

Figure A6.9.6 Traffic Conditions and Existing Layout of Deum Kor Market Taxi-bus Terminal



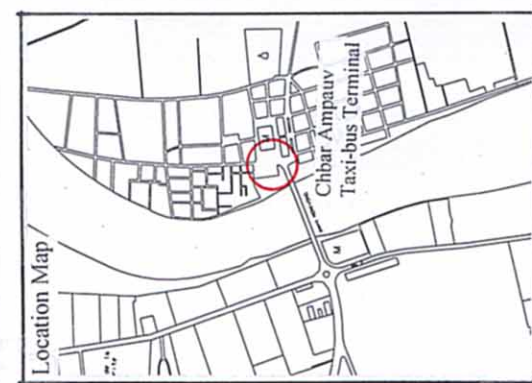
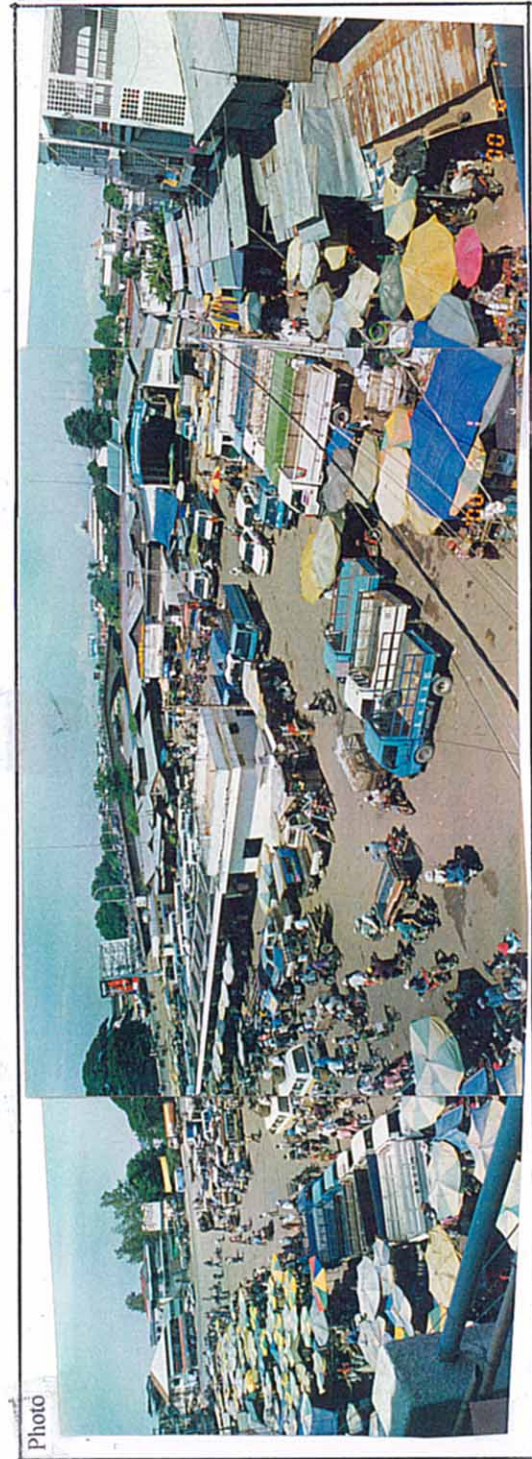
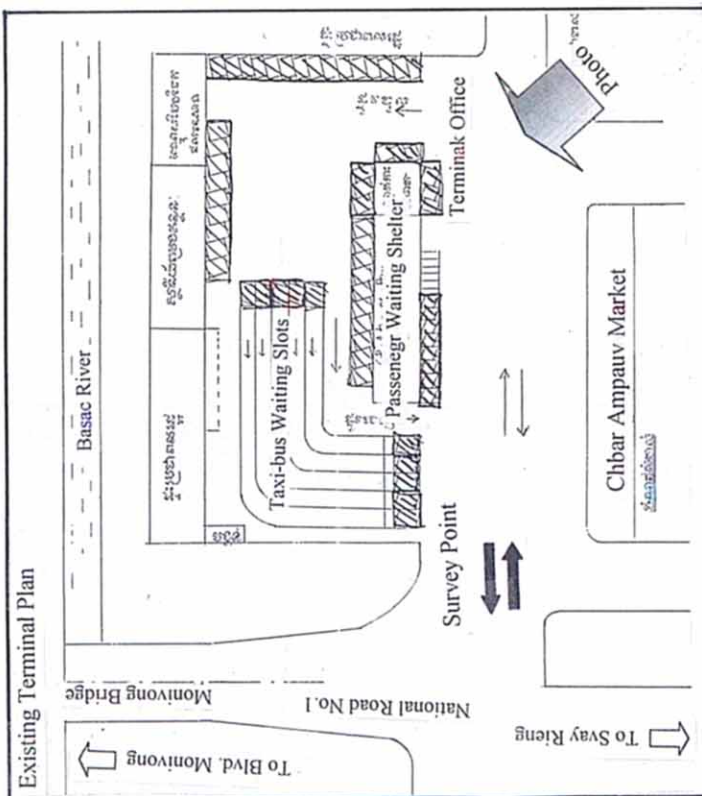
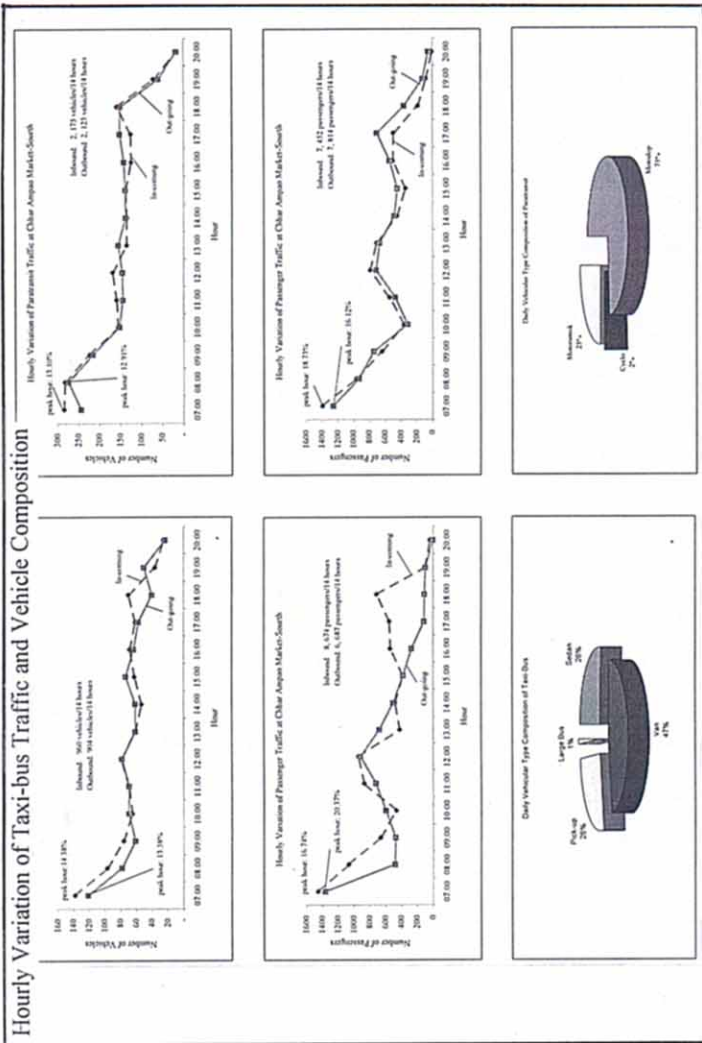
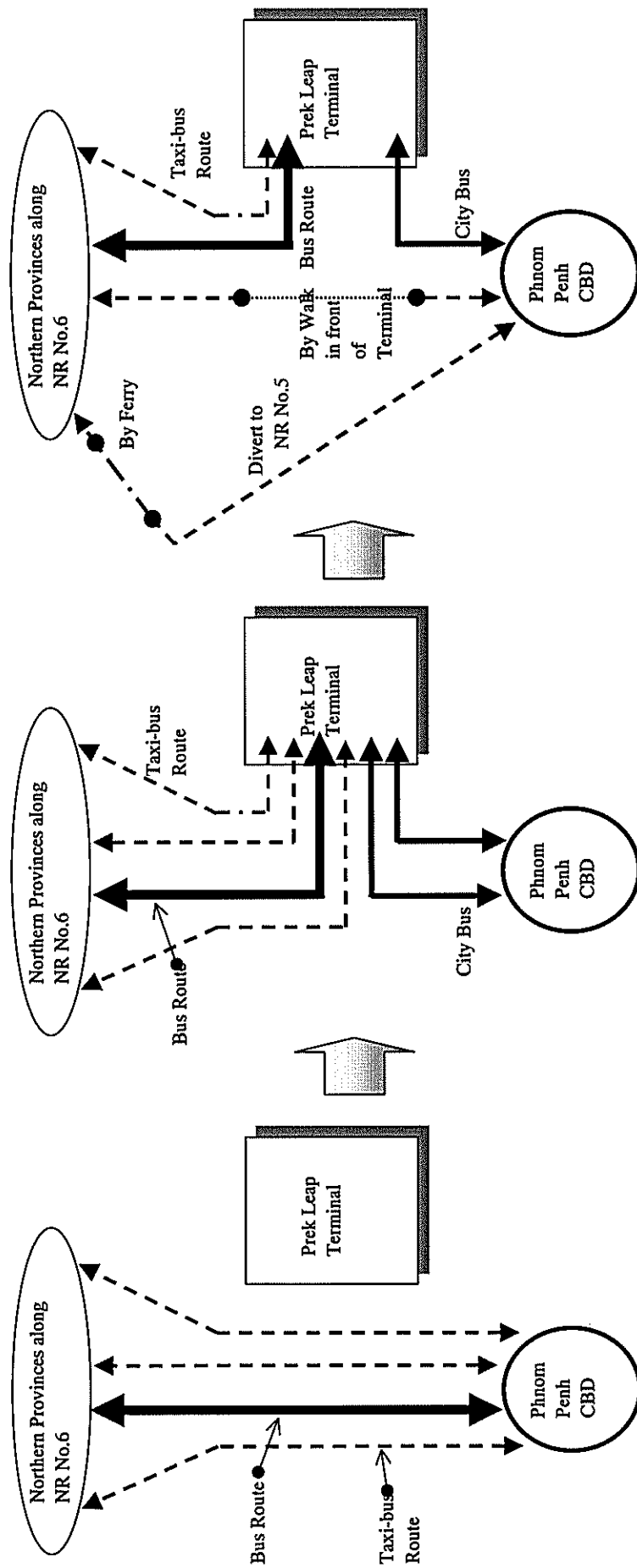


