Library, the second phase of the China Fine Arts Gallery, the third phase of the China Museum of Science and Technology, the Capital Museum and new buildings for the China Central Television Station and the Beijing Television Station.

To create a better tourist environment, the city will construct culturally distinctive commercial areas to attract tourists and athletes participating in the Olympics, Shan noted.

Expansion of rail transit

Beijing has conducted researches to anticipate traffic flows during the Olympics. Specific plans on rail transport, public transit, private vehicles and other related issues are also under study.

Having affirmed rails as the focus of the city's transportation infrastructure and the major transportation means during the Olympics, Beijing is planning the construction of an urban light-rail system, the Bawangfen-Tongxian subway, the No. 4 and 5 subway lines, a subway line leading to the Olympic village and an express railroad from Dongzhimen to the Capital Airport.

By 2008, newly added urban rails will reach 148.5 kilometers (92.8 miles) to raise the total mileage to 202 kilometers (126.3 miles), and subways will account for 10 percent of Beijing's total transportation capacity.

THE CHINABUSINESS REVIEW
REAL ESTATE

Blue Skies for the Beijing Olympics

Andrew Ness
March-April 2002

In the run-up to the 2008 Olympic Games in Beijing, Chinese government officials at both the central and municipal levels are keenly aware that they must transform Beijing into a world-class city. Indeed, China's capital is woefully unprepared for what will undoubtedly be the single largest international event that China has ever hosted.

To prepare for the Olympics, Beijing plans to redevelop large tracts of central city real estate, extend its urban transportation infrastructure, clean up its air, create new parks, and restore historic landmarks

The pressure to transform Beijing will generate numerous benefits; most notably, enduring changes to the city's urban form through the completion of a comprehensive urban regeneration program. Mid-September 2008 is a decidedly harsh and inflexible deadline by which the city will have to resolve numerous longstanding environmental, transportation, and other infrastructure problems. Massive spending on infrastructure projects and related capital construction programs will benefit the municipal economy in the short term by creating jobs.

The pace and scale of investment in urban infrastructure and environmental improvement will accelerate considerably, leaving the city with a major new central park, where there is now none; a much-expanded mass transit system, which will include a sorely needed connection between the north and south areas of the central city; and fi- nally, much more rigorous environmental protection systems and the infrastructure and facilities required to back them up (see Figure 1).

Key problems and improvements

Specifically, Beijing plans to address problems relating to:

The environment

Beijing still suffers from severe dust storms, which blanket the city with some 25,700 tons of sandy dust each spring and give rise to the glowing, purplish-orange springtime sunsets for which the city is famous. The city is also home to 110 polluting factories, which ring the inner city, and some 1.17 million automotive vehicles. In addition, around 10-15 percent of the inner city's 6 million residents still heat their homes with coal-burning stoves in the winter, according to the Beijing Municipal Environmental Protection Bureau (EPB).

China's representatives pledged to the International Olympic Committee that, if chosen to host the 2008 Olympics, Beijing would reduce its ambient air pollution to the level of Paris today. To attain this difficult goal, the Chinese government has reportedly earmarked roughly RMB45 billion ($5.4 billion) to resolve some of the city's most serious environmental problems. In an attempt to control the dust storms, Beijing will soon take steps to increase the forested area surrounding the central city by 50 percent by 2005, through the addition of a 125-km tree belt.

In another, dramatic bid to improve the air quality, 90 percent of the city's 20,000-odd public buses will switch from diesel to natural gas by 2008, up from 60 percent today. Sixty percent of the city's 67,000 taxis will also use natural gas by 2008, up from 40 percent today.

Beijing will also move the 110 polluting factories now inside the fourth ring road--which have a total floor area of 6.13 million m2 and primarily serve the chemical, pharmaceutical, and textile industries--to locations outside of the fourth ring road by 2007. According to the Beijing Municipal EPB, this move will cut the total amount of inner-city land devoted to industrial purposes by half, to 7 percent. In addition, to safeguard the quality of water in, around, and under Beijing, the city will require the treatment of 90 percent of its sewage in modern treatment plants by 2010, up from 60 percent today.

