# Overview on Transport Infrastructure Sectors in the Kingdom of Cambodia





**January 2008**

**Infrastructure and Regional Integration**

**Technical Working Group**

**(IRITWG)**

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## Preface

The Infrastructure and Regional Integration Technical Working Group (IRITWG) is proud to publish the "Overview on Transport Infrastructure Sectors in the Kingdom of Cambodia".

This document has been made with the following purpose:

(1) To prepare a strong basis for the future planning in the transport infrastructure sectors.
(2) To share the basic information and the overall picture concerning the transport infrastructure sectors among the related organizations, development partners, etc.

This is a huge step forward since the document had been disclosed to the public in the name of the IRITWG, the joint meeting between the Cambodian organization and the development partners. Not by a particular development partner as it was in the past.

IRITWG is thankful to all stakeholders for their effort in helping realize this document, and we hope that the planning and implementation of the transport infrastructure will go on smoothly from now on and the sustainable development of Cambodia would be achieved.

< Chair of the IRITWG >

H.E. Sun Chanthol
Minister
Ministry of Public Works and Transport

< Coordinator of the IRITWG >

Mr. Kazuhiro Yoneda
Resident Representative
JICA Cambodia Office

Mr. Arjun Goswami
Country Director
Cambodia Resident Mission
Asian Development Bank

## Instruction

The information on each sectors are based primarily on the below documents. We also added the situation of the authorization process in the Cambodian government for each plan that was made by the input of the development partners.

### 1. Roads

The "Study on the Road Network Development in the Kingdom of Cambodia, Final Report Volume II Main Text, October 2006, JICA." Hereinafter referred to as "JICA study".

Ministry of Public Works and Transport (MPWT) is preparing the final presentation document of this road master plan that will be sent to the Council of Ministers soon for approval.

### 2. Railway

The project on "Restructuring of the Railway in Cambodia, Strategy Report and Action Plan, ADB," "Restructuring of the Railway in Cambodia, Traffic Forecast and Financial Analysis Report, April 2006, ADB," and "GMS Rehabilitation of the Railway in Cambodia, Final Report, November 2006, ADB."

There is no master plan for railway at this moment.

### 3. Maritime and Ports

The "Study on the Master Plan for Maritime and Port Sectors in Cambodia (Interim Report), March 2007, JICA.

MPWT is now preparing the final presentation document of this master plan on maritime and ports that will be sent to the Council of Ministers soon for approval.

### 4. Inland Waterway

The "Master Plan for Waterborne Transport on the Mekong River System in Cambodia, Final Report, September 2006, Belgian Technical Cooperation.

MPWT is now preparing the final presentation document of this master plan on inland waterway that will be sent to the Council of Ministers soon for approval.

### 5. Air Transportation

The "Project Profiles and Progress (Civil Aviation)", Prepared by SSCA.

There is no master plan for air transportation at this moment.

### 6. Tourism

The "Statistical Yearbook 2005 and Tourism Statistical Report", December 2005.

IRITWG is not responsible for making a master plan for tourism. We place the information on tourism since it has a lot of effect to transport infrastructure.

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# 1. Roads

## (A) Present State of Roads in Cambodia

The road network in Cambodia is composed of arterial roads that are managed by the Ministry of Public Works and Transport (MPWT) and rural roads managed by the Ministry of Rural Development (MRD). Pavement and Bridge status are as below.

Table 1-1 Road network length (as of 2006)

| Road Classification | Length (rate) | No. of Bridges (Length) | Management Authority |
|---|---|---|---|
| 1-digit national roads | 2,097.280.km (5.31%) | 589 (17,643m) | MPWT |
| 2-digit national roads | 2,704.737km (6.85%) | 698 (15,710m) | |
| Provincial roads | 6,692.440km (16.95%) | 904 (16,309m) | |
| Rural roads | 28,000 km (70.89%) | N/A | MRD |
| **Total length** | **39,494.457 km (100.0%)** | **2,121 (51,917m)** | |

*Source: LRCS Inventory, 2006 and MRD Inventory2006*

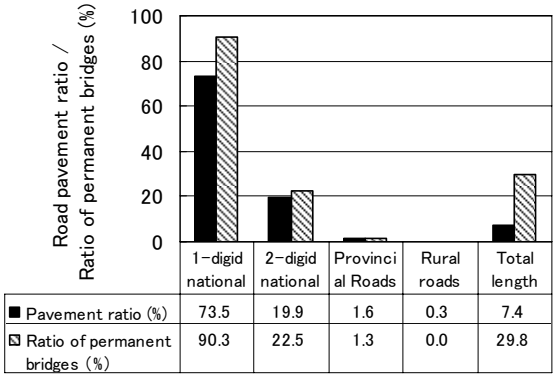



*Fig. 1-1 Road pavement ratio and ratio of permanent bridges (as of 2004)*

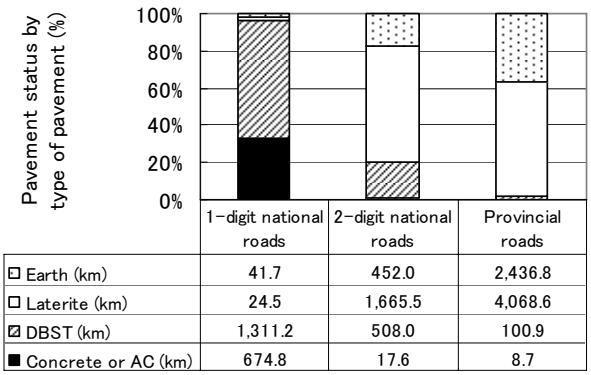



*Fig. 1-2 Pavement status by road classification (as of 2004)*

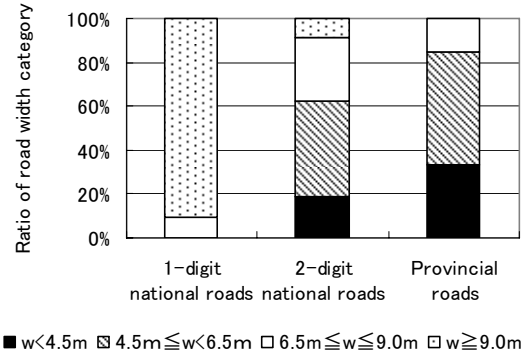
*Source: Fig. 1-1 and 1-2 both based on JICA study, LRCS Inventory, 2004 and MRD Inventory*

Table 1-2 Pavement status of 1-digit national roads (unit: km)

| No | AC | DBST | DBST (fair) | Laterite | Earth | Total | Remarks |
|---|---|---|---|---|---|---|---|
| NR.1 | 79.1 | 87.1 | 0.0 | 0.0 | 0.0 | 166.2 | Includes 56 km Section (On-going) |
| NR.2 | 57.8 | 14.3 | 47.9 | 0.0 | 0.0 | 120.0 | Includes 51.7 km Section (Completed) |
| NR.3 | 12.8 | 54.3 | 135.2 | 0.0 | 0.0 | 202.3 | Includes 32.8 km Section (Completed) |
| NR.4 | 214.2 | 0.0 | 0.0 | 0.0 | 0.0 | 214.2 | |
| NR.5 | 59.8 | 346.7 | 0.0 | 0.0 | 0.0 | 406.5 | Includes 47.3 km Section (On-going) |
| NR.6 | 190.0 | 223.4 | 0.0 | 0.0 | 0.0 | 415.5 | Includes 98.2 km Section (On-going) |
| NR.7 | 61.1 | 402.4 | 0.0 | 0.0 | 0.0 | 463.5 | Includes 192.8 km (On-going ; New alignment shorter than existing) |
| NR.8 | 0.0 | 0.0 | 0.0 | 22.4 | 41.7 | 109.08 | New 1-digit national road (On-going) |
| Total | 674.8 | 1128.2 | 183.0 | 24.5 | 41.7 | 2,097.280 | |
| | 32.9% | 55.0% | 8.9% | 1.2% | 2.0% | 100% | |

*Source: As-built Drawings, Design Drawings and Tender Drawings Collected by JICA Study Team*

Road widths: All 1-digit national roads have at least two lanes, while only 37.8% of 2-digit national roads and 15% of provincial roads have two or more lanes.




*Source: JICA study, LRCS Inventory, 2004 and MRD Inventory*

Note: For 1-digit national roads, data for w≥9.0m is actually that for w≥10.0m, and 6.5m≤w≤9.0m, that for 6.5m≤w≤10.0m

*Fig. 1-3 Road lengths according to road widths (as of 2004)*

International roads: A portion of national roads No. 1 and No. 5 make up a part of Asian Highway 1; national roads No. 4, 6 and 7 make up a part of Asian Highway 11; national roads No. 48, 3 and 33 make up a part of Asian Highway 123; and national roads No. 66 and 78 make up a part of the arterial highway of the Greater Mekong Sub-region (GMS).

