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Beijing 2008 Olympic Games success: massive public transport developments and major road traffic reduction



Left: Beijing metro system: from 3 lines in 2002 to 7 lines for the 2008 Olympic Games
Right: Olympic reserved lane with official Olympic ground markings and vertical lane sign

Beijing has shown outstanding transport system improvements in the seven-year lead up to the Olympic Games. Of all the Olympic Host Cities, it is the one that introduced the most innovative traffic management measures to deliver reliable transport services for the Games while keeping the city moving and while improving the environment.

This article explains how Beijing transport planners, together with the traffic police and public transport operators, successfully delivered 2008 Olympic transport.

These Games (see Table p.54) benefited from knowledge transfers made in transport planning and traffic management since the Sydney 2000 and Athens 2004 Games where public transport had a leading role. They are briefly presented to illustrate progress made towards more Games transport legacy and sustainability.

2008 Olympic Games transportation challenge

With 205 participating countries, the Olympic Games are the largest mega-

event in the world. It is the equivalent of 28 world championships run in parallel for 16 days over more than 40 competition sites in the Host City and five other cities. It is also the most complex transport operation to cope with 1.5 to 2 million supplementary daily journeys in the Host City.

With more than 1000 new vehicle registrations per day since 2002 (0.4 million new cars per year), Beijing car growth had created, irrespective of the huge road construction programme, an extremely high level of congestion. Prior to the Games, foreign media had been highly critical, not only of road congestion, but also of heavy air pollution threatening public health as well as Olympic endurance competitions.

How was this challenge met during the 2008 Olympic Games where the 'transport and environment' record was considered a great success by Beijing visitors and the world media?

Beijing 2008: what programmes and policies to deliver Olympic transport?

Massive urban transport developments

More than 20 billion USD were invested over seven years for the following main transport projects:

- Tripling of the Beijing Capital Airport capacity thanks to the creation of a third runway and of the largest airport terminal in the world (1 million sqm) allowing air passenger traffic to triple from 25 million pax in 2002 to 75 million in 2010-2012;

- Beijing metropolitan road and motorway expansion, mainly the fifth Ring motorway (108km), 2/3 of the sixth Ring motorway (208km), adding two Capital Airport motorway links and full major arterial network, partly underground, of the biggest Olympic Park ever created, the 725ha Beijing Olympic Green;
- Massive extension and renovation of Beijing metro system. From a rudimentary metro two-line system (East-West line 1 and circular line 2) and one suburban line, the system has been expanded to seven lines including an airport dedicated rail link;
- Beijing bus system was expanded to a fleet of around 20,000 mostly modern and environmentally cleaner vehicles.

All these transport system components were in the 2001 Beijing candidate bid and put into service just in time for the 2008 Games.

Major role of bus transport

Most Olympic transport is performed by bus with on board security between secured bubbles. Dedicated bus sub-systems are operated for client groups with specific travel and schedule requirements such as athletes, technical officials, media (broadcasters and press), workforce and volunteers as well as sponsors. In Beijing, a fleet of more than 2000 buses was operated out of four or five temporary logistical depots, transport malls and bus holding areas.

About 12km North of Tian-Anmen, the new 725ha Olympic Green, the biggest Olympic Park ever, was served by a new metro line in its middle and by the first North South Beijing metro line. Those two metro lines provided only 20 to 25% of Olympic Park accessibility. In a bold temporary strengthening of the bus system, 34 additional lines were created to carry about 75% of the Olympic Park spectator, workforce and volunteer traffic.

Three hundred kilometres of temporary Olympic lanes

One key Olympic transport requirement is to maintain athlete travel between the Olympic Village and most competition venues to less than 30 minutes (45 minutes by exception for the most outlying venues). Only a continuous network of Olympic reserved lanes can guarantee such short travel times in such a large metropolis.

