

China

Beijing Capital Airport Terminal Area Expansion Project (1)(2)(3)

Report Date: September, 2001

Field Survey: August, 2001

1. Project Profile and Japan's ODA Loan



Site Map: Beijing



Site Photo: Apron in Beijing Capital Airport Terminal

1.1 Background

According to data concerning Beijing Capital Airport, during the decade from 1980 to 1990, the number of passengers and the volume of cargo in China grew 4.4 times (about 16% per annum on average) and 2.5 times (slightly less than 10% per annum on average), respectively, in parallel with the growth in the air transportation sector. In the 1990s also, both passenger and cargo transportation annually grew more than 30%. The number of passengers was seen to have reached 8.7 million (38% of increase compared with the previous year) in 1992. By contrast, the passenger terminal at the time of appraisal had been constructed in 1980 based on designs that had initially assumed a capacity of 3 million passengers per annum. Although two extension works later increased its capacity, the terminal was still overloaded. In addition, further extension of the terminal was physically difficult.

According to prospects by the Chinese counterpart that were made in 1990 prior to the appraisal of the project's first phase¹, it was expected that, considering the prospect of economic development and the actual record of aerial demand, the number of passengers and the volume of cargo would reach 20.5 million and 243 thousand tons, respectively, by 2005. To prepare for such an increasing demand in future, this project was set as one of the key projects in the China's Ninth Five-Year Plan (1996-2000).

Based on the prospects, the extension of such facilities as the passenger and cargo terminals was seen to be vital, though other facilities such as runways could still meet future demand.

1.2 Objectives

To construct a passenger terminal building for both domestic and international services and a cargo terminal building, as well as other related facilities in order to respond to rapidly increasing passenger and cargo traffic in Beijing Capital Airport.

1.3 Project Scope

Construction of (1) a passenger terminal building for domestic and international services (240 thousand m², annual handling capacity of 36 million passengers), (2) a cargo terminal building (120,000 m²), (3) aprons (41 spots, 464,000 m²), (4) an airport office building, (5) staff quarters, (6) infield road, (7) parking area (170,000 m²) in Beijing Capital Airport. Also, (8) the procurement of special vehicles

¹ The ODA loan to this project was provided over the three phases: the first phase was signed in 1993 fiscal year; the second phase was signed in 1995 fiscal year; and the third phase was signed in 1996 fiscal year.

and (9) the installation of fuel supply, telephone facilities, water supply and sewage & waste treatment facilities, and heat supply facilities, as well as the employment of consultants (This is the modified project scope of the first phase loan used in making an appraisal for the second loan. The project scope of the initial plan of this project refers to that of the modified scope. This report also follows the modified scope).² The ODA loan is to cover the total amount of the foreign currency portion of the project cost.

1.4 Borrower / Executing Agency

Ministry of Foreign Trade and Economic Co-operation of the People's Republic of China / Civil Aviation Authority of China

1.5 Outline of Loan Agreement

	The first phase (1993)	The second phase (1995)	The third phase (1996)	Total
Loan Amount	8,106 mil.yen	13,435 mil.yen	8,459 mil.yen	30,000 mil.yen
Loan Disbursed Amount	8,075 mil.yen	7,175 mil.yen	7,627 mil.yen	22,877 mil.yen
Date of Exchange of Notes	Aug. 1993	Oct. 1995	Dec. 1996	
Date of Loan Agreement	Aug. 1993	Nov. 1995	Dec. 1996	
Terms and Conditions				
Interest Rate	2.6%	2.3%	2.3%	
Repayment Period (Grace Period)	30 years (10 years)	30 years (10 years)	30 years (10 years)	
Procurement	General untied	General untied	General untied	
Final Disbursement Date	Jul. 2000	Dec. 2000	Not completed	

2. Results and Evaluation

2.1 Relevance

With the beginning of the reform and open door policy in 1978, the volume of transportation in China's air sector showed a drastic growth. When the volume of air transportation grew, Beijing Capital Airport not only accommodated all types of aircrafts for taking-off and landing, but also was the only civil airport in the capital used by foreigners to enter China; hence it played a core role for domestic airlines. In 1994, among 98 airports in China, it was first in the number of passengers handled (14% of all), and second after Shanghai in the volume of cargo handled (16.1% of all). However, its passenger terminal building, which had been constructed in 1980 with the assumption of 3 million passengers per annum, was overloaded at the appraisal of the first phase, despite two extension works for increasing its capacity. In addition, further extension of the terminal was physically difficult. This project was defined as one of the key projects of China's Ninth Five-Year Plan in order to prepare for the future increase in aerial demand. Therefore, the relevance of this project at the time of appraisal (the first and second phases) can be well appreciated.