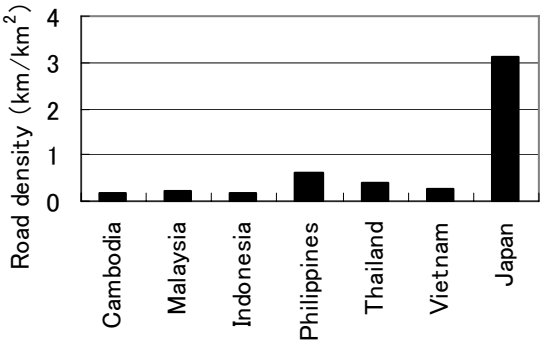
*Table 1-3 International roads in Cambodia*

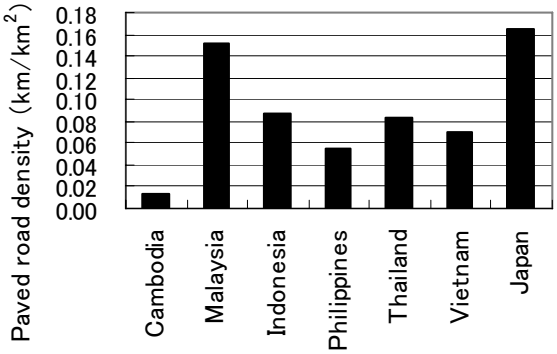
| Name of international road | | | Transit Cities | Length (km) | International Road Classification | | | | | Missing Links | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GMS roads | Asian Highway | ASEAN Highway | | | Primary | Class I | Class II | Class III | Below Class III | | |
| Central Subcorridor | AH1 | AH1 | Poipet-Sisophon - Phnom Penh - Svay Rieng -Bavet (NR.1, NR5) | 572.4 | - | - | 11.2 | 561.2* | - | - | *103km upgraded to Class II (Japan [56km] and ADB [47km]) |
| Inter-Corridor Link | AH11 | AH11 | Sihanouk Ville - Phnom Penh - Kampong Cham - Stung Treng - Trapengkreal (NR4, NR6, NR7) | 755.0 | - | | 364 | 391.0** | - | - | **Includes 193km on-going Road Rehabilitation of NR.7 (China Fund) |
| Southern Coastal Subcorridor | - | AH123 | Cham Yeam - Koh Kong - Viel Rinh - Sre Ambel - Kampot - Lork (NR48, NR3, NR33) | 163.3 | - | - | 2.4 | 8.7 | 152.2 | - | NR.48 funded by Thailand NR 33 funded by ADB |
| Northern Subcorridor | - | - | Siem Reap - Preah Vihear - Stung Treng - Rattanak Kiri - O Yadav Border (NR66, NR78) | 464.9 | - | - | - | - | 464.9 | - | NR.78 funded by Vietnam. |
| Total Length (km) | | | | 1,955.6 | - | - | 377.6 | 960.9 | 617.1 | - | |

*Source: JICA Study & MPWT Updated*

Note; International road classifications are as follows (ASEAN STANDARD):
[Primary] Roads used exclusively by automobiles / AC or concrete pavement
[Class I] Highways with 4 or more lanes / AC or concrete pavement
[Class II] Roads with 2 or more lanes / AC or concrete pavement
[Class III] Narrow 2-lane roads / DBST pavement

Comparison with neighboring countries: Roads in Cambodia differ little compared to roads in neighboring countries in terms of road length per area, but the delay of Cambodia's road development is evident in the length of paved roads in Cambodia.




*Source: Figs. 1-4 and 1-5 both prepared based on JICA study*

*Fig. 1-4 International comparison of road density* *Fig. 1-5 International comparison of paved road density*

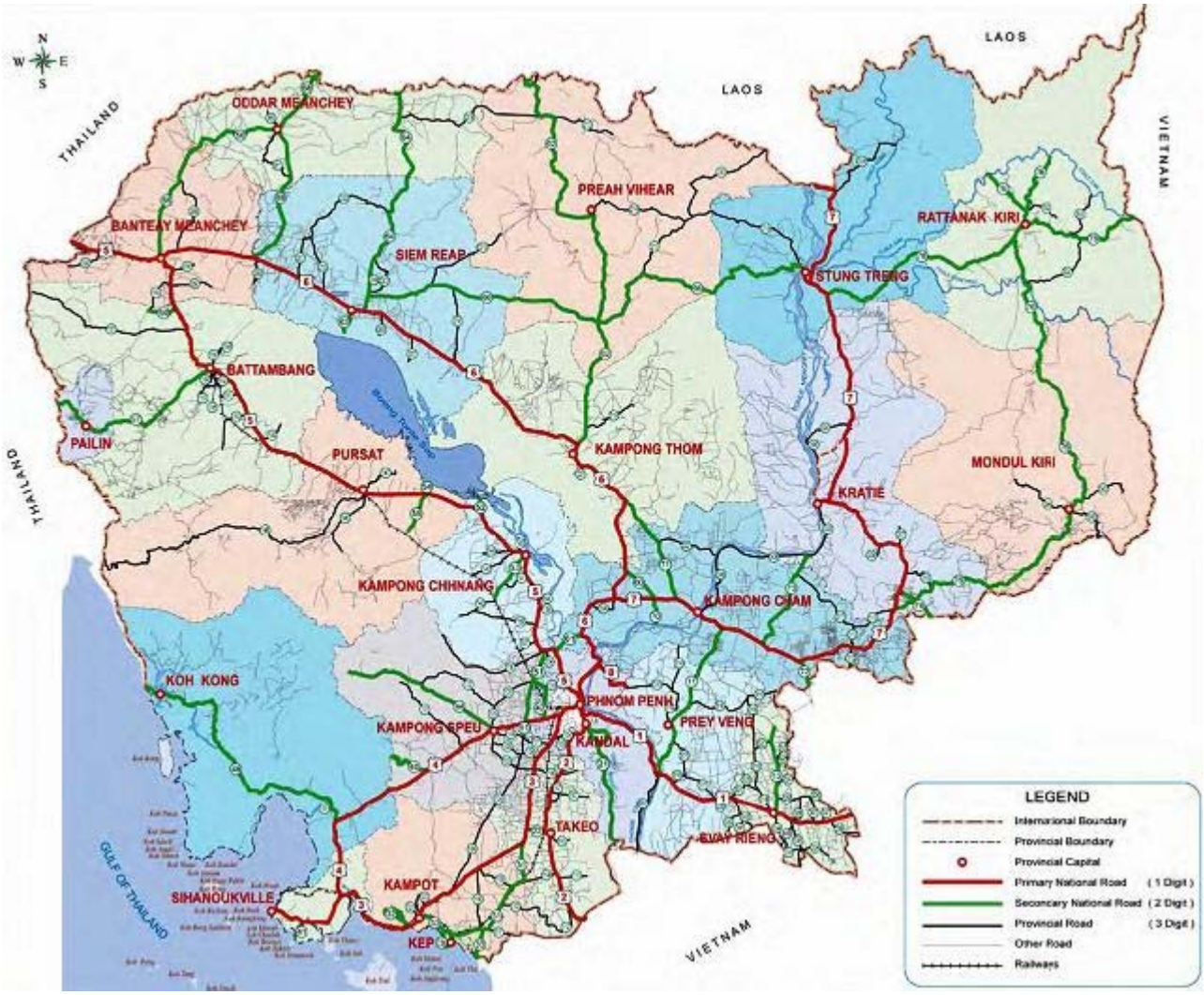
Figure 1-6 illustrates the total population compared to the total road length and people living in rural area to the rural road length.

| | | | | |
|---|---|---|---|---|
| **Road** | | | | |
| 1-digit NR | | 2,097.28 km | | |
| 2-digit NR | | 2,704.37 km | | |
| Prov. Road | | 6,692.44 km | | |
| | Rural Road (L1) | 28,000.00 km | | |
| | NR and PR (L2) | 11,494.09 km | | |
| | Total length (L3) | 39,494.09 km | | |
| Land areas (A) | | 181,035 sqkm | | |
| **Population, P (x1000)** | | (in 2005) | PxA | (PxA)^0.5 |
| Total population | | 13,800.00 mill. | 2498283000 | 49982.83 |
| Rural | | 11,592.00 mill. | | |
| Urban | | 2,208.00 mill. | | |
| **Road density and Road density index** | | | | |
| Road density, RD=L/A (km/sqkm) | | 0.218 | (all roads) | |
| | | 0.063 | (National & Provincial roads) | |
| | | 0.155 | (Rural roads) | |
| Road density Index, RDI | | 0.790 | (all roads) | |
| RDI=L/(PxA)^0.5 | | 0.230 | (National & Provincial roads) | |
| | | 0.560 | (Rural roads) | |
| Total population/Total road length | | 350.00 Person/km | | |
| Rural population/Rural road length | | 414.00 Person/km | | |

*Fig 1-6 Population by Road Density* *Source: World Bank*

## (B) Road Development Project

Figs. 1-7 shows the national network in Cambodia and Fig.1-8 shows the status of assistance by Development Partners