A 300km Olympic lane system has been implemented to connect all key Olym-

UITP Working Group on Public Transport and Large Events

Hosting large public events has become an important element in cities and regions' strategy to attract visitors and investments. The Beijing case shows how large events can be powerful catalysts for the development of public transport infrastructure and the implementation of measures that create a better environment for public transport.

But large events are also a test for public transport. Wrong choices, delays or even accidents, give a bad image which could have negative consequences on future ridership. The planning and the management of large events thus requires public transport undertakings to develop close partnerships with event organizers and public authorities, amongst other stakeholders. More than anything else, the reliability and the organization of travel, whilst at the same time handling the background traffic, represent the keys to a successful event.

Realising that a number of UITP members are facing the organisation of large events and that UITP could provide them with highly valuable support by promoting and structuring the exchange of information with members having experience in this field, UITP launched a working group which gathers experts designated by relevant UITP Committees and Commissions.

This working group is composed of UITP members from ten different cities worldwide. The deliverables are a general checklist illustrated by case studies and a policy document - a Focus Paper - aiming at raising the awareness of decision makers and event owners on the benefits of taking public transport into account in early decisions on venue location and the overall transport scheme for the event.

The purpose of the general checklist is to outline the questions that public transport operators and authorities have to ask themselves when they face the preparation of large events. The checklist follows a structure that addresses pre-planning verifications, the development of the service offer including infrastructure and rolling stock aspects, the organizational processes with coordination, information, security, communication, ticketing and emergency issues and staff management.

The checklist is accompanied by a collection of case studies that follow an identical structure to the checklist in order to illustrate how the different points were addressed in practice in different situations.

The final results of this working group will be officially presented at the UITP World Congress in Vienna during a workshop followed by a technical visit dedicated to Public Transport and Large Events on **10 June 2009 from 14:00 – 17:30**. During this workshop, a debate gathering event owners, political representatives and public transport companies will be moderated by Prof. Philippe Bovy, who also acts as external expert to the working group.

Athens 1896 to London 2012 Olympic Summer Games key figures								
	1. N° NOC.	2. N° Events	3. N° Comp.	4. % Female	5. N° Media	6. N° Volunteers	7. N° Tickets	8. Total TV rights
1896 Athens	14	43	250	0				
1984 Los Angeles	140	221	6,800	23	9,200	28,500	5.7	285
1988 Seoul	159	237	8,500	26	11,300	27,000	3.3	400
1992 Barcelona	169	257	9,400	29	13,100	34,500	3.0	835
1996 Atlanta	197	271	10,400	34	15,100	47,500	8.3	900
2000 Sydney	200	300	10,600	38	16,000	47,000	6.7	1330
2004 Athens	202	301	10,600	42	21,500	45,000	3.8	1495
2008 Beijing	204	302	10,950	43	24,600	70,000	6.5	1730
2012 London*	204	300	10,600	43	21,500	70,000	7.7	---**
1. Number of participating nations, 2. competition events, 3. athletes, 4. female athletes (%), 5. accredited media +press+broadcasters, 6. volunteers (±500), 7. ticketed spectator (in millions), 8. TV rights(in million USD) * London 2012 statistics are 2009 best estimates; ** Not yet available								

pic hotel and logistic sites, the Olympic gateway airport to 40 competition venues. Olympic lanes were designated by Olympic road markings, vertical signs and lane specific traffic lights. This special network was operational from 6am to 12pm for 60 days. Average commercial speeds for Olympic accredited vehicles using Olympic lanes were about 55 km/h, whatever the time of the day. No significant congestion was recorded on any Olympic Lane during the 60 days of operation.