The project has been completed with the third phase. There has been no change up to now and will not be in the situation where the airport plays an important role in the aerial transportation network as the China's biggest hub airport. Moreover, its significance is likely to increase because it is expected to meet greater demands of international passengers due to the 2008 Beijing Olympic Games. Therefore, the relevance of this project is still supported.

² The scope of the first phase loan was the construction of a passenger terminal (120,000 m²), a cargo terminal (9,000 m²), aprons (20 spots, 213,000 m²), and parking areas (57,000 m²). There were no plan to employ foreign consultants.

2.2 Efficiency

2.2.1 Project Scope

The actual growth of passenger demand from 1990 by far exceeded the estimate: that of 1992 was already close to the prospective demand of 1995. To respond to this rapid increase in passenger demand, the Chinese counterpart—after the commencement of the first phase project—modified its estimate to upwards of 36 million passengers in 2005. Accordingly, the project scope was also modified when appraising the second phase project; the passenger terminal was extended from 120,000 m² to 240,000 m² to deal with 36 million passengers, and the cargo terminal from 9,000 m² to 12,000 m². Since this revision of the project scope before the second phase implementation was made based on the modified estimate of demands, it can be evaluated that it was a realistic response in view of the completion of the whole projects and its efficiency is highly thought of.

This project was completed as originally planned (which is the plan made at the appraisal of the second phase after the revision of the scope). Immediately after the completion of this ODA loan project in 2000, however, an additional construction was undertaken to extend the passenger terminal from 240,000 m² to 326,000 m². The reason for this extension was that the size of 240,000 m² was too small for the passenger platform, and that resting rooms for transit passengers were added. Accordingly, other airport facilities were also extended: the apron was enlarged from 464,000 m² to 518,000 m²; and the capacity of the cargo terminal was extended from 12,000 m² to 25,000 m². It is considered that passenger-related facilities have been improved by the Chinese counterpart itself in view of passengers' convenience after the project completion.

2.2.2 Project Cost

At the stage of field survey, the completion report of this project is still in preparation. The actual implementation costs as of 30 June 2001, which included costs for land acquisition, was 6.33 billion yuan for the local currency portion (equivalent to 90.5 billion yen), 1.6 billion yuan for the foreign currency portion (equivalent to 22.8 billion yen), and 7.93 billion yuan in total (equivalent to 113.3 billion yen). The total costs at the time of appraisal for the third phase were estimated at 71.1 billion yen; therefore the unofficial estimate suggests 60 % of cost overrun.³ However, the ODA loan covered 22.8 billion yen on an actual disbursement basis against planned 30 billion yen (equivalent to three quarters). The item that showed an outstanding cost increase, compared with the planned cost, was the passenger terminal building. Although its cost at the time of appraisal for the third phase was estimated at 23.6 billion yen (within which 18.1 billion yen was covered by the ODA loan), the actual cost increased by 46 billion yen to 69.5 billion yen (within which 18.6 billion yen was the ODA loan). This was largely equivalent to the amount of cost overrun of total project costs.⁴ As regards the apron, although 1.6 billion yen was planned (within which 300 million yen was the ODA loan), 7.9 billion yen was the actual cost (within which 70 million yen was the ODA loan). In the case of the viaduct, road and parking area, too, costs increased from 5.5 billion yen (within which 1.6 billion yen was the ODA loan) at the time of appraisal to 17.6 billion yen (400 million yen was the ODA loan) on the actual basis. The changes of the project scope seem to have significantly increased the costs in the local currency portion.

The arrangement for the local currency portion was supposed to be made through construction funds of the Civil Aviation Authority China and other funds including soft loans from the State Development Bank. In fact, while the funds from these sources increased, other funds were also arranged from the China Construction Bank, responding to cost increase.

