

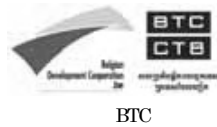
5. Number of Registered Cars/Motorcycles (DPWT) and Accidents (PPMP)

Number of Registered Cars/Motorcycles (DPWT) and Accidents (PPMP)

Year	Light Vehicles		Heavy Vehicles		Motorcycles			Total		Accidents						Indicators	
	No.	Accum. No.	No.	Accum. No.	No.	Accum. No.	No.	Accum. No.	No. of Accidents	Fatalities	Severely injured	Slightly injured	Total	No. of accident/ 1000 veh.	No. of fatalities/ 1000 veh.		
	C	D	E	F	G	C/B	D/B										
1990	3,211	3,211	1,210	1,210	43,733	43,733	48,154	48,154	719	91	362	459	912	5.05	0.504		
1991	4,401	7,612	930	2,140	27,432	71,165	32,763	80,917	577	94	369	339	802	3.90	0.457		
1992	4,208	11,820	441	2,581	36,443	107,608	41,092	122,009	429	83	335	259	677	3.02	0.370		
1993	3,807	15,627	924	3,505	12,544	120,152	17,275	139,284	576	108	463	307	878	3.50	0.431		
1994	4,557	20,184	585	4,090	12,818	132,970	17,960	157,244	472	133	419	228	780	2.81	0.479		
1995	3,698	23,882	549	4,639	19,080	152,050	23,327	180,571	499	92	444	304	840	2.56	0.280		
1996	5,592	29,474	1,154	5,793	18,422	170,472	25,168	205,739	397	111	300	241	652	1.85	0.315		
1997	6,401	35,875	1,454	7,247	10,794	181,266	18,649	224,388	710	170	626	526	1,322	3.58	0.460		
1998	3,975	39,850	433	7,680	21,756	203,022	26,164	250,552	693	181	652	452	1,285	3.23	0.455		
1999	6,611	46,461	495	8,175	20,147	223,169	27,253	277,805	789	206	813	462	1,481	3.46	0.481		
2000	6,209	52,670	512	8,687	43,978	267,147	50,699	328,504	892	230	923	629	1,782	3.67	0.473		
2001	5,356	58,026	396	9,083	18,253	285,400	24,005	352,509	730	200	768	433	1,401	2.45	0.350		
2002	6,473	64,499	753	9,836	9,613	295,013	16,839	369,348	801	261	824	525	1,610	2.47	0.401		
2003	6,065	70,564	608	10,444	22,217	317,230	28,890	388,238	1,0090	1,0918	1,0709	1,0113	1,0485	0.9422	0.9811		
2004	10,471	81,035	666	11,110	18,823	336,053	29,960	428,198	0.90%	9.18%	7.09%	1.13%	4.85%	-5.78%	-1.89%		
2005	13,104	94,139	613	11,723	43,912	379,965	57,629	485,827	6.99%	16.06%	9.24%	8.12%	9.74%	-0.48%	5.26%		
2006	15,695	109,834	1,204	12,927	68,172	448,137	85,071	570,898	1,069946	1,16063	1,09235	1,08118	1,0974	0.995245	1,05259		
2007	14,499	124,333	1,649	14,576	63,950	512,087	80,098	650,996	1,130548	1,076737	1,097414	1,102641	1,0974	0.995245	1,05259		
Annual increase rate (1995 - 2007)									1.1474	1.1001	1.1065	1.1128					
		14.74%		10.01%		10.65%		11.28%	0.90%	9.18%	7.09%	1.13%	4.85%	-5.78%	-1.89%		
Annual increase rate (2000 - 2007)		13.05%		7.67%		9.74%		10.26%	6.99%	16.06%	9.24%	8.12%	9.74%	-0.48%	5.26%		

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6. Cambodia Road Traffic Accident and Victim Information System



Cambodia Road Traffic Accident and Victim Information System



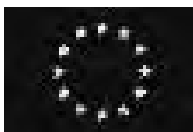
Monthly Report December 2007



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Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

I. Introduction

The objective of the Road Traffic Accident and Victim Information System (RTAVIS) is to provide government and development stakeholders in Cambodia with accurate, continuous and comprehensive information on road traffic accidents and victims.

It should allow them to better understand the current road safety situation, plan appropriate responses and evaluate impact of current and future initiatives.

The system is being developed by the Ministry of Public Works and Transport, the Ministry of Interior and the Ministry of Health, with the support of Handicap International.

In Siem Reap, Oddar Mean Chey and Kampong Cham provinces, the system is also supported by the Belgian Technical Cooperation.

The system is run based on data collection forms filled in by trained staff at major hospitals, private clinics and traffic police.

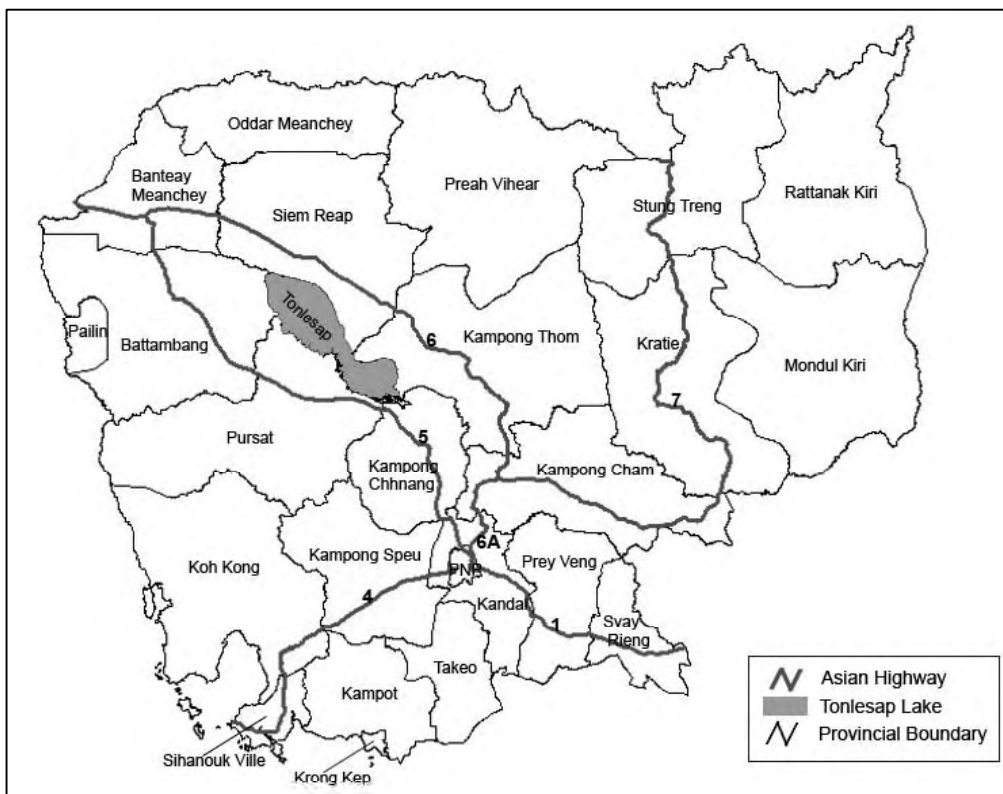
RTAVIS reports are distributed monthly. RTAVIS reports can also be found on the following websites: www.roadsafetycambodia.info and www.cnctp.info

Notice:

This monthly report is a snapshot of the situation at a particular time of the year. More analysis is provided in the annual report. The annual report 2007 will be released in April 2008.