Daily background traffic more than halved
Following a first four-day traffic reduction test in August 2007, one year prior to the Games, Beijing traffic authorities decided to implement a specific 'package of traffic management measures' for the 2008 Games:

- General traffic reduction over 60 days, starting with the opening of the Olympic Village on 20 July until 20 September, the end of the Paralympic Games;
- About 55% of all vehicles, or about 2 million vehicles out of a total of 3.45 million registered vehicles were only allowed to drive on alternate days. This reduction in car numbers was achieved by complete driving ban of the most polluting vehicles (more than half a million) and odd-even alternate day driving for vehicles other than public transport and city services and security;
- Prior to the Games, Beijing had considerable construction activity generating dust and fine air particles. All construction activity was stopped for two to three months, thereby reduc-

ing dust and highly polluting truck traffic. All day-time deliveries were prohibited;

- Sixty days of traffic reduction combined with all other measures led to a very substantial drop in air pollution, which allowed all Olympic competitions to take place. However certain discrepancies remain in statistical results whereby the 55% daily reduction in vehicles resulted in only a 25% reduction in measured traffic volumes on Beijing ring motorways;
- The 'zero' spectator parking policy at Olympic competition venues and 100% accessibility by public transport were beneficial to the environment.

Transportation know-how transfer from Games to Games

Sydney 2000

As a consequence of the Atlanta 1996 Games transport shortcomings, Sydney 2000 innovated in many different fields of transport and traffic management. Two of these were:

- '**Green**' transport policies were introduced whereby 100% of ticketed spectators, accredited workforce and volunteers could access Olympic sites by public transport or on foot/bike only. This meant 'zero' parking availability for spectators near Olympic competition venues as well as free 24hour public transport for all ticketed spectators and accredited personnel;
- Prior to the Games, Sydney Olympic Park **new traffic policies were tested** with other mega-events to familiarize the general public with Olympic 100% public transport accessibility or 'no car' policy.

Athens 2004

Athens 2004 applied most of the Sydney Olympic transport and innovative traffic policies with two particular emphases:

- **Rapid 1999-2004 development of metropolitan public transport**, mostly major improvements in rail transport that had been postponed for decades. The successful opening of Athens' new International Airport two years prior to the Games with rail connection to the city centre and peripheral motorway and arterial developments to relieve automobile pressure on the city centre were also accelerated;
- Temporary implementation - a first in Olympic history - of a **160km network of Olympic lanes** designed to allow a 55km/h average commercial speeds, three times the usual Athens bus speeds.

Beijing 2008

Other than the considerable transport infrastructure development described earlier, the most spectacular transport and traffic measures and impacts were as follows:

- Network of **300km of directional continuous Olympic lanes**, the largest in Olympic Games history;
- **55% road traffic reduction** in all Beijing during the 60 days of Olympic and Paralympic Games;
- **Much improved air quality** due to drastic 60-day traffic reduction, construction work stoppage and a full programme of other environmental improvement measures.

Olympic Games

Conclusion

Past Olympic Games show that bold transport developments are accelerated by the Games, mostly in rail public transport. In addition the challenge of handling considerable additional mega-event transport and traffic loads is such that Olympic Cities innovate with temporary transport and traffic schemes providing maximum priority to mass public transport, the only service which can cope with exceptional transport tasks. In Beijing all transport developments were planned as long-term legacies to avoid being left with any transport 'white elephants'.

Games to Games transport monitoring and transfer of knowledge have been outstanding. They constitute 'live traffic laboratories' and lead to more sustainable solutions not only for the very short duration of the Olympic Games but for the Host Cities' long term legacy.

Bibliography:

¹ Bovy Ph. "Olympic and mega event transport bibliography 1996-2009" Lausanne, Jan. 2009; download from: www.mobility-bovy.ch



Beijing Olympic Green with the 'Bird's Nest'

2. Bovy Ph., "Solving outstanding mega-event transport challenges: the Olympic experience", in Public Transport International (PTI), N° 6/2006, Brussels, Nov./Dec. 2006.
3. Zheng Shusen, "Beijing Speeds Up Development of Public Transport Systems to receive the 2008 Olympic Games", UITP - Public Transport International (PTI), N° 6/2006, Brussels, Nov./Dec. 2006.
4. Bovy Ph. "High performance Public Transport: A must for very large events", UITP - Public Transport International (PTI), N° 2/2004, Brussels, Feb./Mar. 2004.

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