³ Since the project scope was modified after upward adjustment of the estimation of demands, project costs estimated in the first phase project (foreign currency 29.8 billion yen, local currency 1.17 billion yuan, and total 38 billion yen) increased in the second phase project (foreign currency 29.8 billion yen, local currency 3.68 billion yuan, and total 72.8 billion yen). In the third—but final—phase project, they were also adjusted to 30 billion yen foreign currency, 3.43 billion yuan local currency, and 71.1 billion yen in total.

⁴ The format of the actual record statement of the project by the airport authority is different from that of appraisal. For instance, costs for consulting services are included in the costs for the passenger terminal. Hence, a strict comparison is impossible.

2.2.3 Implementation Schedule

This project was completed in September 1999 before the initial schedule of October 1999. It can be said that the whole implementation schedule followed the initial plan.

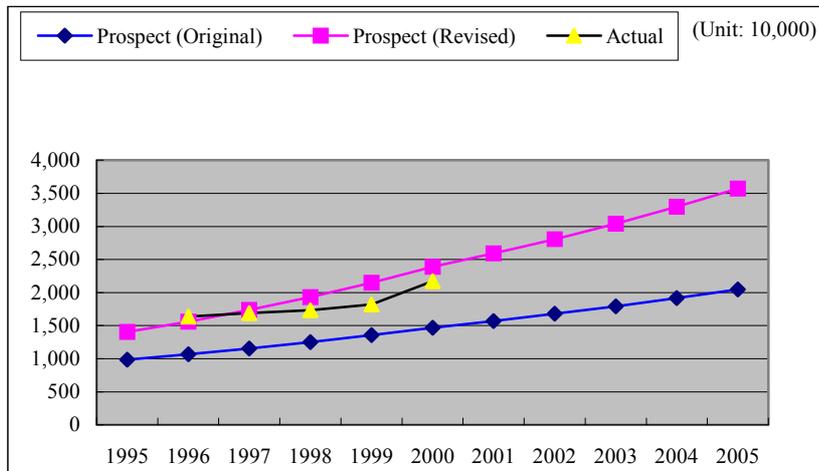
2.3 Effectiveness

The opening of the new passenger terminal on 17 September 1999 made it possible for the total capacity of the new and old passenger terminal to increase from 3 million to 36 million passengers. (However, with the new passenger terminal the old one temporarily stopped its operation, and was currently under construction for its re-open.)

1) The Number of Passengers at Beijing Capital Airport

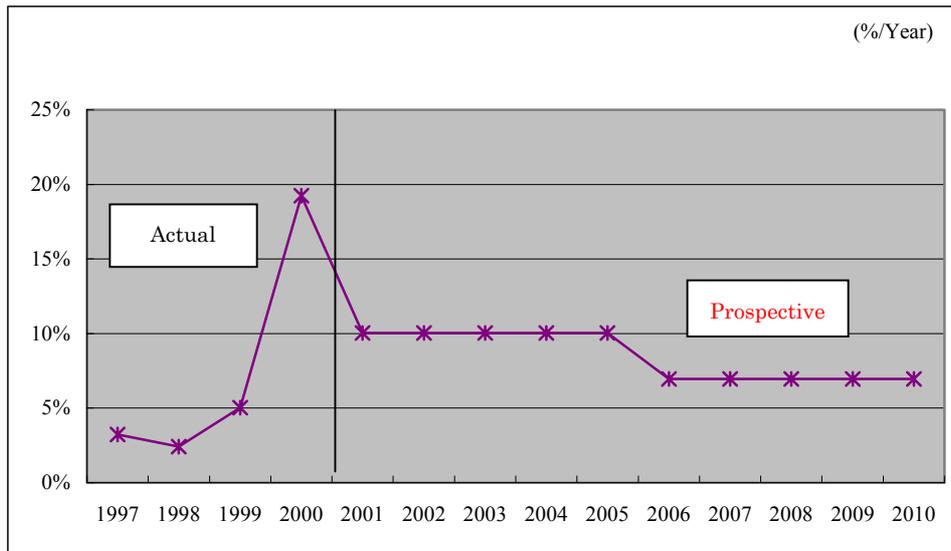
Figure 1 compares the prospective and actual number of passengers at Beijing Capital Airport. There are two prospective numbers at the time of appraisal for the first phase in 1993 and the time of appraisal for the second phase in 1995. The prospective number of 1995 was modified drastically to be higher than that of 1993. For example, demand in 2000 was estimated at 14.7 million on the 1993 estimate; it was adjusted to 23.38 million on the 1995 estimate—increasing more than 60% of the number of 1993. Meanwhile, the actual number was 21.69 million—close to the revised estimate by Beijing Capital Airport.⁵ It is thought that the passenger terminals have achieved the expected effect.