*Source: JICA study, MPWT materials*

*Fig. 1-7 National Road Network in Cambodia*

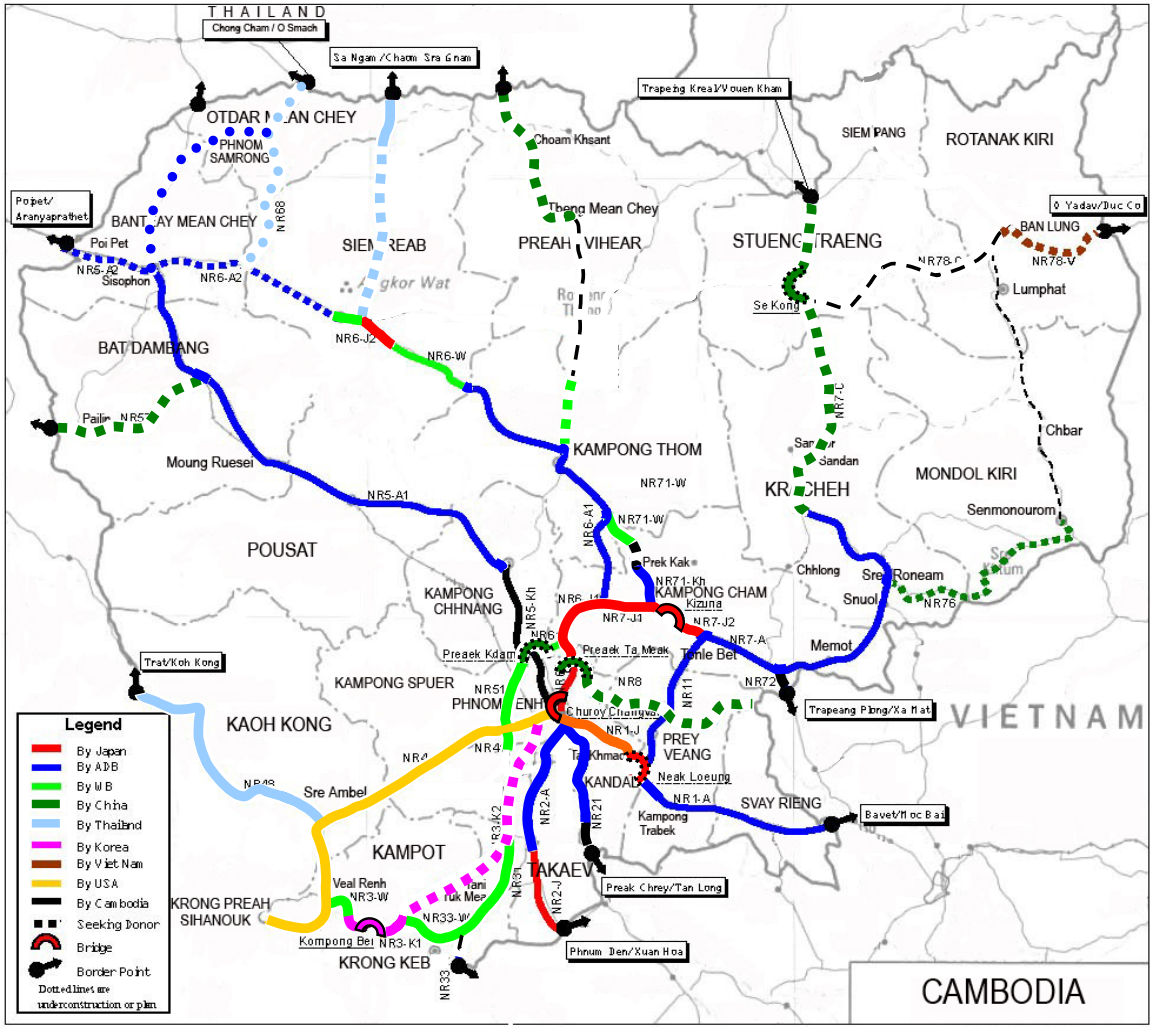



*Fig. 1-8 Status of Assistance by Development Partners*

**Table. Major Road Improvement Projects in Cambodia**

| No. | Road | Org. | Cost (Mill$) | length (km) | Section | Year Start | Year End | Status |
|---|---|---|---|---|---|---|---|---|
| 1 | NR1-J | Japan | 80.0 | 56.0 | Phnom Penh - Neak Loeung | 2005 | 2010 | AC |
| | NR1-A | ADB | 26.7 | 107.0 | Neak Loeung - Bavet | 1999 | 2004 | DBST |
| 2 | NR2-A | ADB | 1.1 | 63.0 | Takhmau - Takeo (flood restoration) | 1994 | 1996 | DBST |
| | NR2-J | Japan | 12.0 | 51.6 | Takeo - Phnum Den | 2003 | 2006 | AC |
| 3 | NR3-A | Korea | 50.0 | 147.0 | Phnom Penh - Kampot | 2007 | 2010 | DBST |
| | NR3-K | Korea | 21.3 | 32.7 | Kampot - Trapang Ropaou | 2004 | 2007 | DBST |
| | NR3-W | WB | 6.5 | 21.5 | Trapang Ropaou - Veal Renh | 2002 | 2004 | DBST |
| 4 | NR4 | USA | 24.0 | 224.0 | Chaom Chao - Sihanouk Ville | 1994 | 1996 | AC |
| 5 | NR5-Kh | Cambodia | 9.0 | 92.0 | Phnom Penh - Kampong Chhnang | 2001 | 2003 | DBST |
| | NR5-A2 | ADB | 28.0 | 261.0 | Kampong Chhnang - Sisophon | 2001 | 2004 | DBST |
| | NR5-A2 | ADB | 12.7 | 48.0 | Sisophon - Poipet | 2006 | 2009 | AC |
| 6 | NR6A | Japan | 28.0 | 44.0 | Phnom Penh - Thnal Kaeng | 1993 | 1995 | AC |
| | NR6-J1 | Japan | | | Thnal Kaeng-Skun | 1996 | 1999 | AC |
| | NR6-A1 | ADB | 6.0 | 92.0 | Skun-Kampong Thom | 2002 | 2004 | DBST |
| | NR6-W | WB | 16.0 | 65.0 | Kampong Thom- Prey Romeas | 2002 | 2006 | DBST |
| | NR6-J2 | Japan | 12.0 | 17.5 | Siem Reup- Rolous | 2000 | 2001 | AC |
| | NR6-A2 | ADB | 30.0 | 100.0 | Sisophon - Siem Reap | 2006 | 2009 | AC |
| 7 | NR7-J1 | Japan | | | Skun - Kompong Cham | 1996 | 1999 | AC |
| | NR7-J2 | Japan | 19.0 | 10.2 | Kompong Cham - Chob | 2001 | 2003 | AC |
| | NR7-A | ADB | 17.0 | 128.0 | Chob - Kratie | 2003 | 2005 | DBST |
| | NR7-C | China | 62.8 | 187.0 | Kratie - Trapeang Kriel | 2004 | 2008 | DBST |
| 8 | NR8 | China | 71.5 | 109.0 | Preak Ta Mak - Anlong Chrey | 2007 | 2010 | AC |
| 11 | NR11 | ADB | 9.5 | 90.4 | Neak Loeang - Tnal Kheng | 2001 | 2004 | DBST |
| 21 | NR21-A | ADB | 2.2 | 57.5 | Saang-Kaoh Thum | 2002 | 2004 | DBST |
| | NR21-Kh | Cambodia | | 17.4 | Kaoh Thum-Chrey Thum | | | |
| 31 | NR31 | WB | | 51.7 | | 2003 | 2005 | DBST |
| 33 | NR33-W | WB | | 39.8 | | 2002 | 2005 | DBST |
| | NR33 | - | | 17.0 | Kompong Trach - Kompot | | | |
| 48 | NR48 | Thai | 21.7 | 151.3 | Koh Kong - Sre Ambel | 2004 | 2007 | DBST |
| 51 | NR51 | WB | 5.8 | 38.0 | Tnal Toteung-Vang Chas | 2003 | 2004 | DBST |
| 56 | NR51 | ADB | | | Bantay Meanchchey-Samraong | | | |
| 57 | NR57 | China | 45.0 | 103.0 | Batambang - Thai Border | 2007 | 2009 | DBST |
| 62 | NR62 | WB | | | K.P Thom- Preahvihear Border | | | |
| | NR62 | - | | | K.P Thom Border - Tbaeng Mean Chey | | | |
| | NR62 | China | 57.8 | 116.0 | Tbaeng Mean Chey - Prasat Preahvihear | 2008 | 2011 | DBST |
| 64 | NR64-T1 | Thai | 3.1 | 18.0 | Choam Sa Ngam - Anlong Veng | 2004 | 2006 | DBST |
| | NR64-T2 | Thai | 32.5 | 131.0 | Anlong Veng - Siem Reup | 2006 | 2009 | DBST |
| 68 | NR68 | Thai | 35.0 | 113.0 | O Smach - Kralagn | 2008 | 2010 | |
| 71 | NR71-A | ADB | 1.0 | 33.0 | Troeng-Chamkleu | 2001 | 2004 | DBST |
| | NR71-Kh | Cambodia | | | | | | |
| | NR71-W | WB | | | | | | |
| 72 | NR72 | Cambodia | | 13.5 | Ponhea Kreak- Smach | 2005 | 2006 | |
| 76 | NR76 | China | 51.9 | 127.0 | Snoul - Sen Monorom | 2007 | 2010 | |
| 78 | NR78-V | VN | 25.0 | 69.6 | Bang Lung - O Yadav | 2007 | 2009 | DBST |
| | NR78 | - | | | O Pong Moan - Bang Lung | | | |
| PP Ring Road | | - | | | | | | |

**Table. Major Bridge Constructions in Cambodia**

| Name of Bridge | Cost (Mill$) | length (km) | Location | Year Start | Year End |
|---|---|---|---|---|---|
| Kizuna | 60.0 | 1.3 | Kompong Cham, NR7 | 1996 | 2001 |
| Churoy Changvar | 27.0 | | Phnom Penh, NR6A | 1992 | 1993 |
| Neak Loeung | 74.0 | | Kandal, Svay Rieng, NR1 | 2009 | 2014 |
| Preaek Ta Meak | 43.5 | 1.1 | Prey Veng, NR8 & NR6A | 2007 | 2009 |
| Preaek Kdam | 28.9 | 1.0 | Phnom Penh, NR5 & NR61 | 2007 | 2009 |
| Kompong Bei | | | Kampot, NR3 | 2004 | 2007 |
| Se Kong | | | Stoeng Treng, NR7 | 2004 | 2008 |

*Source: JICA Cambodia Office*

### (C) Present State of Road Traffic

Number of registered automobiles: The number of registered automobiles has been increasing at a rate of about 10% each year, and has exceeded 480,000 automobiles in 2004. Approximately 70% of all registered automobiles are motorcycles.

