

Transportation

As part of Beijing's climate change and air quality challenges noted above, transportation is an additional challenge for the city. For the Games, Beijing has introduced a number of cleaner energy transportation measures, most notably 3 759 compressed natural gas public buses, one of the largest fleets in the world.⁹¹ Unfortunately, the number of motor vehicles has increased drastically in Beijing in recent years. By official estimates, the city will be home to roughly 3.35 million motor vehicles by the time the Games are held in August.⁹²

Around 120 000 cars were added to Beijing's roads in the first quarter of 2008 alone, which is equal to adding around 1 300 vehicles to Beijing's roads every day.⁹³

BOCOG estimates that there will be over 6.4 million visitors to Beijing for the Games.⁹⁴ This will add an estimated 1.3 million passengers/day to an already overburdened public transportation system.⁹⁵

Beijing Commitments

1. Implementation of a vehicle emission standard equal to EURO II for light vehicles by 2004. To strengthen car emission standards.⁹⁶
2. By 2007 exhaust from new vehicles will be reduced by 60%.⁹⁷
3. The daily capacity of the city's subway will be increased from 1.3 million people to 2.66 million by 2008.⁹⁸
4. Public ground transport will rise to 19.5 million people/day.⁹⁹
5. By 2007, 90% of buses and 70% of taxis will use clean fuels.¹⁰⁰
6. For the Games, the city will build 292 liquid petroleum gas and natural gas stations.¹⁰¹
7. All transportation in competition venues and in the Olympic Village will use low or zero emission and low-

noise vehicles.¹⁰²

8. Four new subway lines and an Olympics Line will be opened before the Olympics.¹⁰³

Greenpeace Guidelines

Guideline 3 - Reduce the need for private transportation during the building process and during the use of the building(s) by concentrating developments in existing urban areas, using local resources and using facilities to their maximum potential.

Guideline 4 - Establish a non-fossil fuel-based public transport infrastructure and promote individual non-polluting forms of transportation. Ensure that public education and incentives to use the system are planned from the beginning.

Guideline 5 - Ban the use of fossil fuel-based transportation vehicles for public and official access to Olympic venues and other events.

Selected Achievements

Beijing has taken some significant steps toward improving and expanding public transportation and increasing low-emission buses and taxis but most importantly, it has led the developing world in adopting some of the highest fuel emission standards for new vehicles.

New standards for monitoring and reducing vehicle emissions

In 2001, Beijing introduced an environmental labeling system for vehicles. High emission vehicles that are below EURO I standard are identified with yellow labels, while green labels are provided to newer vehicles with more updated emission systems. Older vehicles with sub-

91. BOCOG, "Beijing 2008: Environmental Protection, Innovation and Improvement 2001-2006 Update," p.33.

92. Xinhua, "Vehicles in Beijing to reach 3.35 million during Olympics." March 27, 2008. http://www.chinadaily.com.cn/olympics/2008-03/27/content_6571379.htm

93. Xinhua, "Vehicles in Beijing to reach 3.35 million during Olympics." March 27, 2008. http://www.chinadaily.com.cn/olympics/2008-03/27/content_6571379.htm

94. People.com.cn. "Hotel reservations increase for the Games." <http://finance.people.com.cn/GB/6708550.html> (in Chinese)

95. BOBICO, "Section Four: Environmental Protection and Meteorology" p.57.

96. Beijing's Green Olympics Action Plan, <http://www.beijing2008.cn/bocog/environment/guidelines/n214067229.shtml> (in Chinese)

97. BOBICO, "Section Four: Environmental Protection and Meteorology" p.55.

98. BOBICO "Section Four: Environmental Protection and Meteorology" p.55.

99. BOBICO "Section Four: Environmental Protection and Meteorology" p.55.

100. Beijing's Green Olympics Action Plan, <http://www.beijing2008.cn/bocog/environment/guidelines/n214067229.shtml> (in Chinese)

101. Beijing's Green Olympics Action Plan, <http://www.beijing2008.cn/bocog/environment/guidelines/n214067229.shtml> (in Chinese)

102. BOBICO, "Section Four: Environmental Protection and Meteorology" p.57.

103. Beijing's Green Olympics Action Plan, <http://www.beijing2008.cn/bocog/environment/guidelines/n214067229.shtml> (in Chinese)

standard emission systems are slowly phased out as well as limited from entering the city center.