Figure 1: Comparison between the Prospective and Actual Number of Passengers



⁵ Beijing Capital Airport—occupying 16% share of the passengers at China’s civil-purpose airports—ranks the first.

Figure 2: Increase Trends of Passenger number (Prospective and Actual)



Source: Material for appraisal (Civil Aviation Authority China) and Beijing Capital International Airport holding Company.

Note: 'Original' in 'Comparison between the Prospective and Actual Number of Passengers' refers to data from the first phase project appraisal in 1993, and 'revised' refers to the third phase project appraisal in 1996.

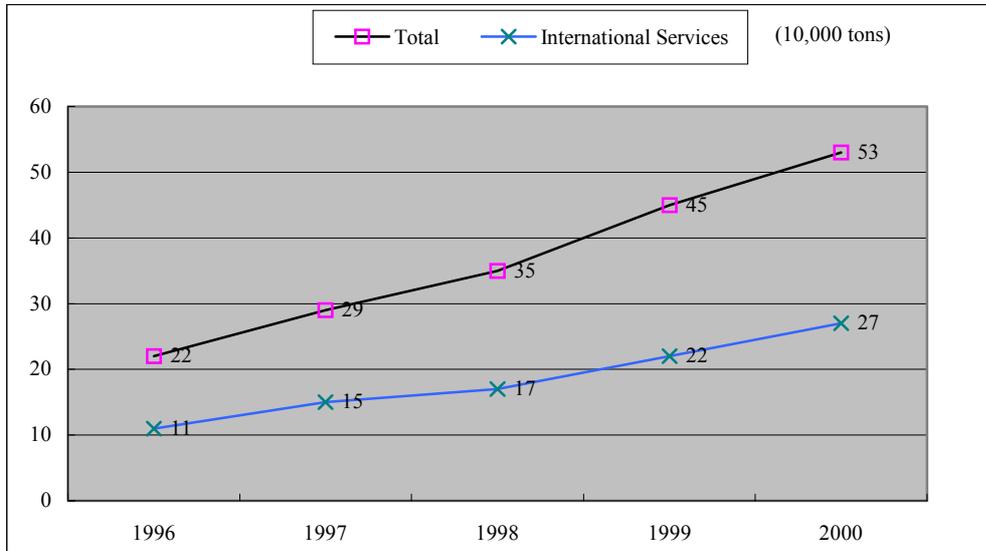
Figure 2 illustrates the trends in the annual increase rate of passenger numbers. The data are derived from the actual number in the case of numbers up until 2000, and from the estimate submitted every five years in the case of numbers after 2001. The rate of increase between 1996 and 1999 was less than 5%, but it reached nearly 20% in the year (2000) after the opening of the new passenger terminal. The opening of the new passenger terminal significantly increased its capacity; this facilitated an adequate response to the rapidly increasing number of passengers. As regards future prospects, a tentative estimate gives a 10% increase on the annual average until 2005 and a 7% until 2010; thereby the annual number of passengers will be 35 million—close to its terminal capacity—by 2005, and the number is estimated to reach 50 million by 2010. Although it is not based on a statistical analysis, the airport authority expects that the 2008 Beijing Olympic Games will increase the annual number of passengers in Beijing airport to 50 million. If the number of passenger increases with the estimate, it can be considered that the airport terminal will be used effectively.