II. System Coverage

RTAVIS covers the whole country. The map here below illustrates the Asian Highway (national road 1, 4, 5, 6, 6A and 7). The analysis of the number of fatalities is shown in the executive summary.



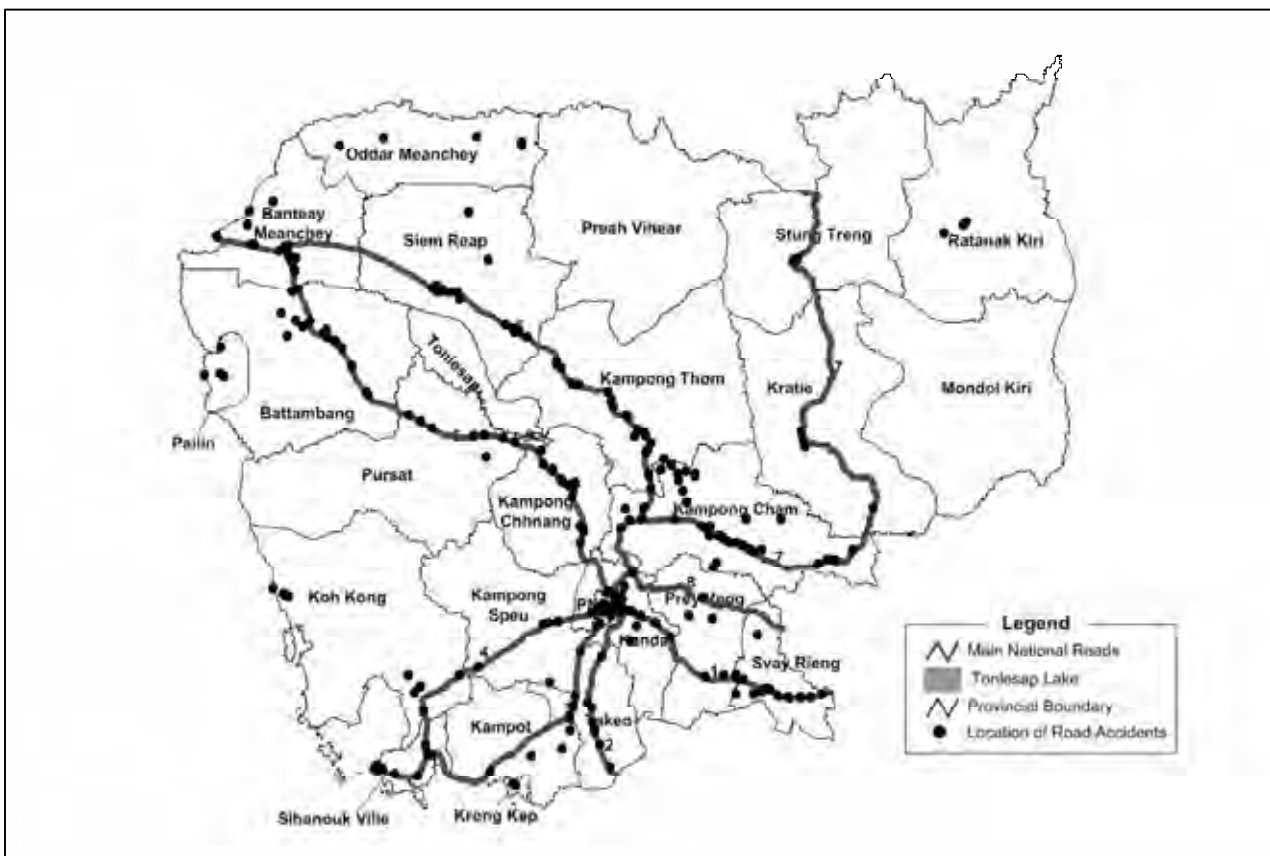
Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

III. System Update

Introduction of GPS

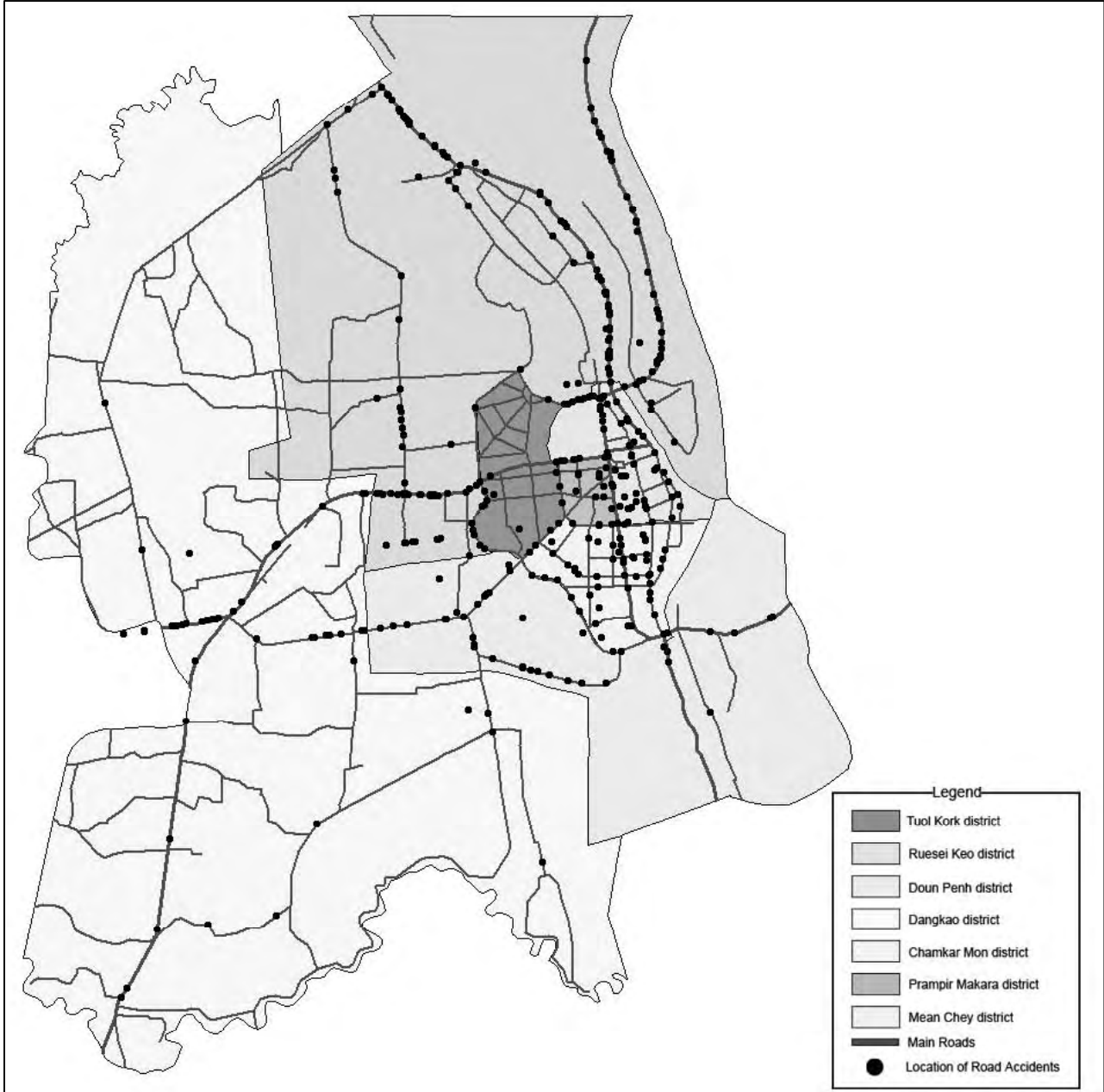
From July 2006, Global Position System (GPS) devices have been introduced to the traffic police in Russei Keo District in Phnom Penh. The GPS coordinates allow us now to exactly locate accidents, using GIS data. GPS devices have been progressively introduced to other districts of Phnom Penh and provinces crossed by major national roads from August 2007. On the medium term, this will enable RTAVIS to identify blackspots of the Cambodian Road Network.