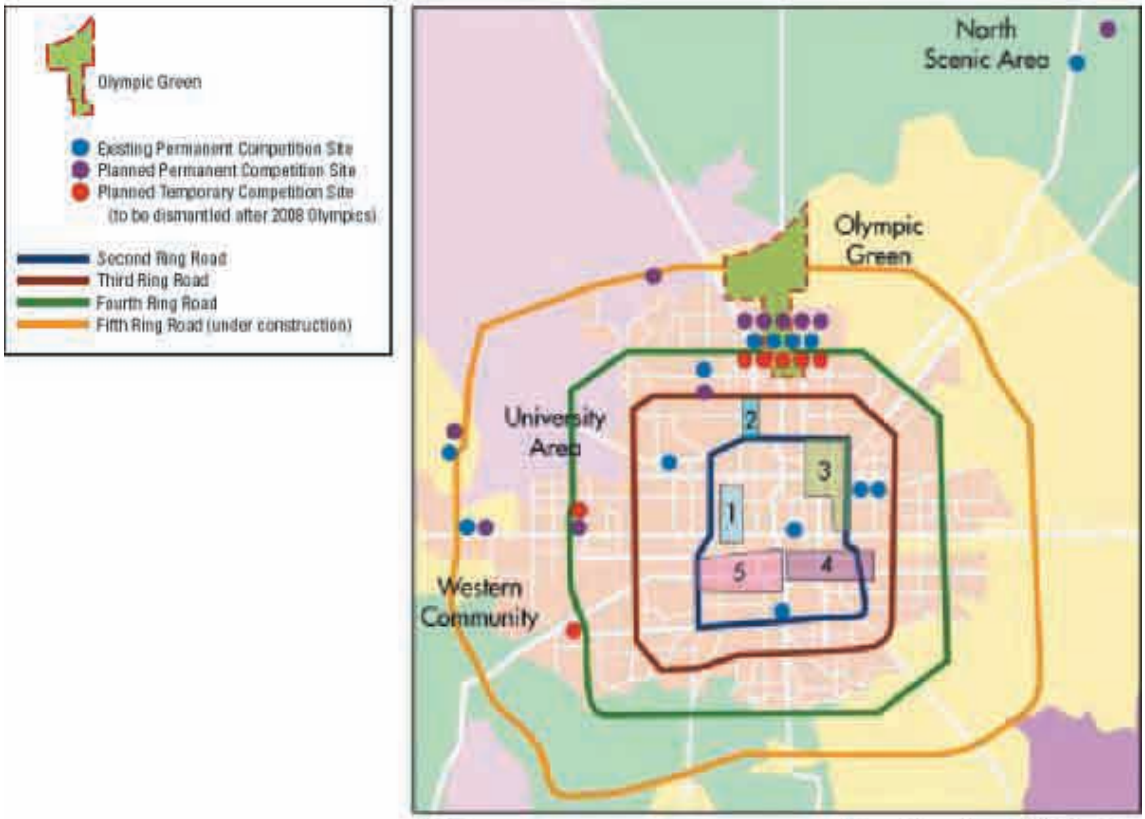
Transportation

Traffic in Beijing is frequently snarled--in part because of the excessive number of lowgrade taxis and other similar vehicles that the city has licensed in recent years and because of the shortage of north-south roadways and metro and light-rail links. The phasing out of the small, uncomfortable Xiali taxis, manufactured in Tianjin, which in 2001 accounted for 77.5 percent of the 67,000 taxis licensed to operate in Beijing, was markedly accelerated in early 2002.

The metro system provides inadequate service to the city's northern and southern areas, with one line currently running east-west and the other following the path of the second ring road. Olympic preparation plans include some RMB90 billion ($10.8 billion) for various kinds of transportation improvements to the inner-city light rail system and the metro, the inner-city expressway system, and outlying high-speed expressways, as well as the accelerated completion of the city's ring road system. The Beijing government has made completion of the city's light rail system a high priority over the next five years, with more than 100 km of new light rail currently under construction. Beijing's plans also include the completion of the No.5 metro line, the Batong and Chunyi branch metro lines, and the Wangjing branch line. Within the same time frame, the city will complete preparatory work to launch construction of the No.4 and No.9 metro lines. As a result of this work, by 2006 Beijing will have 138 km of inner-city metro and light rail lines, up from 53km today (see Figure 2).

The more than 10 expressways that

Figure 1
Beijing's Urban Redevelopment and Olympic Development Plans



NOTES:

1. Beijing is clearing substandard inner city residential areas to make way for the Phase II and III expansions of the financial district, Phase I of which has been completed.

2. The government will connect the second and third ring roads. In the process, the city will considerably upgrade Deshengmen Avenue to create a major new hub of commercial development—provisionally named the Deshengmen Science and Technology Park. This project is intended to drive office and commercial development and, to a lesser extent, high-quality residential development in and around Deshengmenwai.