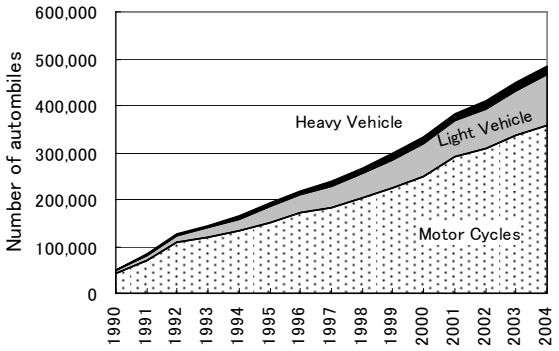



*Fig. 1-9 Trends in number of registered automobiles*

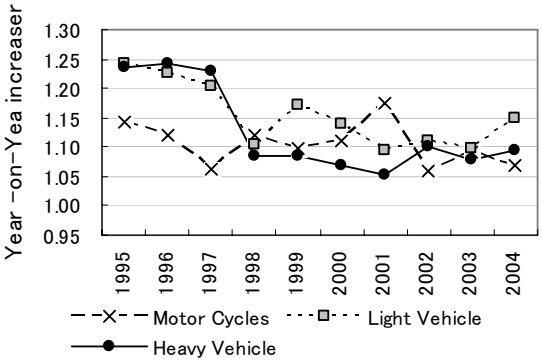


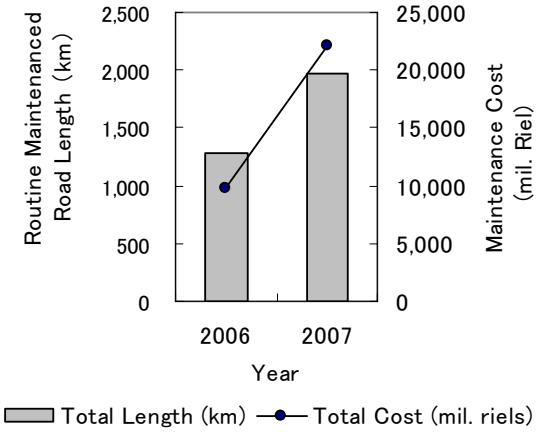

*Fig. 1-10 Year-on-year increase in number of registered automobiles*

*Source: Figs. 1-9 and 1-10 both prepared based on Statistical Yearbook 2006. National Institute of Statistics*

### (D) Road Maintenance

Property management: The Ministry of Public Works and Transport manages 1-digit national roads, 2-digit national roads, and provincial roads, which equal a total length of 11,494.457 km, combined, and exceed US$700 million in net asset value.

Budget: The road maintenance and management budget for 2007 is more than double that of 2006, indicating an increasing awareness in the significance of road maintenance.




*Source: 2006 and 2007 Routine Maintenance Program*

*Fig. 1-11 Trends in routine maintenance programs*

*Table 1-4 2007 Routine Maintenance Program*

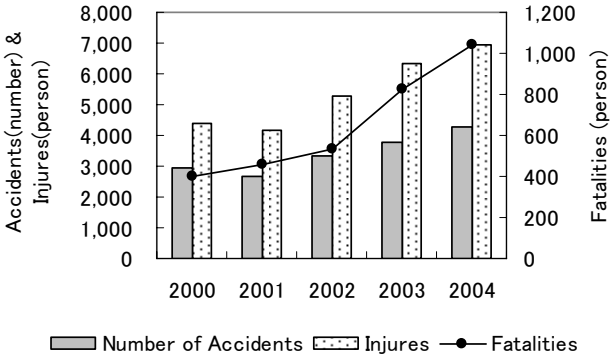
| Item | Maintenance Road Length | Maintenance Cost | | Unit Cost (US$/km) |
|---|---|---|---|---|
| | | ($10^3$ Riels) | (US$) | |
| National Road | 1,730.59 km | 19,730,359 | 4,812,283 | 2,780 |
| Urban Road | 238.46 km | 2,330,902 | 568,513 | 2,384 |
| Total | 1,969.05 km | 22,061,261 | 5,380,796 | 2,732 |

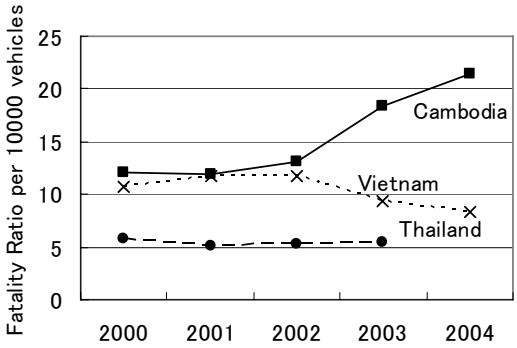
*Source:2006 and 2007 Routine Maintenance Program*

### (E) Road Safety

Number of automobiles owned: There has been an increasing number of people owning an automobile in the past few years.

Traffic accident fatalities per 10,000 automobiles: There are 21.5 fatalities per 10,000 automobiles in Cambodia. This figure is extremely large compared to 8.34 in Vietnam, 5.41 in Thailand (2003 value) and 0.95 in Japan.



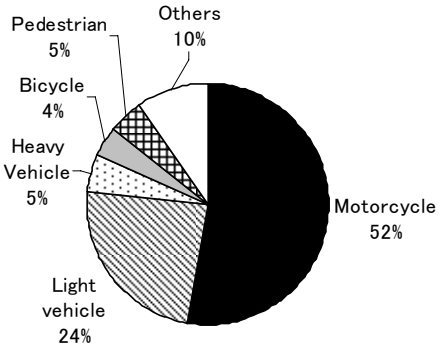



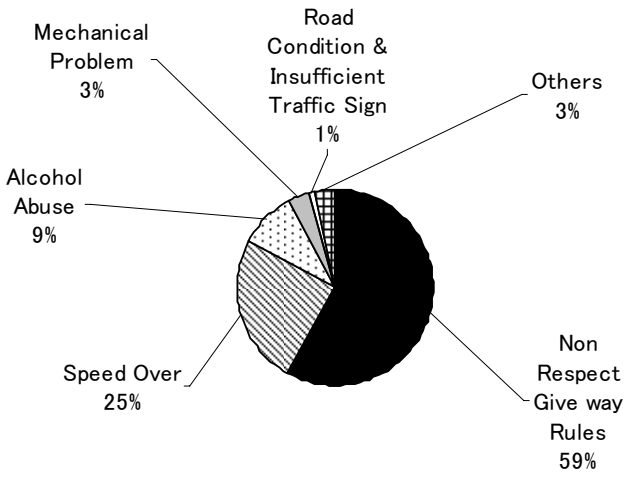

*Source: JICA study, Land Transport Department and Road Safety Committee, MPWT*

*Fig. 1-12 Trends in traffic accidents in Cambodia*

*Fig. 1-13 Comparison of traffic accident fatalities*

Occurrence of road accidents by type of road user




*Source: JICA study, Land transport Department, MPWT*

*Fig. 1-14 Number of accidents by type of road user (2004)*

*Fig. 1-15 Causes of road accidents (2004)*

# 2. Railway

## (A) Present State of Railways in Cambodia

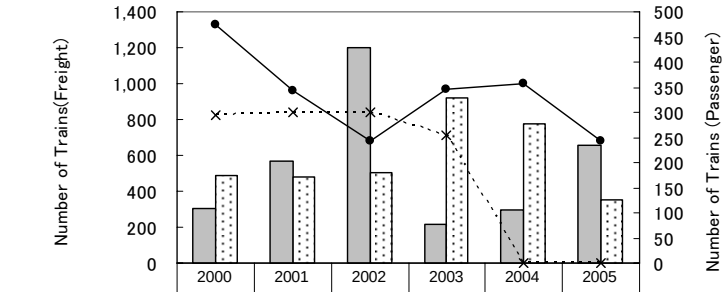
*Table 2-1 Situation of Railway Facilities*

| Item | Northern Line (NL) | Southern Line (SL) |
|---|---|---|
| Length (km) | 385 (including 48km missing link) | 264km |
| Section | Phnom Penh - Pursat - Battambang - Mongkol Borey - Poipet | Phnom Penh - Takeo - Kampot - Sihanoukville |
| Station (number) | 49 (Current Operation 7) | 27 (Current operation 5) |
| Construction Year | 1929 - 1942 | 1960 - 1969 |

*Source: RRC, Restructuring of the Railway in Cambodia, Strategy Report and Action Plan, ADB, GMS Rehabilitation of the Railway in Cambodia, Final Report (Volume ), November 2006, ADB.*

## (B) Present State of Railway Use

Train service has begun to decrease in 2002. In 2005, a maximum of 3 trains per day were operated on the Northern Line (NL) and only 1 train per day on the Southern Line (SL).