2) The Volume of Cargo

As Figure 3 shows that the volume of cargo in 2000 was 530,000 tons. The volume of cargo of postal items and passenger luggage reached 774,000 tons, occupying a 19.4% share and ranking first among China's civil airports. However, this volume is dealt with by not only the cargo terminal covered by the ODA loan. It also includes the volume dealt with by the terminal of Air China (CA), constructed separately from this project in the airport. According to the Chinese executing agency, CA has a lot of international services; therefore it has a greater capacity for dealing with cargo than the cargo terminal of the Beijing Capital International Airport Holding Company which maintains the airport, and it shows better performance in its terminal's operations.⁶

⁶ The volume dealt with only by cargo terminal constructed by the ODA loan, is unknown.

Figure 3: Changes in the Volume of Cargo at Beijing Capital Airport



Source: Beijing Capital International Airport holding Company.

3) Financial Internal Rate of Return

At the time of appraisal, the financial internal rate of return (FIRR) of this project was estimated at 6.5 %, given , as benefits, ground service charges for taking-off and landing, and airport charges. The result of the recalculation shows approximately 10.9% of the FIRR. Even in a with/without analysis assuming opportunity cost that the old passenger terminal is not used, FIRR indicates a plus figure⁷.

- Preconditions
- Project life: 20 years
- Benefits: ground service charges for taking-off and landing, and airport charges
- Costs: project construction, maintenance, tax

In evaluating this project, it is necessary to consider the meaning of prior investment in preparing for increases in passengers due to the 2008 Beijing Olympic Games and the qualitative effects on improvement of airport services through development of the airport as an international one.

2.4 Impact

1) Status of the Air Sector in Domestic and International Transportation

Figure 4 explains the trends in passenger share according to mode of transportation. The air sector, which had 4.1% in 1990, doubled its share to 8.1 % in 1996. Although the air sector's share out of all modes of cargo transportation remained 0.1 % in 2000(not shown in Figure 4), the volume itself of air cargo transportation is annually growing at a high rate, as Figure 5 shows.

Figure 5 explains the growth rate of passenger and cargo volume in China's domestic and international transportation. High growth during the early 1990s slowed down during the late 1990s, but

⁷ Incremental investment cost resulting from this project and operation and maintenance cost of operation beyond handling capacity contributed to the figure close to 0 in FIRR. However, considering that the old terminal is going to be repaired and used for domestic flights in the near future, the actual FIRR is highly likely to be close to 10.9% that was calculated under the same condition.

the growth rate again improved in 1999 and 2000. The growth rate of transportation is 17 % on annual average for passenger numbers between 1990 and 2000 and 20% for cargo volume.

Figure 4: Trends in Passenger Share according to Mode of Transportation

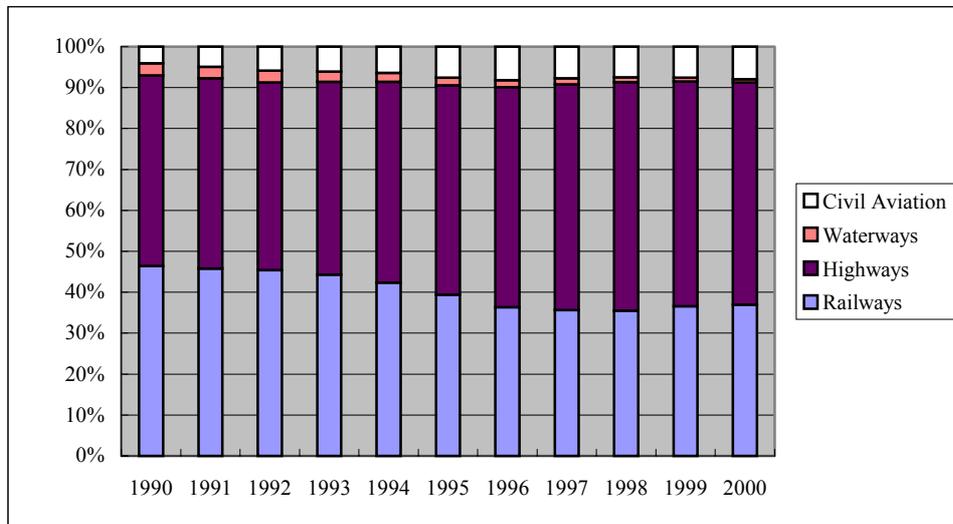
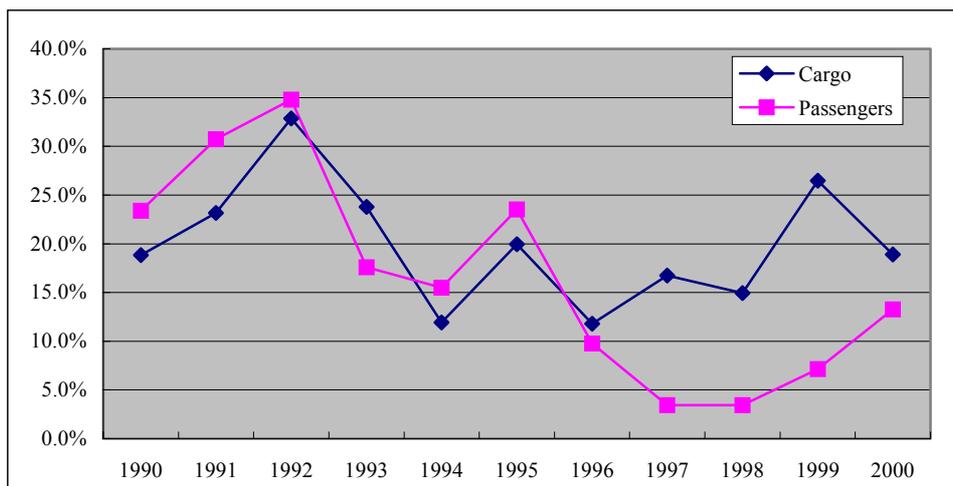