From March 1st 2008, Beijing initiated a new EURO IV standard, two years ahead of schedule specifically for the Olympics. Beijing was the first Chinese city to implement this stringent standard.¹⁰⁴ The EURO IV standard is the fourth stage of emission and testing standards for vehicle emissions including hydrocarbon (HC), NOx, carbon monoxide (CO) and PM.¹⁰⁵ These standards are amongst the most rigorous in the world for new vehicles, and by some comparative models, Beijing's new standard are more stringent than those for Australia, Canada, California,¹⁰⁶ and the U.S.¹⁰⁷ Beijing's car emission standards implementation schedule has occurred over a shorter period of time compared to Europe and is quickly catching up with European standards.¹⁰⁸ Beijing's move from EURO III in 2005 to EURO IV in 2008 ahead of schedule is estimated to deliver an overall 50% reduction in emissions.¹⁰⁹ Europe is currently making the switch to a new EURO V standard in late 2008/early 2009.

Public Transportation

With the addition of four new subway lines and an Olympics Branch Line (which will run from Line 10 to Olympic venues), according to official data, Beijing's total subway capacity will increase from 1.3 million in 2000 (with lines one and two) to 3.9 million by 2008.¹¹⁰ The new lines are Line 13, Line 5, Line 10, the Olympics Branch Line and the Airport Line. Line 13 was completed in January 2003 and Line 5, which runs for a total length of 27.5 km, has been in operation since October 2007. Phase I of Line 10 (about 24.6 km) is scheduled to open in July 2008, while the Airport Line (about 24.5 km) is currently under construction and is scheduled to open in July 2008. The Olympic Branch Line, running through Olympic venues (4.3 km) was scheduled for trial operation in June 2008. The addition of these new lines has been enthusiastically received by Beijing residents and as of June 2008, the new lines were running at capacity during peak

hours. Beijing has also cut subway and public bus fares to encourage public transportation use.

From 2001 to 2006, Beijing has replaced or refitted more than 47 000 old taxis and 7 000 old diesel buses out of around 65 000 taxis and 19 000 buses to lower emissions natural gas.¹¹¹

Beijing now boasts one of the world's largest compressed natural gas (CNG) bus fleets in the world.¹¹² By 2006 Beijing had put 3 759 CNG buses into operation.¹¹³ Public ground transportation reached a total of 19 million passengers per day.¹¹⁴

Low emission and noise vehicles inside the Olympic Village

Environmental friendly buses will operate in and around the Olympics venues¹¹⁵

Table 4

Name	Description	Number
Hydrogen fuel-cell buses	Please see below.	3
Li-ion battery-powered buses	Scheduled to run in the three loop lines in the Olympic village, the northern area of the arena and the press village. The 50 electric buses for the Beijing Olympics will be the largest number of their kind in the Games. There will be a recharge stations covering 5 000 m ² for the buses in southwest Beijing	50
Dongfeng hybrid electric public buses	Scheduled to run in Beijing Olympics Central city area	15
Jiefan brand hybrid electric buses	Scheduled to run in the Athlete's Village and three other Olympic routes	10
Dongfeng pure electric venue vehicles	Scheduled to run in the Athlete's Village and three other Olympic routes	500

104. Beijing Environmental Protection Bureau. <http://www.bjepb.gov.cn/bjhb/tabid/68/Infoid/15382/ftid/426/Default.aspx> (in Chinese)
 105. "What is National IV emission standard?" <http://auto.163.com/08/0119/00/42HF0M5J00082HLJ.html> (in Chinese)
 106. In the United States, emissions standards are regulated nationally through the Environmental Protection Agency (EPA), however California has introduced its own set of stricter emission standard guidelines, which are managed by the California Air Resources Board (CARB). Other states may choose to follow either the national or California standards. States currently following California's standard (otherwise know as CARE) include Maine, Massachusetts, New York, Oregon, Vermont and Washington.
 107. Although different emission standards developed by nine different regions in the world are not easily comparable due to differences in policy, approaches, test drive cycles and units of measurement, some studies have developed a methodology to compare these programs. The "Comparison of passenger vehicle fuel economy and greenhouse gas emission standards around the world," prepared by Feng An and Amanda Sauer for the Pew Center on Global Climate Change, concludes that in terms of fuel economy and GHG emissions the new Chinese Standards are more stringent than those in Australia, Canada, California and the United States, but they are less stringent than those in the European Union and Japan. For the detailed study please see: http://www.pewclimate.org/docUploads/Fuel%20Economy%20and%20GHG%20Standards_010605_110719.pdf
 108. The move from the initial Economic Commission of Europe (ECE) 1503 Standard to EURO IV in Europe took place from 1979 to 2003, 24 years, while in China the same implementation process took place from 1994 to 2008, 14 years. BOCOG, "Beijing 2008: Environmental Protection, Innovation and Improvement 2001-2006 Update," p.33.
 109. Beijing Environmental Protection Bureau. <http://www.bjepb.gov.cn/bjhb/tabid/68/Infoid/15381/ftid/426/Default.aspx> (in Chinese)
 110. UNEP, "Beijing 2008 Olympic Games: An Environmental Review," p.101.
 111. UNEP, "Beijing 2008 Olympic Games: An Environmental Review" p.102.
 112. UNEP, "Beijing 2008 Olympic Games: An Environmental Review" p.102.
 113. BOCOG, "Beijing 2008: Environmental Protection, Innovation and Improvement 2001-2006 Update," p.33.
 114. UNEP, "Beijing 2008 Olympic Games: An Environmental Review," p.102.
 115. Ministry of Science and Technology. "Science Popularization Manual of Electric Vehicles" The 2008 Hi-tech Olympics Exhibition.