The chart below shows locations of accidents in many provinces in December 2007.



Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

The chart shows the locations of road traffic accidents in Phnom Penh from July 2006 to December 2007



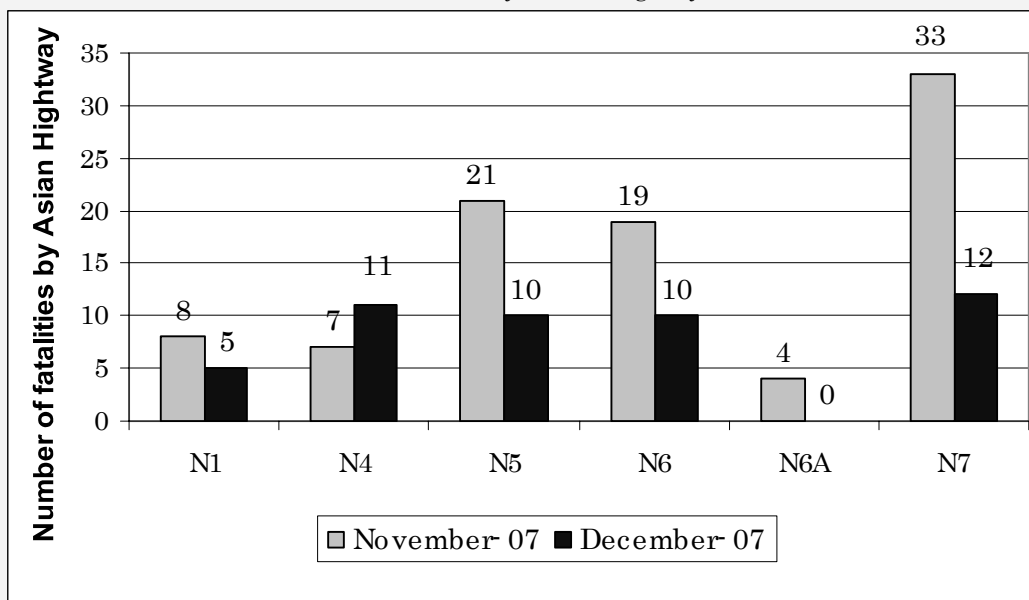
Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

IV. Executive Summary

Key findings for the month of December 2007 are the following:

- A provisional number of 2,048 casualties were reported by the participating hospitals, health centres, private clinics and traffic police departments in the 24 reporting provinces. Among them, 576 were severely injured and 125 died.
- In Phnom Penh, 580 casualties were reported, corresponding to 32% increase compared to December 2006 and 13% decrease compared to the previous month.
- 51% of casualties suffering from cranial trauma.
- 44% of casualties injured in urban areas.
- 55% of casualties injured in accidents occurring on national roads.
- In total, night time accident are responsible for 30% of casualties. A high proportion of night time's accident is noticed in Phnom Penh (35% of casualties, compared to 28% of casualties in the rest of the county).
- Head injuries account for 83% of fatalities. It is interesting to note that only 4% of fatalities were wearing a helmet. In addition, 20% of casualties suffer from fractures and more than 50% suffer from serious cuts/wounds.
- Number of fatality on Asian Highways were decreased in December 2007 compared to previous month due to there are many main festivals such as Independence Day and Water Festival.

Number of fatality on Asian Highways



Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

V. Evolution of Main Indicators

	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
Number of casualties reported to RTAVIS	1,538	1,504	1,818	2,140	2,183	2,048
Gender						
Percentage of males casualties	75%	72%	72%	73%	71%	74%
Age						
Percentage of casualties aged between 15 and 24 years old	35%	28%	30%	31%	31%	29%
Type of road user						
Percentage of motorbike riders	77%	74%	77%	76%	75%	75%
Percentage of pedestrians	9%	9%	9%	7%	8%	7%
Percentage of car riders (private and taxis)	4%	7%	2%	6%	5%	6%
Percentage of bicycle riders	6%	3%	4%	5%	4%	4%
Occupation						
Percentage of students	24%	23%	25%	22%	24%	25%
Percentage of farmers	21%	17%	23%	28%	25%	24%
Percentage of workers	23%	21%	20%	18%	19%	22%
Percentage of house keepers	5%	7%	6%	7%	6%	6%
Percentage of vendors/small businesses owners	5%	5%	7%	5%	5%	5%
Percentage of motorbike taxis	5%	6%	5%	3%	4%	4%
Residence of casualty						
Percentage of casualties residing in another province than the province of accident	20%	18%	15%	16%	19%	16%
Severity of injuries:						
Percentage of severely injured casualties (requiring surgical intervention of ICU)	30% (460 cases)	32% (488 cases)	30% (537 cases)	29% (616 cases)	29% (624 cases)	28% (576 cases)
Percentage of deaths	6% (92 cases)	6% (99 cases)	6% (121 cases)	6% (136 cases)	6% (135 cases)	6% (125 cases)
Nature of injuries:						
Percentage of casualties suffering from cranial trauma	44%	45%	46%	44%	40%	51%
Percentage of them being considered as severe (coma)	8%	10%	13%	10%	7%	4%
Percentage of casualties suffering from fracture	16%	23%	19%	16%	20%	20%
Percentage of casualties having wounds/cuts	54%	47%	50%	51%	54%	53%
Day of accident:						
Percentage of casualties injured during the weekend (from Friday 6 pm to Sunday midnight)	34%	32%	39%	27%	40%	37%
Time of accident:						
Percentage of casualties injured during nighttime (from 6 pm to 5.59 am)	33%	32%	30%	26%	33%	30%
Peak(s) of casualties	5pm-6pm	7pm-8pm	4pm-5pm	3pm-4pm	6pm-7pm	6pm-7pm
Cause of accident						
Percentage of casualties injured in accidents due to human error	91%	94%	95%	96%	96%	97%
High speed	50%	45%	48%	45%	52%	54%
Alcohol abuse	16%	15%	15%	14%	14%	12%
Non respect of rights of way rules	10%	11%	11%	11%	8%	7%
Changing lane without due care	5%	6%	6%	6%	5%	5%
Dangerous overtaking	5%	10%	9%	13%	11%	13%
Driving against flow of traffic	3%	4%	3%	3%	3%	3%
Other	2%	3%	3%	4%	3%	3%
Percentage of casualties injured in accidents due to road conditions	10%	9%	9%	9%	10%	12%
Percentage of casualties injured in accidents due to weather conditions	6%	6%	4%	3%	0%	0%
Percentage of casualties injured in accidents due to vehicle defect	5%	3%	4%	3%	3%	1%

Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
Type of accident:						
Percentage of casualties injured in motorbike-motorbike collisions	41%	39%	40%	45%	45%	44%
Percentage of casualties injured in motorbike-4 wheeler collisions	18%	18%	19%	16%	17%	20%
Percentage of casualties injured in motorbike-pedestrian collisions	8%	8%	9%	7%	8%	7%
Percentage of motorbike casualties who fell alone	9%	9%	7%	6%	6%	6%
Average number of people injured per accident	2	2.5	3	3	3.2	2.6
Hit and Run						
Percentage of casualties injured in accidents where the driver of the vehicle causing the accidents escaped after the accident	23%	18%	26%	23%	22%	23%
Estimation of average vehicle damage cost	156 US\$	204 US\$	177 US\$	160 US\$	166 US\$	190 US\$
Percentage of four-wheeled vehicles with						
Left-hand-drive	69%	61%	75%	74%	70%	70%
Right-hand-drive	31%	39%	25%	26%	30%	30%
Location of accident:						
Percentage of casualties injured in urban areas	53%	53%	47%	41%	50%	44%
Percentage of casualties injured in accidents occurring on national roads	51%	48%	53%	58%	54%	55%
Percentage of casualties injured in accidents occurring on provincial roads	7%	8%	8%	6%	4%	5%
Percentage of casualties injured in accidents occurring on paved roads	82%	80%	81%	79%	79%	76%
Characteristics of location:						
Percentage of casualties injured in accidents occurring on straight roads	81%	76%	78%	78%	80%	83%
Percentage of casualties injured in junctions (X, T, Y-junctions and roundabout)	8%	13%	14%	12%	8%	9%
Percentage of casualties injured in curves	10%	11%	8%	10%	12%	7%
Safety Measures:						
Percentage of car/truck/bus drivers having a driving licence	48%	52%	52%	50%	55%	50%
Percentage of motorbikes' casualties wearing a helmet	3%	3%	4%	3%	7%	4%
Time to be transferred to hospitals:						
Percentage of casualties arriving at hospitals between 10 and 30 minutes after the accident	38%	32%	32%	39%	36%	30%
Percentage of casualties arriving at hospital more than 2 hours after the accident	30%	38%	39%	33%	33%	39%
Way to be transferred to hospitals:						
Percentage of casualties transported by ambulance	34%	36%	33%	34%	31%	43%
Percentage of casualties transported to the hospital by their family or relatives	55%	57%	59%	59%	61%	53%
Percentage of casualties arriving alone at the hospital	11%	7%	8%	7%	8%	4%
Estimation of average cost of treatment	131 US\$	182 US\$	161 US\$	146 US\$	173 US\$	185 US\$
Attendance of police:						
Percentage of cases where police was present on the accident site	67%	68%	69%	73%	64%	69%

Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

VI. Data by Provinces

Number of casualties reported to RTAVIS all provinces	Jul-07		Aug-07		Sep-07		Oct-07		Nov-07		Dec-07	
	Severe	Death	Severe	Death	Severe	Death	Severe	Death	Severe	Death	Severe	Death
Banteay Meanchey	21	7	13	3	20	3	6	3	17	2	19	9
Battambang	16	15	43	6	43	9	17	7	24	3	12	5
Kampong Cham	36	9	34	13	30	15	47	17	79	37	56	21
Kampong Chhnang	16	4	20	5	32	6	16	7	17	6	19	3
Kampong Speu	6	0	17	2	25	6	18	3	14	5	16	3
Kampong Thom	31	7	10	1	30	8	29	13	23	10	29	6
Kampot	9	4	9	1	6	1	25	2	13	2	5	4
Kandal	52	12	48	12	61	12	65	14	62	13	74	5
Koh Kong	3	4	7	2	6	0	9	3	4	1	5	3
Kratie	6	1	11	0	6	2	35	2	29	7	15	3
Mondol Kiri	3	1	2	1	3	0	6	1	4	1	5	1
Phnom Penh	107	16	120	18	114	25	91	17	146	16	124	16
Preah Vihear	0	0	0	0	0	0	0	0	1	0	0	0
Prey Veng	21	2	7	3	22	3	52	2	9	2	25	5
Puslat	7	1	6	3	8	2	29	8	28	13	19	1
Rotanak Kiri	2	0	2	1	3	0	8	0	8	1	4	6
Siem Reap	69	2	67	6	67	10	86	10	71	7	83	7
Sihanoukville	17	2	14	11	11	8	21	2	16	1	16	5
Stung Treng	0	0	6	0	3	1	6	0	2	1	8	0
Svay Rieng	17	0	16	2	12	2	11	9	9	3	10	2
Takeo	13	4	27	6	23	5	27	12	18	2	17	15
Otdar Meanchey	1	0	0	2	3	2	3	2	21	0	10	2
Krong Keb	1	1	1	1	0	1	1	1	0	0	1	0
Krong Pailin	3	0	7	0	8	0	8	1	7	2	3	3
Unidentified province	3	0	1	0	1	0	0	0	2	0	1	0
Total	460	92	488	99	537	121	616	136	624	135	576	125

Notice: NYA i.e. Not yet available.

Cambodia Road Traffic Accident and Victim Information System
Monthly Report – December 2007

Contacts

Further analysis and additional information is available on request. Please do not hesitate to contact one of the following persons

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BTC



MoI



MoH



MPWT



HIB

Cambodia Road Traffic Accident and Victim Information System



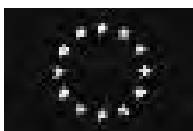
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Cambodia Road Traffic Accident and Victim Information System
Monthly Report – January 2008