Figure 5: Annual Growth Rate of Volume of Aerial Transportation (Passengers and Cargo)



Source: China Yearbook of Statistics.

Note: Person-Km base for passenger transportation volume, and Ton-Km base for cargo transportation volume.

2) Economic Growth and the Company's Investment Performance in Beijing City

Figure 6 illustrates the nominal gross regional domestic product (GRDP) and the actual growth rate in Beijing City, and Figure 7 shows foreign direct investment in Beijing City and its share in Beijing City. As Figure 6 indicates, the economy in Beijing City has been growing at an annual rate of about 10 %. Foreign direct investment remained on the same level from 1994 to 1997. But it increased in 1998, reaching its share in China at more than 4 %. Although this ODA loan project had been completed in 1999, it is inferred that the expectation of a better transportation infrastructure through improvements of the convenience of the airport contributed positively to the promotion of foreign investment.

Figure 6: Economic Growth in Beijing City

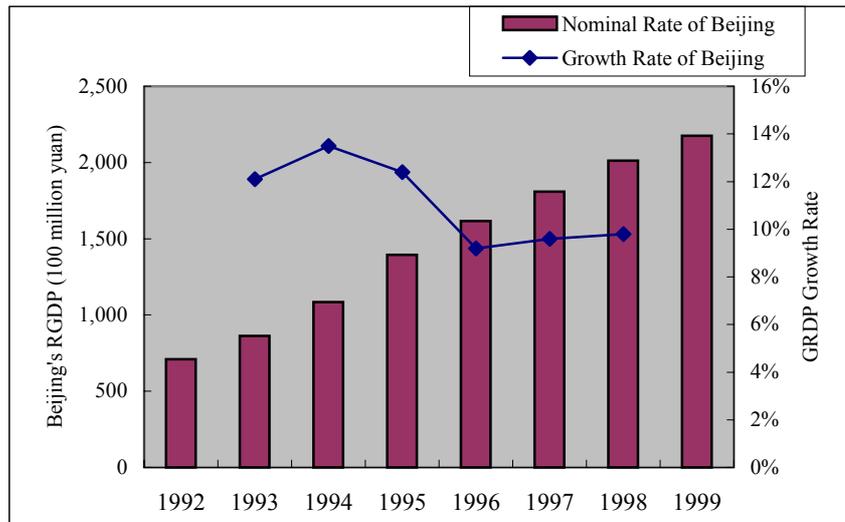
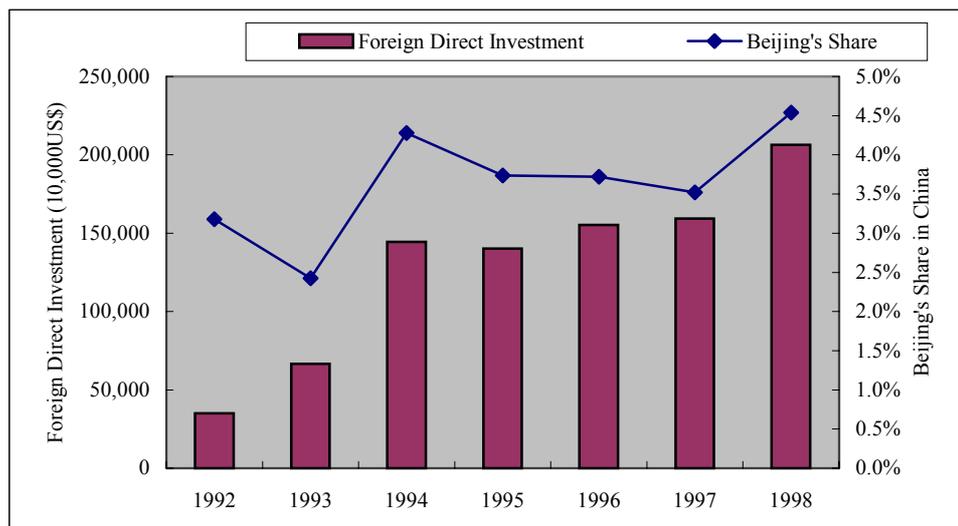