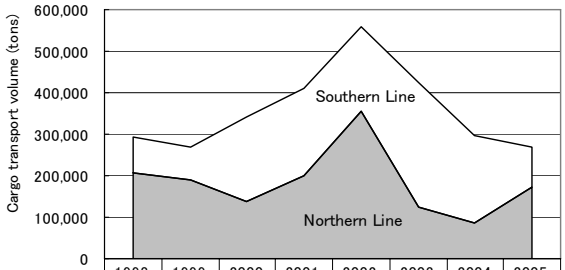



| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| NL-Freight | 306 | 567 | 1,202 | 216 | 294 | 654 |
| SL-Freight | 485 | 482 | 504 | 919 | 779 | 351 |
| NL-Passenger | 474 | 344 | 242 | 345 | 356 | 244 |
| SL-Passenger | 294 | 301 | 299 | 255 | 0 | 0 |

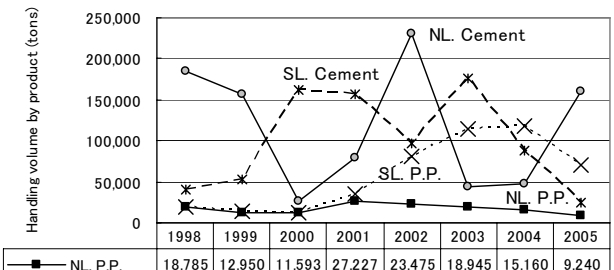
*Source: GMS Rehabilitation of the Railway in Cambodia, Final Report (volume 1), November 2006, ADB TA6251-REG (Source: RRC)*

*Fig. 2-1 Number of trains operated in a year by Cambodia National Railway*

The volume of rail cargo transport began to decrease after reaching 557,000 tons in 2002. The NL mainly carries cement, and while the SL mainly carries cement and petroleum products.




| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|
| Southern Line | 86,151 | 79,122 | 202,672 | 208,251 | 203,653 | 300,692 | 211,865 | 94,795 |
| Northern Line | 208,010 | 189,268 | 137,484 | 201,452 | 353,654 | 122,508 | 85,352 | 174,005 |




| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|
| NL. P.P. | 18,785 | 12,950 | 11,593 | 27,227 | 23,475 | 18,945 | 15,160 | 9,240 |
| NL. Cement | 184,065 | 157,080 | 26,625 | 78,525 | 230,566 | 43,674 | 48,140 | 159,430 |
| SL. P.P. | 20,080 | 14,000 | 12,874 | 35,095 | 80,815 | 114,894 | 117,971 | 69,880 |
| SL. Cement | 40,746 | 52,360 | 161,490 | 156,553 | 96,975 | 175,662 | 87,836 | 24,915 |

*Source: Prepared based on Restructuring of the Railway in Cambodia, Strategy Report and Action Plan, ADB and GMS Rehabilitation of the Railway in Cambodia, Final Report (Volume II), November 2006, ADB.*

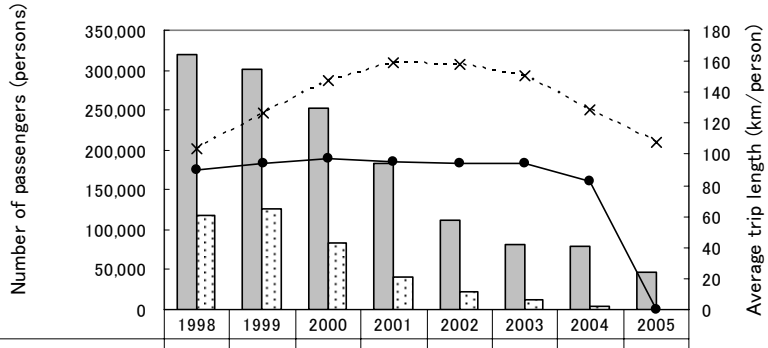
*Fig. 2-2 Trends in rail cargo transport volume*

*Fig. 2-3 Trends in transport volume by product*

The number of railway passengers has drastically decreased after 2000. In 2005, it was around one-tenths the number of the peak period in 1998.

The Southern Line has even terminated the operation of passenger trains in 2004.

On the Northern Line, the number of round-trip services has been reduced from once a day to once a week, due to the decrease in the number of passengers. Today, a train composed of both cargo and passenger cars operates between Phnom Penh and Battambang.

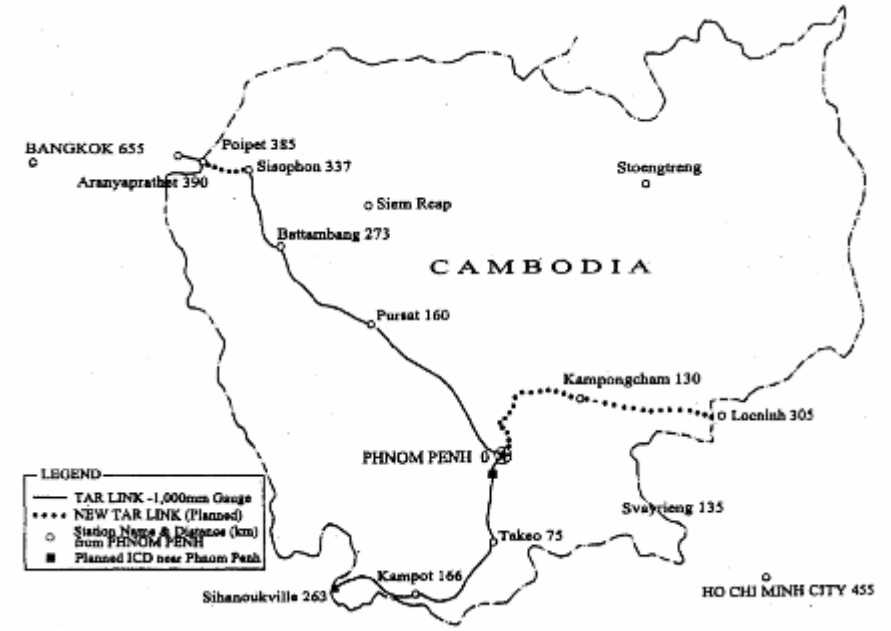



| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|
| NL-Passengers | 320,038 | 302,040 | 253,226 | 182,892 | 110,999 | 81,909 | 78,567 | 47,768 |
| SL-passengers | 117,563 | 127,171 | 82,919 | 41,023 | 22,061 | 11,825 | 3,286 | 11 |
| NL-Trip Distance | 103.8 | 126.5 | 147.4 | 159.0 | 158.4 | 150.7 | 128.6 | 108.2 |
| SL-Trip Distance | 90.5 | 94.3 | 97.7 | 95.3 | 94.3 | 93.9 | 82.2 | 0.0 |

*Source: Prepared based on Restructuring of the Railway in Cambodia, Strategy Report and Action Plan, ADB and GMS Rehabilitation of the Railway in Cambodia, Final Report (Volume II), November 2006, ADB (Source: RRC).*

*Fig. 2-4 Trends in the number of railway passengers and the average length of their trips*

(Reference) Pan-Asian Railway framework




*Source: Report of the Overseas Information Gathering Survey by the Asia-Pacific Region H Group (Cambodia), March 2004, Japan Transport Cooperation Association*

Fig. 2-5 Route of the Pan-Asian Railway Concept in Cambodia

## 3. Maritime and Ports

### (A) Present State of Ports

Among the ports in Cambodia, only Sihanoukville Port and Phnom Penh Port handle international containers. These two ports are controlled by the central government, but are financially independent, autonomously-managed ports. Sihanoukville Port was constructed in 1961 with French assistance. Today, Japan is aiding the development of a 400m-long and 11m-deep container terminal along the quay, slated for completion in 2008. Phnom Penh Port has a 300m-long pier where container cargo is handled. It also handles cargo using a passenger pontoon and a private petroleum jetty. Other ports besides the two autonomous ports are extremely small ports, with the exclusion of the petroleum jetty in Sihanoukville city and Oknha Mong Port (private).