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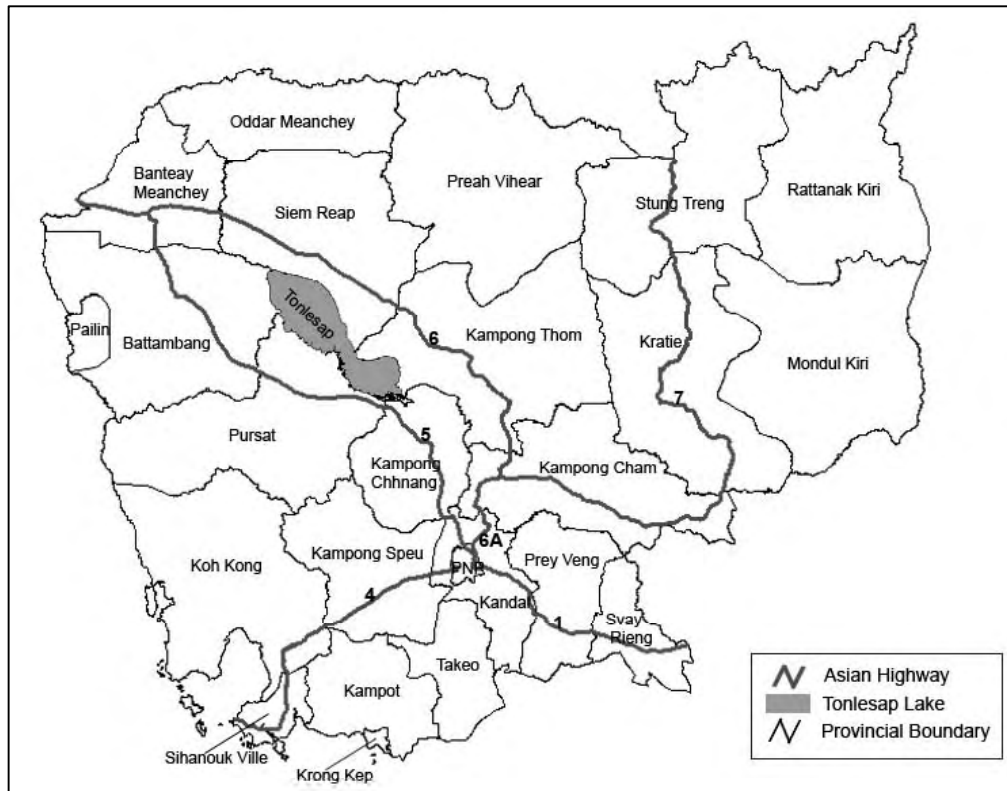
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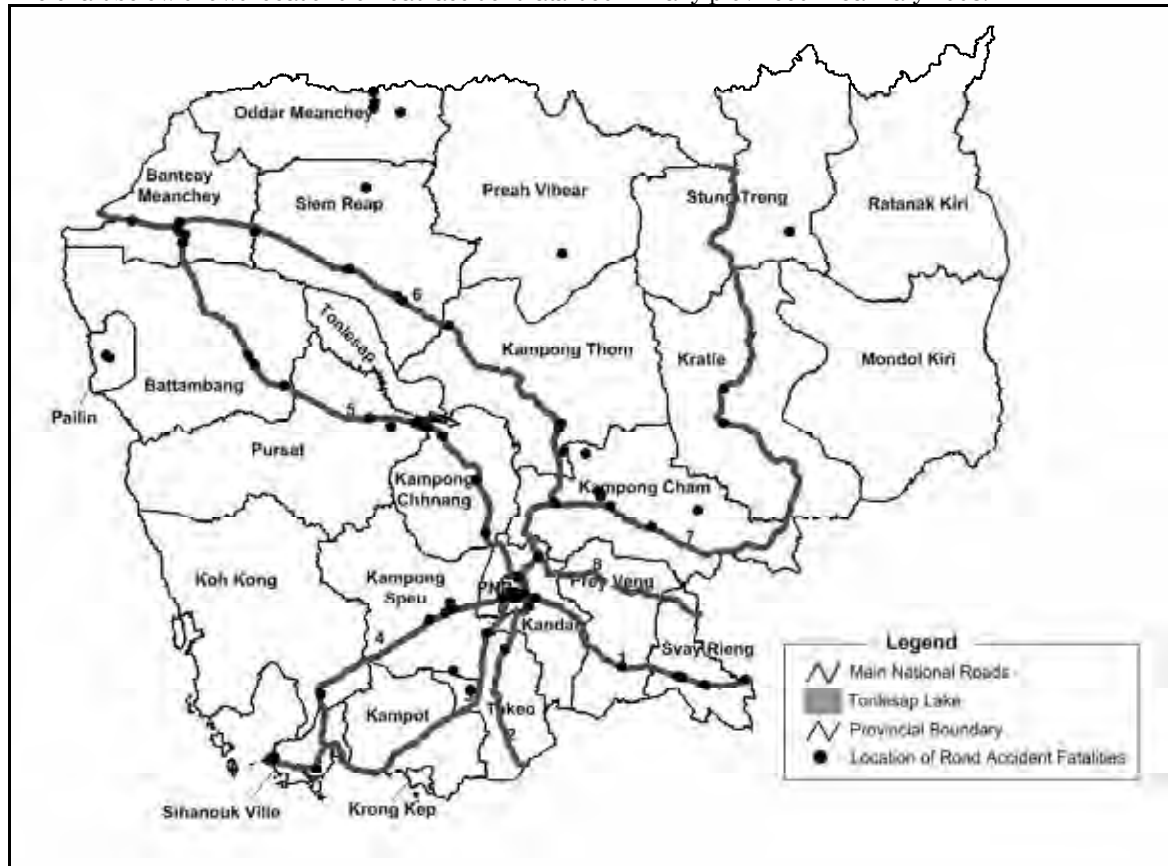
Cambodia Road Traffic Accident and Victim Information System
Monthly Report – January 2008