3. The city will transform a portion of the Dongcheng District into a high-grade residential and commercial area by upgrading Wangfujing into a major commercial boulevard and transforming Dongzhimen into a major transportation hub. The street-level area at the new Dongzhimen traffic hub will serve as an intersection for numerous inner-city public bus routes; basement level two of the new facility will serve the Beijing International Airport Light Rail Express Train; basement level three will serve as the central city terminus of the eastern extension of the Beijing Light Rail system.

4. The government will substantially upgrade Chongwenmenwai Avenue by transforming a large section of the Chongwen District into a high-grade, mixed-use residential and commercial area. The city will also build the New World Center on Chongwenmenwai Avenue.

5. The government will transform a substantial section of the Xuanwu District into a high-grade, mixed-use commercial and residential area. The Junefield Group's massive Junefield Plaza commercial complex, situated on Xuanwumenwai Avenue, is driving this regeneration.

SOURCE: CB Richard Ellis, Global Research & Consulting

China plans to spend RMB30 billion ($3.6 billion) on "digitalizing Beijing." This will entail upgrading the city's basic information technology and telecommunications infrastructures and districtwide networks of fiber-optic cable.

'Olympics' continued

radiate outward from the center of Beijing are the spokes of a system that is giving rise to a dense network of transportation connection points, linking Beijing with its outlying suburban areas. Also by 2006, the city will revamp some 200 km of inner-city roads to form an expressway system and complete the fifth and sixth ring roads, according to the Beijing Municipal Traffic Administration Bureau. In addition, the Bejing-Miyun Expressway, which is currently still in the planning stage, and the third phase of the Beijing- Badaling Expressway are both scheduled for completion by then.

Utilities and high technology

Beijing will use the RMB15 billion ($1.8 billion) that is earmarked for the city's utilities to improve the city's water, power, and gas supplies, according to the Beijing Organizing Committee of the 2008 Olympic Games (BOCOG). Within the next five years, Beijing will establish a second Shanxi-Beijing natural gas

'Olympics' continued

pipeline, tripling or quadrupling the city's current supply of natural gas. By 2005, BOCOG estimates that electricity use will soar from the present 31.8 billion kilowatt-hours (kWh) to 50 billion, with peak period use expected to jump from 67.8 billion to 100 billion kWh.

China also plans to spend RMB30 billion ($3.6 billion) on "digitalizing Beijing." This will entail upgrading the city's basic information technology and telecommunications infrastructures and districtwide networks of fiber-optic cable. The Chaoyang, Dongcheng, Haidian, Shijingshan, and Fengtai districts will be the highest priority areas for the provision of modern telecommunications infrastructure, and as such will be the city's first platforms for the widespread use of ecommerce, e-administration, and distance education. The Olympic Park area will have access to digital and broadband telecommunications, wireless transmission and networking technologies, and other intelligent technology solutions, according to BOCOG.

Heritage and urban regeneration

In the 1950s, the Beijing government chose not to preserve the whole of the city's historic center, which covered 62 km2, on the grounds that it would be too costly and unmanageable. But as the Jianguomenwai central business district, Fuchengmenwai Financial District, and the Wangfujing commercial area continue to expand rapidly, the city's leaders have come to realize that not merely the city's ancient monuments but also the cityscape in older neighborhoods constitute part of the city's charm and character.