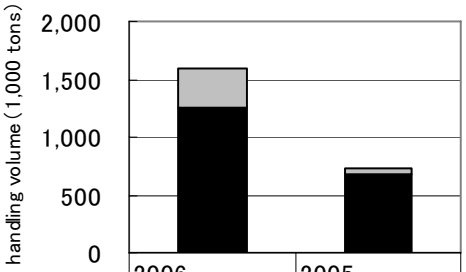
Table 3-1 Status of facilities at Sihanoukville Port and Phnom Penh Port

| Port Name | Channel | Berth | | | | | Other Facilities & Remarks |
|---|---|---|---|---|---|---|---|
| | | Name | Structure | Length | Depth | Year | |
| Sihanoukville Port | [South Channel ]<br>Length 5.5km<br>Depth: 8.4m<br>Width: 80-100m<br><br>[North Channel]<br>Length 1km<br>Depth: 10m<br>Width: 150-200m | No. 1-2 | Jetty | 290m | 9.0m | 1960 | [Warehouses]<br>5 buildings, 36,600m$^2$<br>[Container yard]<br>3 yards, 110,000m$^2$ |
| | | No. 3-4 | Jetty | 290m | 9.0m | 1960 | |
| | | No. 5-7 | - | 350m | 7.5m | 1969 | |
| | | No. 8-9 | - | 400m | 9.0m | 2006 | |
| | | (Private Facilities) | | | | | - |
| | | Sokmex | Jetty | 200m | 9.2m | - | |
| | | - | Pontoon | 110m | 6.5m | - | |
| | | - | Stone Wharf | 53m | 4.2m | - | |
| Phnom Penh Port | Maintenance dredging (at Chaktmok)<br>Depth: 7m<br>Width: 60m<br>Length: 1,290m<br>Volume: 159,648m$^3$ | Port No.1 | | | | | [Container Yards]<br>2 yards for laden containers, 1 yards for empty containers |
| | | No.1 | Jetty, apron width 20m | Total 300m | - | - | |
| | | No.2 | | | - | - | |
| | | No.3 | | | - | - | |
| | | Port No.2 (for passengers) | | | | | 1km downstream from Port No.1 |
| | | No.5b | Pontoon | - | - | - | |
| | | No.5c | Pontoon | - | - | - | |
| | | (Private Facilities) | | | | | Between 4 and 13km upstream from Phnom Penh |
| | | - | 8 facilities for oil berges | Ship size from 600-1,000DWT | | - | |

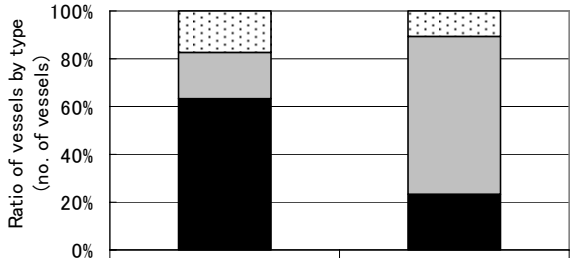
*Source: Prepared based on the Study on the Master Plan for Maritime and Port Sectors in Cambodia, March 2007, Japan International Cooperation Agency (JICA).*

### (B) Status of Port Usage

Sihanoukville Port has a cargo handling volume of approximately 1.6 million tons, and Phnom Penh Port, approximately 740,000 tons. Both ports have been steadily expanding their handling volume, and have shown particularly remarkable increase in the handling volume of containers. Sihanoukville Port accommodated approximately 700 vessels in 2005, and Phnom Penh Port 1,070 vessels (mostly small barges). Container vessels account for 60% of vessels entering Sihanoukville Port. On the other hand, tanker barges account for 65% of vessels in Phnom Penh Port. At Sihanoukville Port, the development of a special economic development zone of 70ha that is integral with the port is underway with Japanese aid, in conjunction with the development of a container terminal. Six offshore oil fields are being developed off the coast of Sihanoukville Port. As a supply base for their development, materials and equipment for trial exploration and drilling are stored and supplied at Sihanoukville Port.




| | 2006 Sihanoukville | 2005 Phnom Penh |
|---|---|---|
| Export | 331 | 57 |
| Import | 1,256 | 680 |

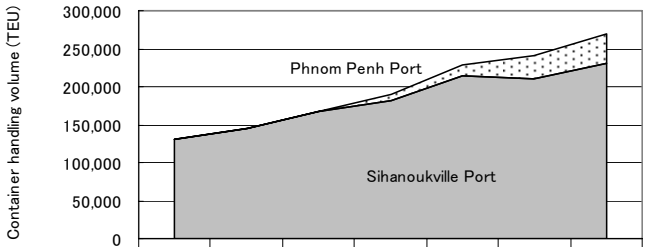



| | Sihanoukville | Phnom Penh |
|---|---|---|
| GC Ship | 121 | 114 |
| Tanker | 132 | 708 |
| Container | 433 | 254 |

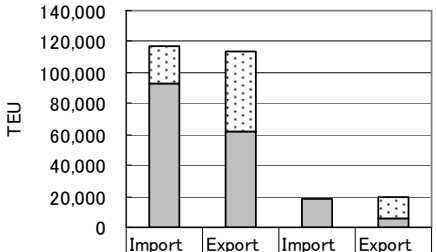
*Source: Created based on the Study on the Master Plan for maritime and Port Sectors in Cambodia, March 2007, JICA (Source: SPA & PPAP).*

Fig. 3-1 Annual cargo handling volume at international trade ports in Cambodia (2005)

Fig. 3-2 Number of vessels entering the two international trade ports in Cambodia per year (by type of vessel, 2005)




| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|
| Phnom Penh Port | 0 | 0 | 746 | 7,630 | 15,526 | 30,281 | 38,233 |
| Sihanoukville Port | 130,435 | 145,292 | 166,638 | 181,286 | 213,916 | 211,141 | 231,036 |

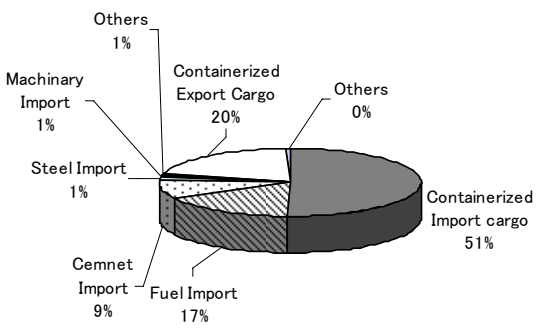


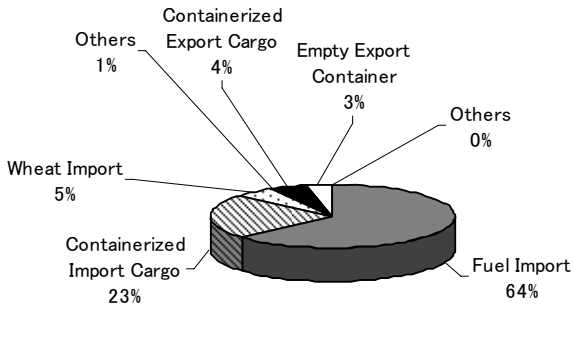

| | Sihanoukville Port | | Phnom Penh Port | |
|---|---|---|---|---|
| | Import | Export | Import | Export |
| Empty | 23,931 | 51,610 | 477 | 14,316 |
| Laden | 93,155 | 62,340 | 18,099 | 5,341 |

*Source: Figs. 3-3 and 3-4 prepared based on the Study on the Master Plan for Maritime and Port Sectors in Cambodia, March 2007, JICA (Source: SPA & PPAP).*

Fig. 3-3 Trends in container cargo volume at international trade ports in Cambodia

Fig. 3-4 Ratio of empty and laden containers (2006)




*Source: Fig. 3-5 and 3-6 prepared based on the Study on the Master Plan for Maritime and Port Sectors in Cambodia, March 2007, JICA (Source: SPA & PPAP).*

Fig. 3-5 Composition of items handled at Sihanoukville Port (2006)

Fig. 3-6 Composition of items handled at Phnom Penh Port (2005)

# 4. Inland Waterway

## (A) Present State of River Navigation

Cambodia's navigable inland waterways measure a total length of 1,750km. The Mekong mainstream accounts for 30% of the total, the Tonle Sap River 15%, the Bassac River 5%, and other tributaries 50%. Year-round navigation is possible through 580km.

Table 4-1 Maximum navigable vessel size in the Mekong River basin by section

| | River Section | Length (km) | Year-round navigation possible? | Vessel Size Restriction (DWT) | |
|---|---|---|---|---|---|
| | | | | Low Water | Mean-high water |
| Mekong Mainstream | Golden Triangle - Luang Prabang | 362 | Yes - but is limited by rocky passages and strong currents | | 60 |
| | Luang Prabang - Vientiane | 425 | Yes - but requires small boats and skilled pilots during dry season | 15 | 60 |
| | Vientiane - Savannakhet | 459 | Yes | 200 | 500 |
| | Savannakhet - Pakse | 261 | No "high water" only navigation possible | Less than 10 | 50 |
| | Pakse - Khinak | 151 | Yes | 50 | |
| | Khinak - Veune Kham | 14 | No - navigation noy possible at any time due Khone Falls | | |
| | Veune Kham - Stung Treng | 30 | Yes - with size limitations at low water | 15 | 50 |
| | Stung Treng - Kratie | 128 | Yes - with size limitations at low water | 20 | 50 |
| | Kratie - Kampong Cham | 121 | Yes | 80 | 400 |
| | Kampong Cham - Phnom Penh | 100 | Yes - navigable by sea-going ships | 2,000 | |
| | Phnom Penh - Junction of Vam Nao Pass | 154 | Yes - navigable by sea-going ships | 3,000-4,000 | 5,000 |
| | Vam Nao pass - South China Sea | 194 | Yes - navigable by sea-going ships | 3,000-4,000 | 3,000- 4,000 |
| Bassac River | Phnom Penh - Junction of Vam Nao Pass | | Yes - but not possible by sea-going ships | 20 | 50 |
| | Vam Nao Pass - South China Sea | 188 | Yesu - navigable sea-going ships | 5,000 | 5,000- 6,000 |
| Tonle Sap (Cambodia) | Phnom Penh - 5km South of Kampong Chhnang | 94 | Yes - navigable by sea-going ships | 1,000 | 2,000 |
| | Kampong Chhnang - Chhnoc Trou | 46 | Yes - with size limitations at low water | 20 | 150 |
| | Chhnoc Trou - Chong Kneas109 | 109 | Yes - with size limitations at low water | 20 | 150 |
| Mekong Delta Waterways | Dense network of man-made canals, natural creeks and Mekong tributariesa, with a total navigable length of 4785 km | 4,785 | Yes - Vessel size restrictions within this network vary from 10-300DWT | | |
| | Se-kong - Mekong tributary (Lao PDR and Cambodia) | | Yes - this waterway is navigable between the Lao PDR and Cambodia, providing an alternative international transit corridor to the Mekong which is non-navigable through the Khone Falls | | |