III. System Update

Introduction of GPS

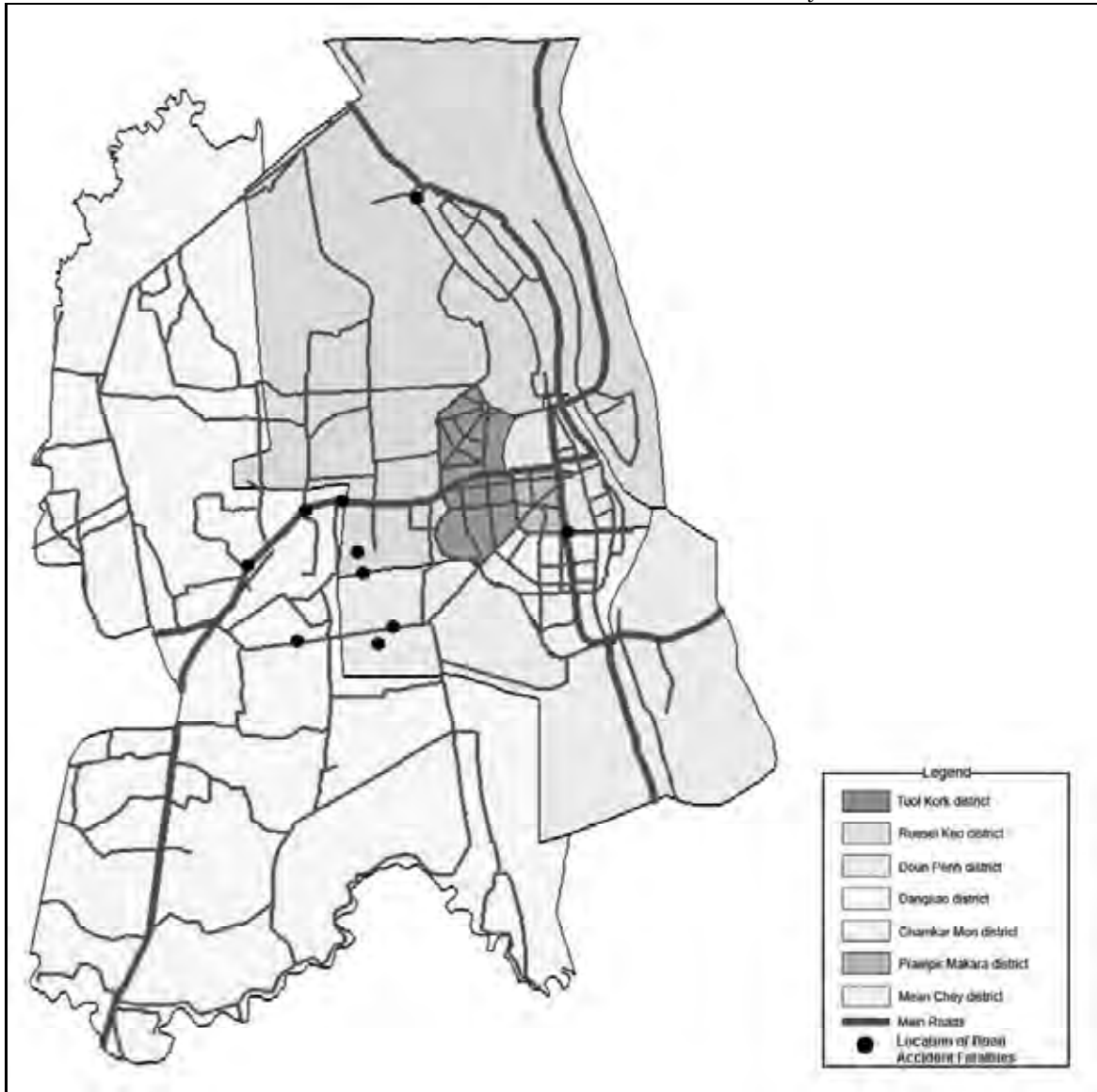
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Cambodia Road Traffic Accident and Victim Information System
Monthly Report – January 2008

The chart shows the locations of road accident fatalities in Phnom Penh in January 2008



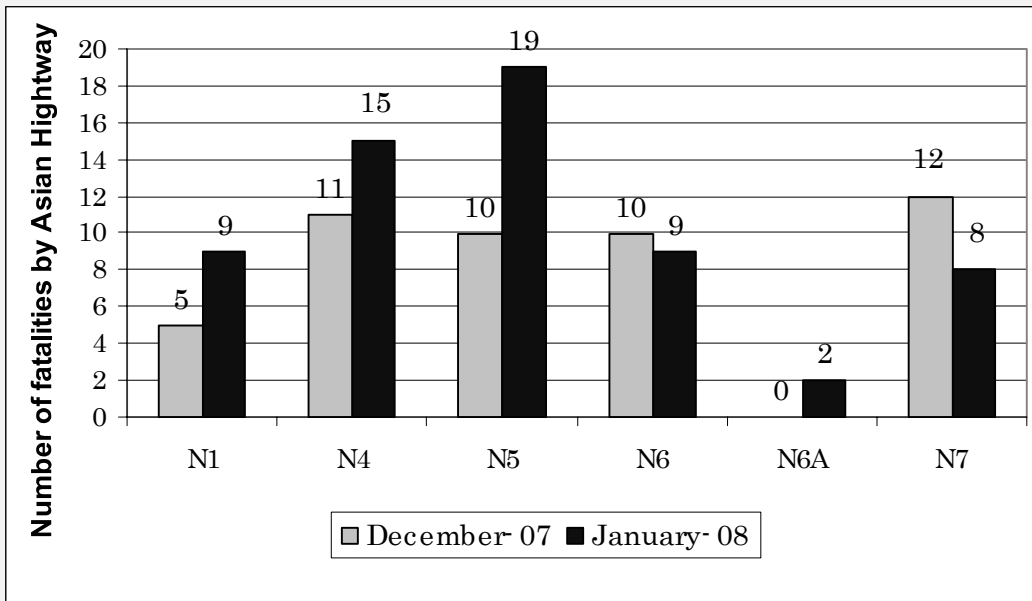
Cambodia Road Traffic Accident and Victim Information System
Monthly Report – January 2008

IV. Executive Summary

Key findings for the month of January 2008 are the following:

- A provisional number of 2,299 casualties were reported by the participating hospitals, health centres, private clinics and traffic police departments in the 24 reporting provinces. Among them, 689 were severely injured and 145 died.
- In Phnom Penh, 483 casualties were reported, corresponding to 8% decrease compared to January 2007 and 17% decrease compared to the previous month.
- 21% of fatalities were age between 25 to 29 years old
- Peak of casualties was 5pm to 6pm.
- 6% of motorbikes' casualties were wearing a helmet, compared to 4 % in January, 2007.
- Head injuries accounted for 47% of motorbike casualties.
- Asian Highways shared more than 40% of the total fatalities in the country. A significant increase of fatalities was noticed along the National road 5.

Number of fatalities on Asian Highways



Cambodia Road Traffic Accident and Victim Information System
Monthly Report – January 2008

V. Evolution of Main Indicators

	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08
Number of casualties reported to RTAVIS	1,504	1,818	2,140	2,183	2,048	2,299
Gender						
Percentage of males casualties	72%	72%	73%	71%	74%	73%
Age						
Percentage of casualties aged between 15 and 24 years old	28%	30%	31%	31%	29%	28%
Type of road user						
Percentage of motorbike riders	74%	77%	76%	75%	75%	74%
Percentage of pedestrians	9%	9%	7%	8%	7%	7%
Percentage of car riders (private and taxis)	7%	2%	6%	5%	6%	6%
Percentage of bicycle riders	3%	4%	5%	4%	4%	4%
Occupation						
Percentage of students	23%	25%	22%	24%	25%	21%
Percentage of farmers	17%	23%	28%	25%	24%	29%
Percentage of workers	21%	20%	18%	19%	22%	21%
Percentage of house keepers	7%	6%	7%	6%	6%	6%
Percentage of vendors/small businesses owners	5%	7%	5%	5%	5%	4%
Percentage of motorbike taxis	6%	5%	3%	4%	4%	4%
Residence of casualty						
Percentage of casualties residing in another province than the province of accident	18%	15%	16%	19%	16%	15%
Severity of injuries:						
Percentage of severely injured casualties (requiring chirological intervention of ICU)	32% (488 cases)	30% (537 cases)	29% (616 cases)	29% (624 cases)	28% (576 cases)	30% (689 cases)
Percentage of deaths	6% (99 cases)	6% (121 cases)	6% (136 cases)	6% (135 cases)	6% (125 cases)	6% (145 cases)
Nature of injuries:						
Percentage of casualties suffering from cranial trauma	45%	46%	44%	40%	51%	49%
Percentage of them being considered as severe (coma)	10%	13%	10%	7%	4%	8%
Percentage of casualties suffering from fracture	23%	19%	16%	20%	20%	23%
Percentage of casualties having wounds/cuts	47%	50%	51%	54%	53%	50%
Day of accident:						
Percentage of casualties injured during the weekend (from Friday 6 pm to Sunday midnight)	32%	39%	27%	40%	37%	35%
Time of accident:						
Percentage of casualties injured during nighttime (from 6 pm to 5.59 am)	32%	30%	26%	33%	30%	31%
Peak(s) of casualties	7pm-8pm	4pm-5pm	3pm-4pm	6pm-7pm	6pm-7pm	5pm-6pm
Cause of accident						
Percentage of casualties injured in accidents due to human error	94%	95%	96%	96%	97%	97%
High speed	45%	48%	45%	52%	54%	49%
Alcohol abuse	15%	15%	14%	14%	12%	13%
Non respect of rights of way rules	11%	11%	11%	8%	7%	9%
Changing lane without due care	6%	6%	6%	5%	5%	6%
Dangerous overtaking	10%	9%	13%	11%	13%	14%
Driving against flow of traffic	4%	3%	3%	3%	3%	3%
Other	3%	3%	4%	3%	3%	3%
Percentage of casualties injured in accidents due to road conditions	9%	9%	9%	10%	12%	15%
Percentage of casualties injured in accidents due to weather conditions	6%	4%	3%	0%	0%	0%
Percentage of casualties injured in accidents due to vehicle defect	3%	4%	3%	3%	1%	2%