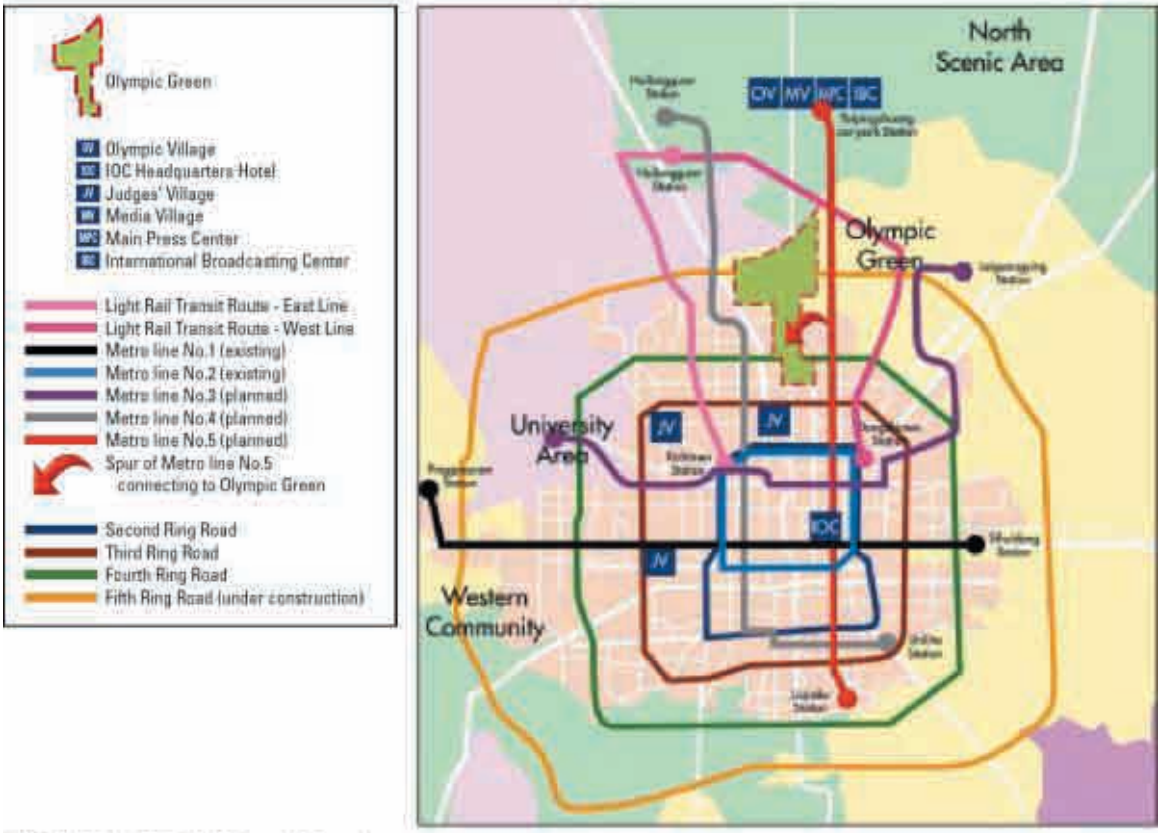
Upon completion, the Olympic Park will provide a desperately needed new "lung" amidst the miles of macadam ringing Beijing's concrete canyons.

The Beijing Municipal Construction Commission issued two regulations in 1999 that identified areas for historic preservation within the second ring road amounting to 5.58 km2 (about 9 percent of the area within the second ring road), which was subdivided into 25 sites. This area amounts to 15 picturesque ancient streets, three cultural-historical areas, four enclosed courtyardtype residences (siheyuan), four historical lane areas (hutong), and three major commercial and cultural streets. Almost all of these properties are situated near the Qing Dynasty-era Imperial City. The plan aims to restore ancient sites and monuments gradually back to their original condition and convert the most attractive of them into public museums, thereby expanding the historical areas open to Beijing's tourists.

Initially the Beijing government did not seem in any hurry to implement the plan, but shortly after the city was granted the 2008 Olympic Games it announced an acceleration of the plan and designated some $208 million to restore historical sites and remove old, dilapidated buildings that surround them.

City officials have also stepped up the removal of slum and substandard housing. Between 1990 and 2000, a total of almost 5 million m2 of substandard housing was demolished in Beijing--the equivalent

Figure 2
Planned Mass Transportation Improvements



SOURCE: CB Richard Ellis, Global Research & Consulting

'Olympics' continued

of about 184,000 residential units averaging about 27 m2 each--forcing the relocation of some 165,000 urban households. The government wants to demolish an additional 9.34 million m2 of older housing, out of a total residential stock of some 28 million m2, resulting in the dislocation of yet another 350,000 inner-city households, according to BOCOG.

Raising--and spending--the money

The PRC government has reportedly drawn up a budget of RMB180 billion ($21.7 billion) for 142 Olympics-related improvement projects in Beijing. Of this, some $14 billion will come from the PRC government and the remaining $8 billion will come from domestic and overseas private- sector investment. The Beijing Municipal Finance Bureau, under the central government's Ministry of Finance, will reportedly allocate half of the necessary PRC government funding.

Directly or indirectly motivated by the Olympics, Beijing will develop some 25 million m2 of property in the 2002-08 period. This will entail not merely the revamping or new construction of competition and sports venues, and the development of a number of mega-malls and other major commercial projects, but also includes an enormous "urban facelift" program which will redevelop sizeable tracts containing substandard single-story dwellings in the city's Xuanwu, Chongwen, Dongcheng, and Xicheng districts into new residential areas composed primarily of high-rise apartment complexes. At the same time, the city is stepping up the development of a new business district centered around the Zhongguancun area in Haidian and the second and third phases of the Fuchengmenwai Financial District.