Figure 7: Foreign Direct Investment in Beijing City

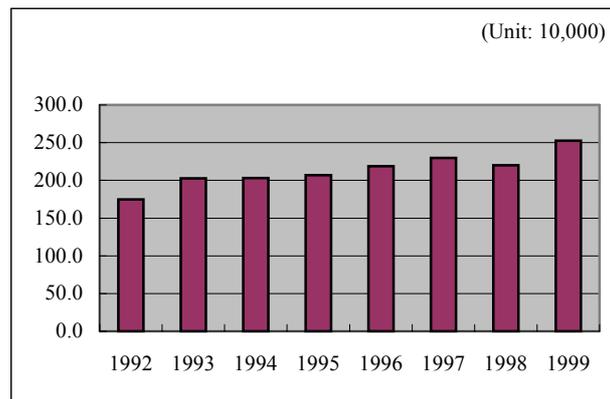


Source: Beijing Yearbook of Statistics.

3) Trends of the Number of Tourists

At the time of appraisal, the increase in tourist numbers and thereby earnings from the tourism, and the activation of international exchange such as international conferences and international events were expected to be produced as an effect of this project. The following is the trends in the number of tourists who visited Beijing City. Except in 1998 when it decreased slightly, the number has been consistently increasing. The improvement of the airport would contribute to the increase in tourist numbers in the future.

Figure 8: Trends of the Number of Tourists Coming to Beijing City



Source: Beijing Yearbook of Statistics.

Note: Sum of tourist numbers from foreign countries and Special Administrative Regions of the People's Republic of China.

4) Environmental Aspect and Relocation & Resettlement of Residents

In general, refuse disposal facilities (incinerators), sewage disposal facilities and noise can be pointed out as sources of environmental problems at an airport. This airport regularly monitors the data of BOD and COD at sewage disposal facilities. In addition, in August 2001, the environment section of the City of Beijing monitored sewage disposal and refuse disposal. In any case, there has been no report from the airport on such problems as an excess of standard.

This project mainly intended to expand the terminal and not to expand runways, and thus did not cause any relocation and resettlement of residents. However, Chinese Government had planned to relocate and resettle residents nearby as a measure for noise, prior to implementation of this project. As far as noise of night flights is concerned, there is no report of taking-off and landing during the 12:00pm and 5:00am period except when flights have been delayed. Resident resettlement around the runway had not been completed when the field survey was undertaken. The airport indicated insufficient funds and delaying consensus with residents for the reasons.