Figure A6.9.7 Traffic Conditions and Existing Layout of Chba Ampao Market Taxi-bus Terminal



Current Status

Rerouting Plan

Before Rerouting

Figure A6.9.8 Rerouting of Bus and Taxi-bus along National Road No.6A

## **A6.9.4 Para-transit Operation**

### **(1) Motodop**

There is a very high number of entrants into para-transit operation primarily because of the following two reasons: (1) there is no need to get a license; and (2) it is the easiest way to earn money to support families of low-income level. Increase of motodop units in operation is one of the most serious factors leading to the traffic congestion in Phnom Penh. Therefore, it is necessary to control entry into motodop operation by adopting some measures, such as requiring registration of motodops and wearing of uniform, which is being proposed by the Department of Public Works and Transport in the Municipality of Phnom Penh.

### **(2) Cyclo**

Nowadays, use of the cyclo as urban public transportation mode is definitely unsuitable because of speed concern and its influence on the other transportation modes on thoroughfares. However, the historical importance and uniqueness of the cyclo should be taken into account. It is therefore recommended that cyclos be allowed to ply designated areas, such as tourist zones, in Phnom Penh in the future.

### **(3) Motorumok**

The main public transport system in the suburban area in Phnom Penh is the motorumok. Usually, the motorumok serves rural roads, especially trunk roads such as the two-way, two-lane National Roads in the suburban area. It is considered dangerous to operate along these National Roads due to the faster and much heavier truck traffic. This observation has been borne out by the motorumok driver interview survey in which one of the serious problems of motorumok operation pointed out by respondents is the accidents along trunk roads.

Therefore, it is necessary to introduce mass public transport modes along trunk roads in suburban area, such as bus instead of motorumok. The motorumok can serve as feeder transport mode to the bus in the future.