The hosting of the 2008 Olympic Games will thus be the second-largest public works project ever undertaken in China--after the Three Gorges Dam. By some calculations, this is also the largest sum that has ever been spent in readying any single municipality to host the Olympic Games. According to the estimates of a Beijing economist with the China Research Institute of Science Popularization, who used statistics from the Sydney Olympics to derive a model of job creation, if Beijing attracts RMB74.5 billion ($9 billion) in additional outside investment as a result of hosting the 2008 games, and if each RMB100,000 ($12,100) invested creates one new employment opportunity, then Olympics-related investment will create 745,000 new jobs in Beijing. In addition, the government anticipates that the combination of Olympics-related fixed-asset investment and foreign direct investment will add 0.3 to 0.4 percentage points to China's annual GDP growth in the six-and-a-half years leading up to the event.

The Olympic Park

To rectify the lack of a suitable, central city park area to serve as an Olympic Park, the Beijing Municipal Government is now organizing a tender for the conceptual master plan of what will be the city's newest park. The Olympic Park will occupy 12 km2, about 60 percent of which will be green and wooded space. Its size makes it the largest park in central Beijing and the second largest within Beijing Municipality, after Fragrant Hills Park in the city's northwest. Upon completion, the Olympic Park will provide a desperately needed new "lung" amidst the miles of macadam ringing Beijing's concrete canyons.

The park will be located at the northern end of the central north-south axis that bifurcates central Beijing, straddling the fourth ring road. The importance of this north-south axis is clearly explained by Zixuan Zhu and Reginald Yin-Wang Kwok in their essay "Beijing: The Expression of Political Ideology," in Culture and the City in East Asia: "Following the Confucian tradition, Beijing was planned along a north to south axis, representing the authority of the state. The Imperial Palace, government offices, religious buildings, and minor royal residences were all located, symmetrically, on the east and west sides of the central axis. Political power and social position were clearly demarcated on the urban landscape." The location of the Olympic Park thus embodies the Chinese government's stated goal of "integrating the 2008 Olympics with Chinese culture and spiritual civilization."

The park will include one central district, which has been officially designated the Olympic Green, and three non-contiguous ancillary districts. The central district will contain the Beijing Olympics Athletes' Village, Reporters' Village, News Center, International Broadcasting Center, and 14 athletic competition venues. The three subdistricts include a northern scenic district, a western living district, and a university village that contains sports training and competition facilities associated with eight Chinese universities.

Olympic facilities and hotels

China Olympics Commission Sports Director Lou Dapeng stated that for the 28 competitive athletic events in the 2008 Olympics, China will provide a total of 59 stadiums, sports arenas, gymnasiums, and workout and exercise areas, all of which will meet international specifications. Beijing will provide 32 competition venues, located in the four districts of the Olympic Park. For the convenience of the participating athletes, 14 of the competition areas will be within 5 minutes' drive of the Olympic Village, 10 of the competition venues will be within a 20-minute drive, and the remaining 8 venues will be within 30 minutes' drive. Five additional competition venues will be located in Shanghai; Tianjin; Qingdao, Shandong; Qinhuangdao, Hebei; and Shenyang, Liaoning. Qingdao will host the sailboat race competitions while the four other cities will host soccer matches.

In the late 1980s, the Beijing government spent RMB2.5 billion ($302.1 million) developing sports venues and related facilities for the 1990 Asian Games. These facilities, with a total floor area of 1.3 million m2, include 80 venues for athletic training and competitions--55 of which were either renovated or newly constructed buildings. However, Beijing still faces the sizeable task of building 24 completely new competition venues and related facilities, and Beijing and the other host cities will need to revamp 13 existing facilities to bring them up to International Olympic

The Beijing Municipal Tourism Bureau has announced that it intends to more than double the city's present stock of star-rated hotels to over 800 and raise the number of hotel rooms in such hotels by some 60 percent, to 130,000, by the time the games begin.

'Olympics' continued

Committee specifications, according to BOCOG.

The housing for athletes and journalists who attend the roughly three-week event will include 470,000 m2 of housing for athletes (equivalent to 12,000 apartment units) and 400,000 m2 of housing for journalists and other media personnel (equivalent to 10,000 apartment units). Private sector developers will build all of the housing in the two villages, and the resulting units will be offered for sale as condominiums after the games.