2.5 Sustainability

1) Organization and Maintenance System

At the time of the field survey, the maintenance of the project was undertaken by the Beijing Capital International Airport Holding Company.⁸ The total number of staff of the Beijing Capital International Airport Holding Company was 4,509 (full-time staff 2,949) in August 2001. Although there is a movement towards streamlining the company, the company maintains basically the same staff numbers since the previous year. In comparison with the previous year of 2000, the number of managerial staff declined from 70-80 to 50 while that of ordinary workers increased.

The maintenance system of the terminal facilities (including bridges) was carried out by Bowei Equipment Repair Holding Company (387 staff), which was founded by the Beijing Capital International Airport Holding Company. General maintenance was undertaken internally, and some of the machinery maintenance were out-sourced. It can be considered that the maintenance system of terminal facilities has been well maintained.

These points will support organizational and managerial sustainability and self-sufficient

⁸ Beijing Capital International Airport Holding Company was incorporated into a stock company but 65 % of the stocks were owned by the state-managed enterprise. Supervision, previously by the Civil Aviation Authority China, will be transferred to the City Government of Beijing.

development from a viewpoint of the organization and maintenance.

2) Finance

The consolidated profit and loss statements of the Beijing Capital International Airport Holding Company are as follows. Compared with 1999, its profit after tax in 2000 remains high though it declined. As long as this high profitability is ensured, financial sustainability and self-sufficient development will exist.

Table 9: Statement of Profit and Loss (Tentative Translation)

Item	Unit: thousand yuan	
	2000	1999
Revenue related to airport operation ¹⁾	1,300,450	1,121,316
Revenue not related to airport operation ²⁾	527,997	315,875
Gross sales	1,828,447	1,437,191
Business tax	(65,057)	(38,747)
Net sales	1,763,390	1,398,444
Expenses	(1,129,278)	(610,856)
Operating profit	634,112	787,588
Non-operating profit and loss ³⁾	107,371	(128,882)
Profit before tax	741,483	658,706
Profit after tax	482,904	495,365

Source: Beijing Capital International Airport holding Company.

Note: 1) Charges for passengers passing through the airport and service charges for taking-off and landing.

2) Revenues from duty free shops and other retail shops, in-flight meal and tenant charges

3) Receipt and payment of interests, and foreign exchange profit and loss.

Comparison of Original Plan and Actual Scope

Item	Plan ¹⁾	Actual ¹⁾
Project Scope		
Passenger Terminal Building	240,000 m ²	240,000 m ²
Cargo Terminal Building	12,000 m ²	12,000 m ²
Apron	464,000 m ² , 41 spots	464,000 m ² , 41 spots
Office Building	9,000 m ²	9,000 m ²
Staff Quarters	65,000 m ²	65,000 m ²
Parking Area	170,000 m ²	167,000 m ²
Infield Road	Road and viaduct	Road and viaduct
Special Vehicles	14 sets	14 sets
Utility Facilities	Heat supply facilities, water supply and sewage & waste treatment facilities, and fuel supply facilities	Heat supply facilities, water supply and sewage & waste treatment facilities, and fuel supply facilities
Consulting Services	172M/M	30.7M/M
Implementation Schedule	January, 1994 ~ October, 1999	January, 1994 ~ September, 1999 (completed one month earlier than planned)
Project Cost		
Foreign Currency	30,000 million yen	22,877million yen
Local Currency	41,121 million yen (= 3,427million yuan)	90,480 million yen ³⁾ (= 6,334 million yuan) ³⁾
Total	71,121 million yen	113,357million yen ³⁾
ODA Loan Portion	30,000 million yen	22,877 million yen
Exchange Rate	1yuan = 12.0yen (1996: the second phase appraisal)	1yuan = 14.3yen ⁴⁾ (1996: data from the Chinese Counterparts)

Note:

- 1) Project scope based on the plan at the second phase project appraisal. Project costs are those of the revised plan at the third phase project appraisal.
- 2) Actual amount of this project (the ODA loan).
- 3) Among project costs, actual amount of local currency is based on data from the Chinese counterpart. It includes costs for re-expansion construction funded by the Chinese counterpart itself after the completion of this project.
- 4) At the third phase appraisal in 1996, the exchange rate of 12.0 yen to 1 yuan was applied. But the Chinese counterparts used the rate of 14.3 yen to 1 yuan from the end of 1995.