## **A6.9.5 Persons Who Engaged in Public Transport Sector**

Most of those who engage in the public transport business in Phnom Penh belong to the low-income group, and it is a main source of income for them. Based on the results of surveys conducted by the Study Team, such as the public transport owner/driver survey, passenger interview survey, interview to bus companies, and traffic count survey, and on data from the Department of Public Works and Transport in the Municipality of Phnom Penh, the estimated number of persons who are directly involved in public transport service is 37,400, as shown in Table A6.9.2. This figure reaches 8.8% of the 423,747 economically active persons in Phnom Penh. It is necessary to take countermeasures against the excess personnel, those that have limited skills for other types of work, resulting from the expected restructuring of the public transport industry in the future, such as the introduction of new public transportation system and the rearrangement of para-transit sector.

Table A6.9.2 Estimated Number of Persons Directly Engaged in the Public Transport Sector

Mode		Total No. of Person	Driver		Others	Remarks
			*A	*B		
Bus	Ho Wha Genting	250	65		185	See Note 1
	G.S.T. Express Bus	25	12		13	
	D.H. Cambodia Group	15	6		9	
	Total	290	83		207	
Taxi-bus	Central Market					See Note 2
	Chba Ampao	393	319	217	74	
	Deum Kor	681	553	376	129	
	Olympic	105	85	58	20	
	Chark Angrae	136	110	75	26	
	Choam Chau	94	76	52	18	
	Chrang Chamres+ Preak Leap	1,247	1,011	688	235	
	Total	2,656	2,155	1,466	501	
Motodop	33,000	33,000		6,098	See Note 3	
Cyclo	1,203			1,203		
Motorumok	227			227		
Grand Total	37,376					

Note

- 1: All data from bus company
- 2: Data in column '\*A' is from DPWT, MPP. Figures in column 'Driver' include non-registered drivers.  
Figures in column 'Others' are taxi-bus owners.
- 3: 33,000 drivers are estimated by JICA study team (Refer to Chapter 6)

Source: \*A: Data from DPWT, MPP

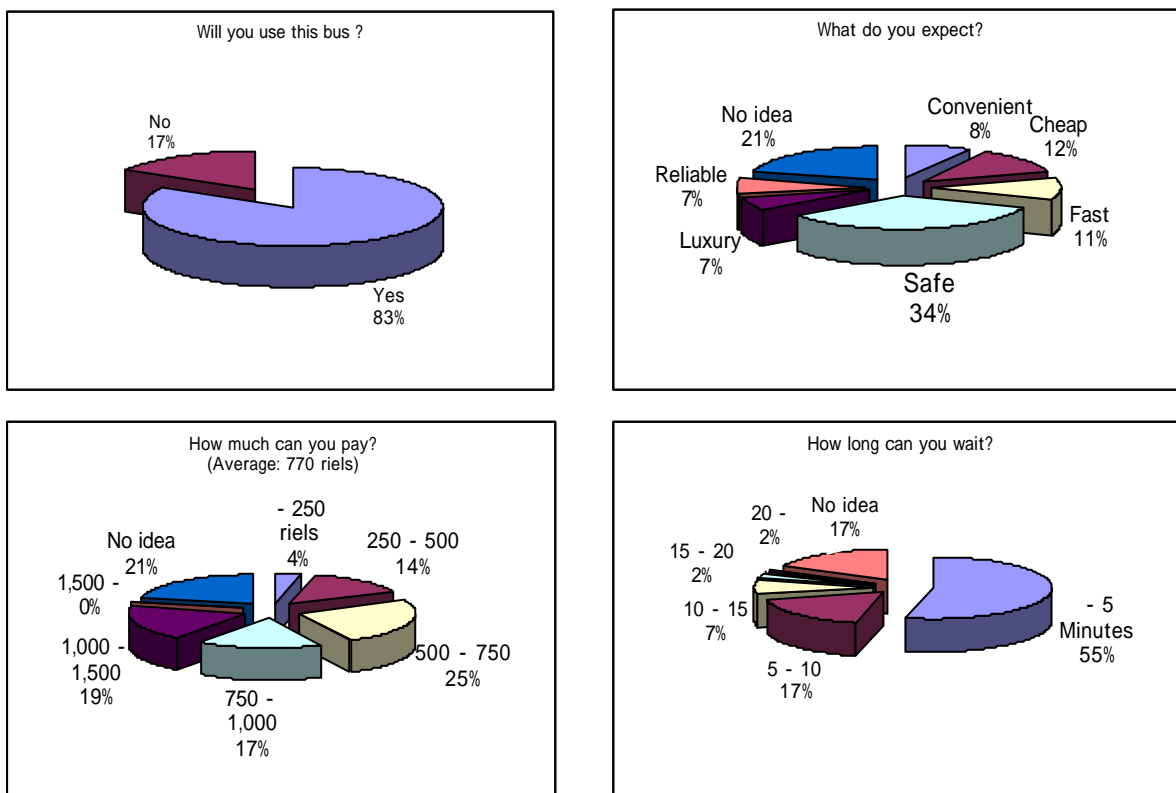
\*B: Statistics of vehicles in Phnom Penh by DPWT, MPP