A zero-emission hydrogen bus pilot project launched by the Global Environment Facility (GEF), UNDP, and the Chinese Government was launched in 2003 to introduce low emissions fuel cell buses (FCBs), or otherwise known as hydrogen fuel cell buses, in China's urban areas. This project aims to reduce GHG emissions and air pollution as well as to demonstrate the viability of operating FCBs in a developing country. According to the UNEP, three FCBs were purchased and have been operating in Beijing since June 2006. As a part of the FCB project, the Beijing Hydrogen Re-fuelling Station was built within the Beijing Hydro Demo Park and began operations in the same year. These three buses will be used to transport international and national athletes within the Olympic compound during the Games and will also serve to raise public awareness about low-emission transport solutions.¹¹⁶



Public and free transportation during the Games

BOCOG is encouraging public transportation use in Beijing throughout the Games. Those with tickets to Olympic events can travel throughout the city free of charge. Free public transportation for ticket holders will last for 51 days.¹¹⁷

According to the UNEP "Beijing 2008 Olympic Games: An Environmental Review" report, a fleet of 200-300 bicycles will be available in the Olympic Park and Olympic Village for visitors during the games.

Missed Opportunities and Mixed Results

Beijing has made great strides in introducing cleaner energy vehicles for the Games. However, given Beijing's problems with air quality caused by the rapidly increasing number of private vehicles, Beijing could have taken more aggressive measures to tackle the fast increasing car ownership rate in the city. Beijing could have also acted earlier to construct

mass transit systems to reduce reliance on private vehicles. As well, Beijing could have taken more opportunities to develop bicycle lanes in major city planning projects. Beijing could have also introduced higher licensing fees for private vehicles to limit the number of private vehicles on the road, measures already taken by other Chinese cities such as Shanghai.

Greenpeace Recommendations – Beijing and Beyond

Beijing Beyond 2008

Hosting the Olympic Games presents a unique opportunity for Beijing to introduce state-of-the-art technology to meet the transport demands of a mega event and the growing transport needs of a fast developing city. Greenpeace strongly recommends Beijing to continue to focus on low-emission public transport options for the city long after the Games.

In addition, with up to eight million bicycles in the city, Beijing residents are one of the biggest groups of bicycle users in the world. As Beijing develops, aside from investments in public transportation, Greenpeace strongly recommends the city to actively support, encourage and enable bicycle use as a major aspect of its transportation plan. Bicycle use has the potential to provide both environmental and health benefits for residents as well as being a low-cost transport option. Development of mass transit systems is the only way for large cities such as Beijing to tackle pollution caused by vehicles and traffic congestion. Beijing needs to continue to promote mass public transport and move away from building highways for private vehicles in its future development in order to set an example for other Chinese cities to follow.

China Beyond 2008

Beijing's transportation planning model focused first on developing highways and infrastructure for automobiles ahead of developing a comprehensive system of mass public transit. Other Chinese cities should learn from Beijing's mistakes and prioritize public transportation development from the beginning stages of development.

Future Olympic Games - Recommendations to the IOC

The IOC should highly encourage the development of mass transportation systems as well as to promote bicycle use in Olympic venues to minimize the negative impact of the Games on a city.

116. UNEP, "Beijing 2008 Olympic Games an Environmental Review," p.105.

117. UNEP, "Beijing 2008 Olympic Games an Environmental Review" p.57.