*Source: Master Plan for Waterborne Transport on the Mekong River System in Cambodia, Final report (Volume 1 Main Report, Draft), September 2006, Belgian Technical Cooperation*


*Source:Master Plan for Waterborne Transport on the Mekong River System in Cambodia, Final report (Volume 1 Main Report, Draft), September 2006, Belgian Technical Cooperation*

Fig. 4-1 Maximum navigable vessel size in the Mekong River basin

Table 4-2 Maximum navigable vessel size in the Mekong River basin

| | Mekong Mainstream up to Phnom Penh | Mekong River, Phnom Penh to Kampon Cham | Tonle Sap, Phnom Penh to Siem Reap |
|---|---|---|---|
| Petroleum | Tanker barges<br>1,000 DWT / 4.0m draught | - | - |
| Container | Barges<br>1,900 DWT (120TEU) / Draught 3.8m | - | - |
| Generak Cargo | Barges<br>1,500 DWT / Draught 4.0m | - | - |
| Tourist Cruise Vessels | 50-65 passengers<br>Draught 1.5m | - | 50-65 passengers<br>Draught 1.5m |
| Speedboats | 25 passengers<br>shallow draught | - | 25 passengers<br>shallow draught |

*Source: Master Plan for Waterborne Transport on the Mekong River System in Cambodia, Final report (Volume 1 Main Report, Draft), , September 2006, Belgian Technical Cooperation*

### (B) Present State of Inland Water Transportation

A speedboat carries passengers between Phnom Penh and Siem Reap one round trip per day, during the seven months from August to February. The number of passengers using inland water transportation decreased from 129,000 in 2002 to 37,000 in 2005. 100-120DWT small ships are used for domestic cargo transportation in Phnom Penh Port, and carry mainly food items, such as fresh produce, and packed cement. Cargo handling volume has been greatly decreasing yearly, and has dropped to an estimated 5,700 tons in 2005.

# 5. Air Transportation

## (A) Present State of Airports

There are 11 airports in Cambodia, but regular flights are only available at four airports: the Phnom Penh and Siem Reap International Airports and the Sihanoukville and Rattanakiri Airports. The Société Concessionnaire de l'Aéroport (SCA) has been undertaking operational management of PHNOM PENH International Airport since 1995, SIEM REAP International Airport since 2001, and SIHANOUKVILLE Airport since 2006.These are under BOT Agreements between the Royal of Cambodia and SCA. All other airports are managed by the State Secretariat of Civil Aviation (SSCA) of the Kingdom of Cambodia.

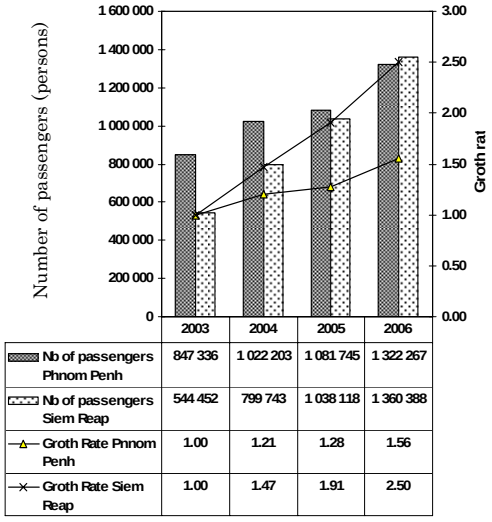
Table 5-1 Present status of airports in Cambodia

| Airport Name | Runway (LxW, m) | ILS | Area (ha) | Owner/Managing Entity | Open/ Close | Remarks |
|---|---|---|---|---|---|---|
| international Airport | | | | | | |
| Phnom Penh | 3000x45/Aspahlt/4D | ☆ | 387.00 | RGC/SCA | Open | ILS for RWY23 only |
| Siem Reap | 2550x45/Asphalt/4C | - | 197.00 | RGC/SCA | Open | ILS will come into service early 2008 |
| Domestic Airport | | | | | | |
| Sihanoukville | 1795x34 /Asphalt/3C | - | 123.84 | RGC/SCA | Open | Reopened January 15, 2007 |
| Kampong Chhnang | 2400x45/Concrete/4C | - | 2011.00 | RGC (Army) | *Close* | The area includes military use land |
| Battambang | 1600x34/Bitumen/3C | - | 128.68 | RGC | Open | Open Regular and Charter |
| Stung Treng | 1300x20-29/Bitumen /3C | - | 112.50 | RGC | Open | |
| Rattanakiri | 1300x30/Laterite/3C | - | 54.57 | RGC | Open | Under ABD Project |
| Koh Kong | 1300x30/Laterite/3C | - | 125.31 | RGC | Open | Open Regular and Charter |
| Mondulkiri | 1500x30/Laterite/3C | - | 46.27 | RGC | *Close* | Temporary close July 20, 2007 |
| Preah Vihear | 1400x30/Laterite/3C | - | 165.24 | RGC | *Close* | |
| Krache | 1200x30/Laterite/3C | - | 112.50 | RGC | *Close* | |

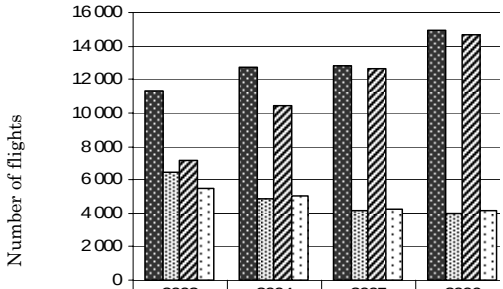
*Source: Prepared based on Project Profiles and Progress (Civil Aviation). (replaced with the latest data)*

## (B) Present State of Airport Usage

The usage of international airports has been increasing yearly owing to the increase of tourist demand.




| | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|
| Nb of passengers Phnom Penh | 847 336 | 1 022 203 | 1 081 745 | 1 322 267 |
| Nb of passengers Siem Reap | 544 452 | 799 743 | 1 038 118 | 1 360 388 |
| Groth Rate Phnom Penh | 1.00 | 1.21 | 1.28 | 1.56 |
| Groth Rate Siem Reap | 1.00 | 1.47 | 1.91 | 2.50 |




| | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|
| Phnom Penh Airport International | 11 292 | 12 706 | 12 782 | 14 979 |
| Phnom Penh Airport Domestic | 6 438 | 4 837 | 4 125 | 3 990 |
| Siem Reap Airport International | 7 154 | 10 443 | 12 637 | 14 660 |
| Siem Reap Airport Domestic | 5 439 | 5 033 | 4 266 | 4 197 |

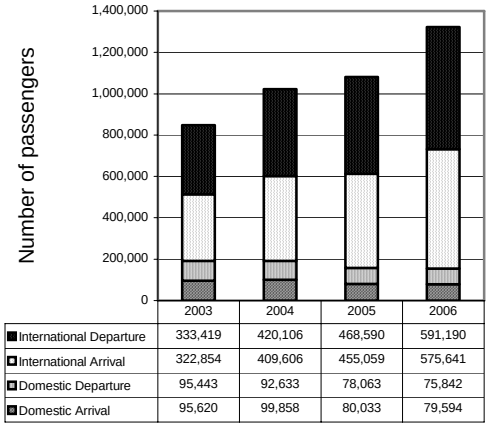
*Source: Prepared based on SSCA materials.*

Fig. 5-1 Trends and growth in the **number of passengers** using Cambodia's international airports

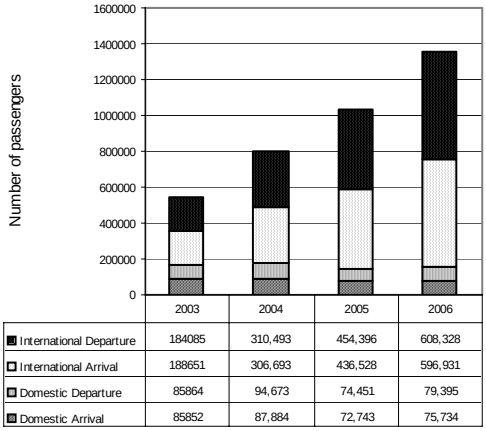
Fig. 5-2 Trends in the **number of flights** arriving and departing from Cambodia's international airports

The number of flights per year varies slightly from year to year, but between 2003 and 2006, it has increased approximately 1.4-fold at Phnom Penh International Airport and approximately 2.1-fold at Siem Reap International Airport. The number of domestic flights, on the other hand, has been decreasing on the whole.