(Result of household interview since 26 October 1998 to 03 March 1999)

### A6.9.6 The Case of Introduction of City Bus Service

The opinion survey on the probability of introduction of city bus system, which was introduced before, was conducted with the existing public transport users as interviewees. The survey focused not only on the introduction of a proper public transportation system but also on the influence of the system to the urban environment of Phnom Penh, which has about a million population. From this survey, approximately 83% of the total interviewees took a positive attitude toward the introduction of a city bus system and had high expectations of safety for this mode; and the acceptable level of fare is 770 riels, as shown in Figure A6.9.9. Incidentally, current public transport users pay approximately 800 and 750 riels for motodop and cyclo fare, respectively. In terms of waiting time for a city bus, most of the interviewees replied that they are not willing to wait more than 5 minutes. Roughly judging from this survey result, it can be said that the city bus system is deemed to be highly safe and a fare of approximately 800 riels is acceptable, but an operation of more than 5-minute interval seems to be considerable.

Figure A6.9.9 Summary of Opinion Survey on Introduction of City Bus Service  
 Number of samples: 2,019 = 600 (Bus) + 900 (Para-transit) + 519 (Intercity)



## A6.9.7 Inter-city Public Transport Operation

### (1) Railway

Considering the operation of its 648-km railway network, the 430 thousand annual passengers and 270 thousand tons of annual freight it carries, and comparing these figures with those of other countries, as shown in Table A6.9.4, it may be said that the railway system in Cambodia has a low utilization rate. The large inter-city public transport demand, in particular, has been diverted from the south line to the long distance bus system along National Road No.4, which is faster and more comfortable. There are discussions for effective utilization of the railway system in the future, such as limited freight railway system and urban rail system, with the urban extension towards the western suburbs of the Phnom Penh Metropolitan Area.

Table A6.9.4 Comparison Table of Railway Activities in Asian Counties

Country	Population (000)	Area (km <sup>2</sup> )	Per Capita GNP (US\$)	Railway Length (km)	Daily Passenger	Daily Freight (tons)	Passenegr per km	Freight per km
Japan (JR Group)	125,931,533	377,835	32,350	19,755	20,150,000	153,000	1,020	7.74
China	1,236,914,658	9,596,960	750	52,767	3,300,000	3,850,000	63	72.96
Cambodia	11,339,562	181,040	260	638	1,200	100	2	0.16
Indonesia	212,941,810	1,919,440	640	6,458	137,000	24,700	21	3.82
Malaysia	20,932,901	329,750	3,670	1,652	18,000	8,800	11	5.33
Myanmar	47,305,319	678,500	700	3,154	171,000	6,300	54	2.00
Philippines	77,725,862	300,000	1,050	512	3,200	170	6	0.33
Thailand	60,037,366	514,000	2,160	3,728	224,000	17,000	60	4.56
Bangladesh	127,567,002	144,000	350	2,892	247,000	8,200	85	2.84
India	984,003,683	3,287,590	440	61,976	10,400,000	873,000	168	14.09
Pakistan	135,135,195	803,940	470	8,775	227,000	32,000	26	3.65
Sri Lanka	18,933,558	65,610	810	1,453	164,000	4,100	113	2.82

Source: 'Asian Railways' publishes in 1990 except for Cambodia

## (2) River Ferry

In recent years, there has been a continuing shift from river transport to vehicular transport as the main mode of travel. However, for the people living along the river in Phnom Penh and adjoining provinces, the river transport has remained as the most important public transportation mode, even if the demand is not so much.