In 2000, Beijing attracted some 67.4 million domestic visitors and 2.82 million overseas travelers. The city's 392 star-rated hotels provided 80,000 hotel rooms. Though the city's present stock of hotels would likely be sufficient to accommodate the huge surge in visitors during the two weeks of the Olympic Games, the Beijing Municipal Tourism Bureau has nevertheless announced that it intends to more than double the city's present stock of star-rated hotels to more than 800 and raise the number of hotel rooms in such hotels by some 60 percent, to 130,000, by the time the games begin. These plans seem to reflect an anticipated rapid growth in the city's tourism and convention industry over the next six years, as opposed to demand during the Olympic Games.

After the games

Once the games are finished, the parks, competition venues, residential facilities, sports complexes, media centers, and commercial facilities now on the drawing board will provide the population of Beijing with recreational and athletic facilities for decades to come and establish Beijing as an ideal host for a wide variety of national athletic competitions.

The placement of the Beijing Olympic Park, extending northwards from the 1990 Asian Games Village, represents the final step in the development of the northern terminus of the city's north-south axis. The park, which may feature a 120-story Beijing World Trade Center and its own business district, will provide yet another space that may emerge as the center of a major new commercial development area to counterbalance the dense development in the city center to the south.

Beijing Olympics to Get Green Aid

Zhao Huanxin
12 April 2002

The State Economic and Trade Commission (SETC) yesterday promised to lend money and labour power to shore up the environmental theme of the 2008 Summer Olympic Games in Beijing.

The commission will sponsor 20 projects within the next two years to reinforce the capacity of the Chinese capital in treating pollution, recycling resources and conserving water and energy, said division director He Bingguang.

"An estimated 3 billion yuan (US$361 million) will be channelled to the 20 projects to help make the 2008 sporting event a genuinely green one," the official said.

The commission plans to help build a State-level Olympic village pilot project, where a high-efficiency, energy-saving lighting system will be used, He said in an interview with China Daily.

Solar-energy heat-collecting and solar power-generating systems will be integrated with the buildings and some Olympic facilities in the village, he said.

Under the commission's plan, notorious pollution-causing facilities - including the Capital Iron and Steel Corporation and a cement plant in Beijing's Fangshan District and a coal-burning power plant in the Shijingshan District - will undergo substantial technological transformation. Cars using outdated technology will be phased out from Beijing's streets.

China to Build Plant to Turn Coal into Oil Products

Reuters
19 June 2002

WASHINGTON - U.S.-based Headwaters Inc. announced yesterday plans with Shenhua Group Corp. Ltd to build in China the world's first commercial plant to turn coal into diesel fuel and gasoline, a move that could help China reduce oil imports and cut pollution.

The clean coal technology will help the Chinese government counter complaints from environmentalists that the country's heavy reliance on coal causes too much pollution and greenhouse gas emissions that lead to global warming.

Shenhua Group Corp. Ltd is China's largest coal company, producing about 60 million tons of coal per year and having reserves of more than 220 billion tons.

The Bush administration has pulled the United States out of the international Kyoto treaty that seeks to reduce greenhouse gas emissions.

The administration fears the treaty allows developing countries such as China to spew more emissions while placing tough restrictions on industrialized nations that could hurt the U.S. economy.

Ironically, the U.S. Energy Department helped pay for the research that developed the clean coal technology that will be used by China to help reduce its emissions.

At a ceremony in Washington announcing the plant deal, Linda Conlin, the Commerce Department's assistant secretary for trade, praised China for being a leader in using clean coal technology.

Headwaters subsidiary, Hydrocarbon Technologies Inc., will provide the technology license, process design and technical services for the plant.

The $2 billion Chinese facility will able to produce 50,000 barrels a day of cleaner, low-sulfur diesel fuel and gasoline from about 13,000 tons of coal.

Plant construction is expected to begin in early 2003, following approval from U.S. and Chinese governmental agencies. The facility, located about 80 miles south of Baotou in Inner Mongolia, should be operational in 2005.

Under the so-called coal liquefaction process, coal is broken down into small molecules with hydrogen to form oil molecules that are then refined into diesel, gasoline and other petroleum products.

Sulfur, nitrogen, ash and other impurities are removed from the liquid fuel in the process.

Shenhua Group said it plans to build three more coal liquefaction plants in the Shengdong Coalfield of China, which spans the Shaanxi Province and Inner Mongolia.