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	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08
Type of accident:						
Percentage of casualties injured in motorbike-motorbike collisions	39%	40%	45%	45%	44%	39%
Percentage of casualties injured in motorbike-4 wheeler collisions	18%	19%	16%	17%	20%	18%
Percentage of casualties injured in motorbike-pedestrian collisions	8%	9%	7%	8%	7%	7%
Percentage of motorbike casualties who fell alone	9%	7%	6%	6%	6%	8%
Average number of people injured per accident	2.5	3	3	3.2	2.6	2.5
Hit and Run						
Percentage of casualties injured in accidents where the driver of the vehicle causing the accidents escaped after the accident	18%	26%	23%	22%	23%	19%
Estimation of average vehicle damage cost	204 US\$	177 US\$	160 US\$	166 US\$	190 US\$	220 US\$
Percentage of four-wheeled vehicles with						
Left-hand-drive	61%	75%	74%	70%	70%	68%
Right-hand-drive	39%	25%	26%	30%	30%	32%
Location of accident:						
Percentage of casualties injured in urban areas	53%	47%	41%	50%	44%	42%
Percentage of casualties injured in accidents occurring on national roads	48%	53%	58%	54%	55%	53%
Percentage of casualties injured in accidents occurring on provincial roads	8%	8%	6%	4%	5%	10%
Percentage of casualties injured in accidents occurring on paved roads	80%	81%	79%	79%	76%	76%
Characteristics of location:						
Percentage of casualties injured in accidents occurring on straight roads	76%	78%	78%	80%	83%	80%
Percentage of casualties injured in junctions (X, T, Y-junctions and roundabout)	13%	14%	12%	8%	9%	9%
Percentage of casualties injured in curves	11%	8%	10%	12%	7%	9%
Safety Measures:						
Percentage of car/truck/bus drivers having a driving licence	52%	52%	50%	55%	50%	46%
Percentage of motorbikes' casualties wearing a helmet	3%	4%	3%	7%	4%	6%
Time to be transferred to hospitals:						
Percentage of casualties arriving at hospitals between 10 and 30 minutes after the accident	32%	32%	39%	36%	30%	34%
Percentage of casualties arriving at hospital more than 2 hours after the accident	38%	39%	33%	33%	39%	37%
Way to be transferred to hospitals:						
Percentage of casualties transported by ambulance	36%	33%	34%	31%	43%	34%
Percentage of casualties transported to the hospital by their family or relatives	57%	59%	59%	61%	53%	58%
Percentage of casualties arriving alone at the hospital	7%	8%	7%	8%	4%	8%
Estimation of average cost of treatment	182 US\$	161 US\$	146 US\$	173 US\$	185 US\$	170 US\$
Attendance of police:						
Percentage of cases where police was present on the accident site	68%	69%	73%	64%	69%	70%

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VI. Data by Provinces

Number of casualties reported to RTAVIS all provinces	Aug-07		Sep-07		Oct-07		Nov-07		Dec-07		Jan-08	
	Severe	Death	Severe	Death	Severe	Death	Severe	Death	Severe	Death	Severe	Death
	1,780		2,061		2,516		2,455		2,239		2,299	
Banteay Meanchey	26	3	26	3	9	3	21	2	21	9	19	7
Battambang	41	7	44	9	31	7	29	3	22	5	55	8
Kampong Cham	39	13	32	15	49	17	79	37	58	21	58	18
Kampong Chhnang	17	5	24	6	20	7	19	6	30	3	16	6
Kampong Speu	18	2	29	6	17	3	15	5	15	3	37	7
Kampong Thom	20	8	26	8	36	14	32	10	35	6	31	5
Kampot	9	1	8	1	24	2	15	2	7	4	7	1
Kandal	45	12	64	14	65	14	62	14	70	6	77	18
Koh Kong	6	2	6	0	9	3	4	1	9	3	7	2
Kratie	8	0	13	3	34	2	31	7	15	3	16	3
Mondol Kiri	2	1	4	1	7	1	4	1	5	1	2	2
Phnom Penh	152	27	144	31	101	29	173	21	121	18	101	18
Preah Vihear	0	1	3	0	4	1	3	3	1	0	8	1
Prey Veng	7	3	21	3	54	2	8	2	25	5	13	7
Puslat	6	3	8	2	30	8	27	13	22	1	12	6
Ratanak Kiri	2	1	3	0	8	0	8	1	4	6	0	0
Siem Reap	67	6	68	10	86	10	70	7	82	7	129	7
Sihanoukville	14	11	10	8	18	3	14	1	18	5	26	10
Stung Treng	12	0	5	1	9	0	3	1	10	0	10	1
Svay Rieng	17	3	14	3	11	10	11	3	10	2	18	5
Takeo	34	5	30	5	28	12	22	2	22	15	24	5
Otdar Meanchey	0	2	3	2	35	2	20	0	10	2	7	6
Krong Keb	1	1	0	1	1	1	0	0	1	0	6	0
Krong Paolin	7	0	10	0	8	1	7	2	4	3	7	2
Unidentified province	1	0	1	0	1	0	1	0	1	0	3	0
Total	551	117	596	132	695	152	678	144	618	128	689	145

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Contacts

Further analysis and additional information is available on request. Please do not hesitate to contact one of the following persons

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Overview on Transport Infrastructure Sectors in the Kingdom of Cambodia

January 2008

Infrastructure and Regional Integration

Technical Working Group

(IRITWG)