The number of international flight passengers has been increasing yearly at Phnom Penh International Airport, and has marked 1.17 million in 2006. When combined with the number of domestic flight passengers, the airport is used by a total of some 1.3 million passengers a year. Domestic flight passengers have been significantly decreasing since 2005, and have remained level in 2006.




| | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|
| International Departure | 333,419 | 420,106 | 468,590 | 591,190 |
| International Arrival | 322,854 | 409,606 | 455,059 | 575,641 |
| Domestic Departure | 95,443 | 92,633 | 78,063 | 75,842 |
| Domestic Arrival | 95,620 | 99,858 | 80,033 | 79,594 |




| | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|
| International Departure | 184085 | 310,493 | 454,396 | 608,328 |
| International Arrival | 188651 | 306,693 | 436,528 | 596,931 |
| Domestic Departure | 85864 | 94,673 | 74,451 | 79,395 |
| Domestic Arrival | 85852 | 87,884 | 72,743 | 75,734 |

*Source: Prepared based on SSCA materials.( Project Profile and Progress (Civil Aviation), SSCA)*

Fig. 5-3 Trends in the number of passengers using Phnom Penh International Airport.

Fig. 5-4 Trends in the number of passengers using Siem Reap International Airport.

At Siem Reap International Airport, the number of international flight passengers has been rapidly increasing in the past few years. In 2006, it accommodated the largest number of passengers of all airports in Cambodia, exceeding even Phnom Penh International Airport. However, like Phnom Penh International Airport, the number of domestic flight passengers has been decreasing.

Other than the two international airports, regular domestic flights are available only at Sihanoukville Airport (bound for Siem Reap) and Rattanakiri Airport (bound for Phnom Penh).

# 6. Tourism

## (A) Number of Tourists

The number of foreign tourists to Cambodia fluctuates somewhat depending on the international situation, but it has been steadily increasing since 1995. In 2005, more than 1.4 million, or 1.35 times more tourists over the previous year, visited Cambodia.

In terms of foreign tourists' purpose of visit to Cambodia (2005), 89% visit for sightseeing, 7% for business, and 4% for other purposes.

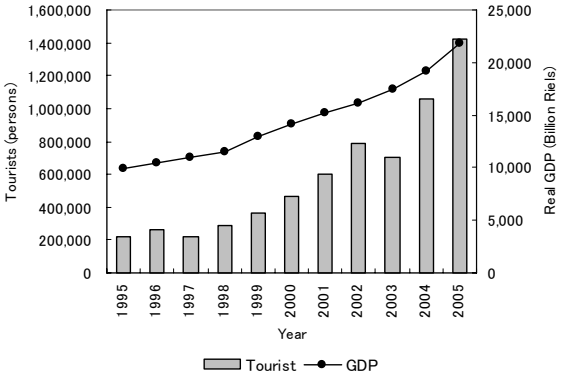



Fig. 6-1 Trends in foreign tourists and GDP

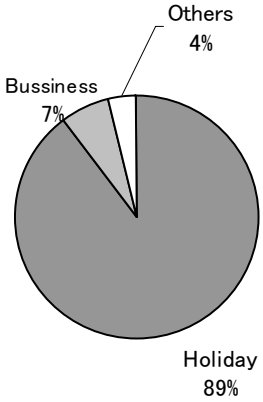
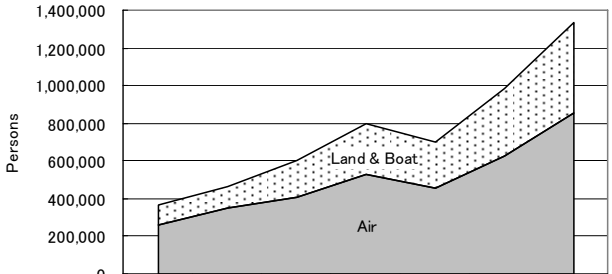



Fig. 6-2 Foreign tourists' purpose of visit to Cambodia (2005)

*Source: Figs. 6-3 and 6-4 prepared based on Statistical Yearbook 2005 and Tourism Statistical Report Dec. 2005.*

In terms of the mode of transportation used by foreign tourists to arrive in Cambodia, an increasing number of tourists are using air, land and water transportation. There has been a particularly large increase in the percentage of tourists using large buses, owing to the development of national roads during the past few years.




| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| Land & Boat | 104,836 | 114,704 | 196,542 | 263,546 | 245,042 | 361,238 | 476,479 |
| Air | 262,907 | 351,661 | 408,377 | 531,199 | 455,972 | 626,121 | 856,521 |

Fig. 6-3 Trends in foreign tourists' mode of tranportation to Cambodia

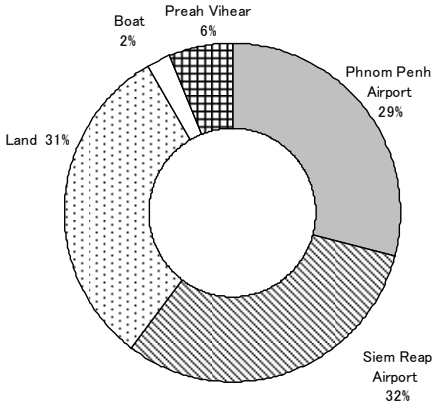
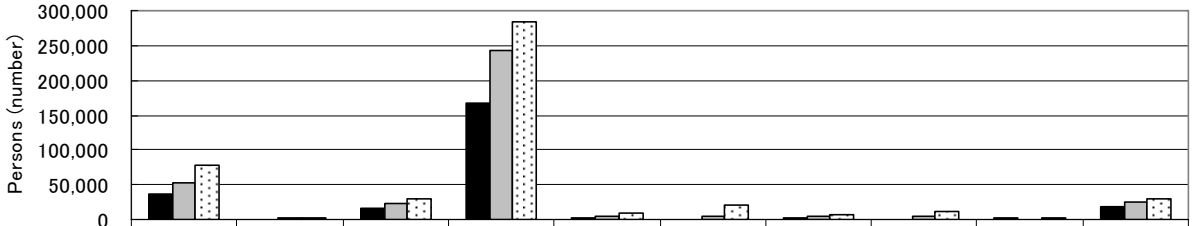



Fig. 6-4 Details concerning foreign tourists' means of arriving in Cambodia (2005)

With respect to tourists entering Cambodia by land or water, the majority enter the country from Thailand using National Road No. 5, followed by from Vietnam using National Road No. 1, from the Mekong River by boat, and from Thailand by National Road No. 48.

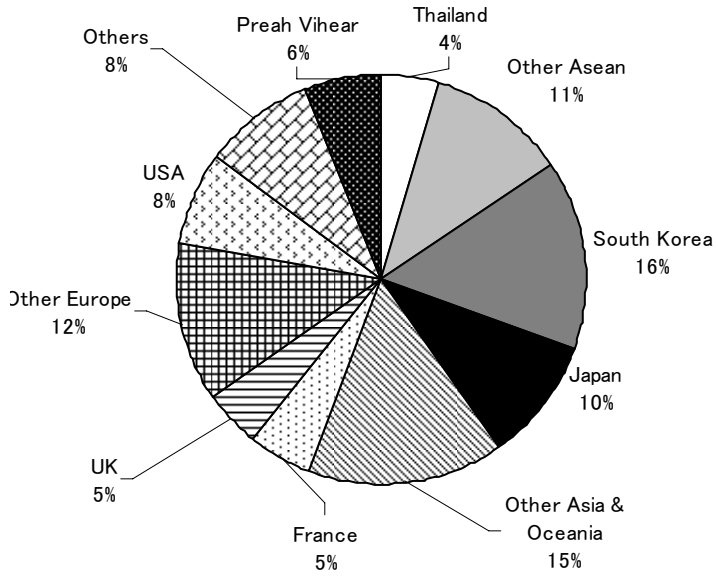



| | No .1 Bavet | No. 2 Phnom Den | No. 48 Cham Yeam | No. 5 Poipet | No. 68 Osmach | No. 13 Dong | No. 7 Dong Kralor | Others | Sihanoukville | Mekong Kaam Samnor |
|---|---|---|---|---|---|---|---|---|---|---|
| | Land | | | | | | | | Sea/River | |
| ■ 2003 | 35,837 | 664 | 17,111 | 167,654 | 2,026 | 0 | 3,134 | 0 | 1,330 | 17,238 |
| ▨ 2004 | 51,935 | 1,724 | 22,960 | 242,456 | 4,097 | 4,346 | 4,322 | 4,016 | 466 | 24,916 |
| □ 2005 | 77,520 | 2,475 | 29,588 | 284,865 | 8,979 | 21,386 | 7,753 | 12,252 | 1,813 | 29,848 |

*Source: Created based on Statistical Yearbook 2005 and Tourism Statistical Report Dec. 2005.*

Fig. 6-5 Trends in the number of foreign tourists at national border cities who have entered Cambodia by land or water

In terms of the number of foreign tourists by country, there has been a rapid increase in Korean tourists during the past few years, accompanying the commencement of direct flights from Korea.




*Source: Created based on Statistical Yearbook 2005 and Tourism Statistical Report Dec. 2005.*

Fig. 6-6 Nationalities of foreign tourists to Cambodia (2005)

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