Environmental concerns have been raised as regards water transport, such as river transport, not only in the developed countries but also the developing countries, most of which are currently faced with serious environmental problems, especially from the transportation system. River transport, however, is more environmentally kind than other modes of transport. But in the case of Phnom Penh, most of its river transportation facilities, such as ferryboats and jetties, are in very poor condition. Therefore, it is important to improve not only these facilities but also the feeder transport system between the ferry and trunk public transport for the convenient access to/from the riverside area and for the improvement of urban environment in Phnom Penh.

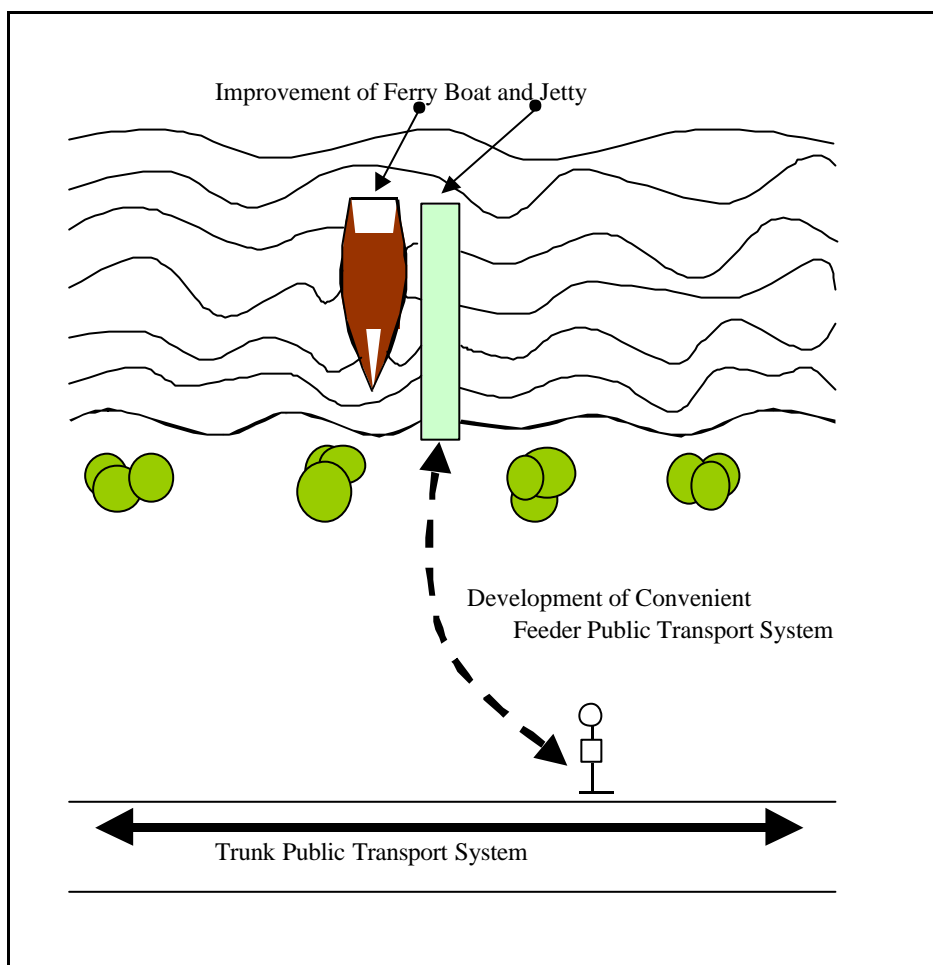


Figure A6.9.11 Environment-Friendly and Convenient River Transport

## (3) Air Transport

Current access mode to/ from the Pochentong International Airport is limited to private cars and airport taxis only. It is necessary to prepare adequate access modes considering future air traffic demand and convenience to airport users. Meanwhile, the target year and the expected annual demand of the expansion, which is ongoing, are year 2005 and 1.7 million passengers, respectively. There are some alternatives concerning the long-term airport plan, such as expansion of existing airport and/or construction of new international airport located 30 km from the CBD in Phnom Penh, in order to meet the future air traffic demand beyond the year 2005.