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 >

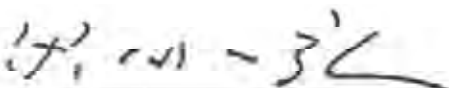


H.E. Sun Chanthol

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

1. Roads

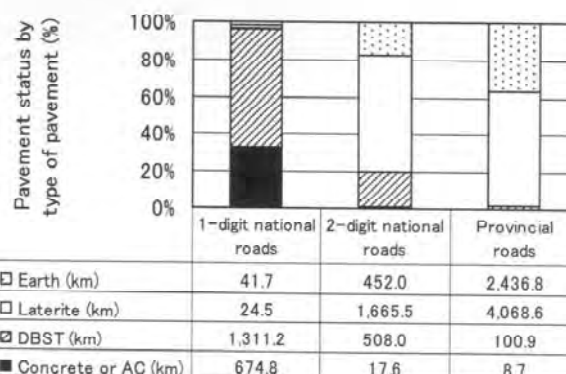
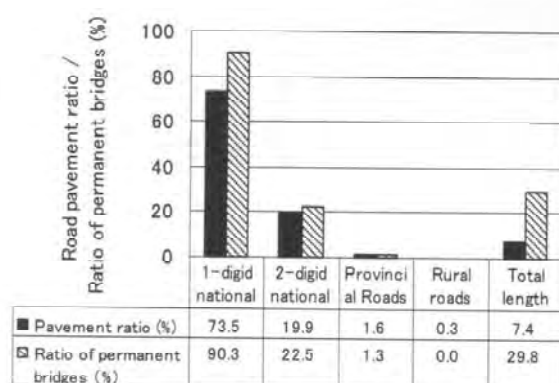
(A) Present State of Roads in Cambodia

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)	MRD
Rural roads	28,000 km (70.89%)	N/A	
Total length	39,494.457 km (100.0%)	2,121 (51,917m)	

Source: LRCS Inventory, 2006 and MRD Inventory 2006



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

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

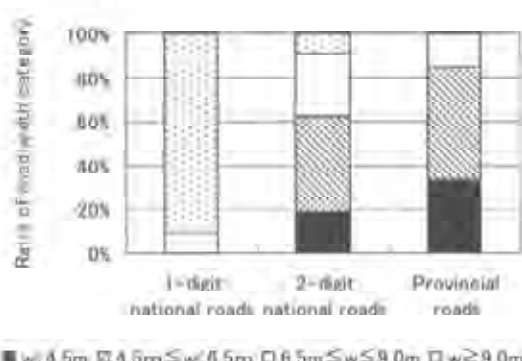
Fig. 1-2 Pavement status by road classification (as of 2004)

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 I; national roads No. 4, 6 and 7 make up a part of Asian Highway II; 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

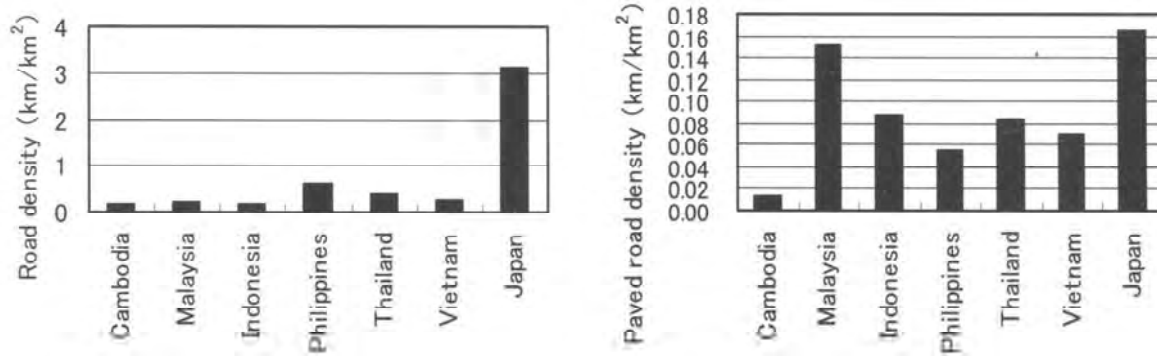
Name of international road			Transit Cities	Length (km)	International Road Classification					Missing Links	Remarks
GMS roads	Asian Highway	ASEAN Highway			Primary Class I	Class II	Class III	Below Class III			
Central Subcorridor	AHI	AHI	Polpet Siocham - Phnom Penh - Svay Rieng - Davet (NR1, NR5)	572.4	-	-	11.2	561.2*	-	-	*103km upgraded to Class II (Japan [56km] and ADB [47km])
Inter-Corridor Link	AHI	AHI1	Sihanouk Ville - Phnom Penh - Kampong Cham - Stung Treng - Trapenkrent (NR4, NR6, NR7)	755.0	-	-	364	391.0**	-	-	**Includes 193km on-going Road Rehabilitation of NR7 (China Fund)
Southern Coastal Subcorridor	-	AH123	Cham Yuen Koh Kong - Viêt Kiri - Sre Ambel - Kamput - Loei (NR48, NR3, NR33)	163.3	-	-	2.4	8.7	152.2	-	NR48 funded by Thailand NR33 funded by ADB
Northern Subcorridor	-	-	Siem Reap - Preah Vihear - Stung Treng - Battanak Kiri - O Yadv Border (NR66, NR78)	464.9	-	-	-	-	464.9	-	NR78 funded by Yunnan
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 II] Highways with 4 or more lanes / AC or concrete pavement
- [Class III] Roads with 2 or more lanes / AC or concrete pavement
- [Class III] Narrow 2-lane roads / DMST 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

Table: Major Road Improvement Projects in Cambodia

No	Road	Orig. (MSD)	Cost (Mill. USD)	Sections	Year Start - End
1	NR1-A	Japan	103.0	Phnom Penh - Kampong Speu	2000 - 2004
2	NR1-B	ADB	20.7	Phnom Penh - Kampong Chhnang	2000 - 2004
3	NR1-C	ADB	107.0	Kampong Chhnang - Banteay Meanchey	2000 - 2004
4	NR1-D	ADB	10.0	Banteay Meanchey - Kampong Speu	2000 - 2004
5	NR1-E	ADB	1.0	Kampong Speu - Phnom Penh	2000 - 2004
6	NR1-F	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
7	NR1-G	ADB	21.0	Kampong Speu - Phnom Penh	2000 - 2004
8	NR1-H	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
9	NR1-I	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
10	NR1-J	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
11	NR1-K	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
12	NR1-L	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
13	NR1-M	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
14	NR1-N	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
15	NR1-O	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
16	NR1-P	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
17	NR1-Q	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
18	NR1-R	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
19	NR1-S	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
20	NR1-T	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
21	NR1-U	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
22	NR1-V	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
23	NR1-W	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
24	NR1-X	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
25	NR1-Y	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
26	NR1-Z	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
27	NR2-A	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
28	NR2-B	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
29	NR2-C	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
30	NR2-D	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
31	NR2-E	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
32	NR2-F	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
33	NR2-G	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
34	NR2-H	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
35	NR2-I	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
36	NR2-J	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
37	NR2-K	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
38	NR2-L	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
39	NR2-M	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
40	NR2-N	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
41	NR2-O	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
42	NR2-P	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
43	NR2-Q	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
44	NR2-R	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
45	NR2-S	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
46	NR2-T	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
47	NR2-U	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
48	NR2-V	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
49	NR2-W	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
50	NR2-X	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
51	NR2-Y	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004
52	NR2-Z	ADB	1.0	Phnom Penh - Kampong Speu	2000 - 2004

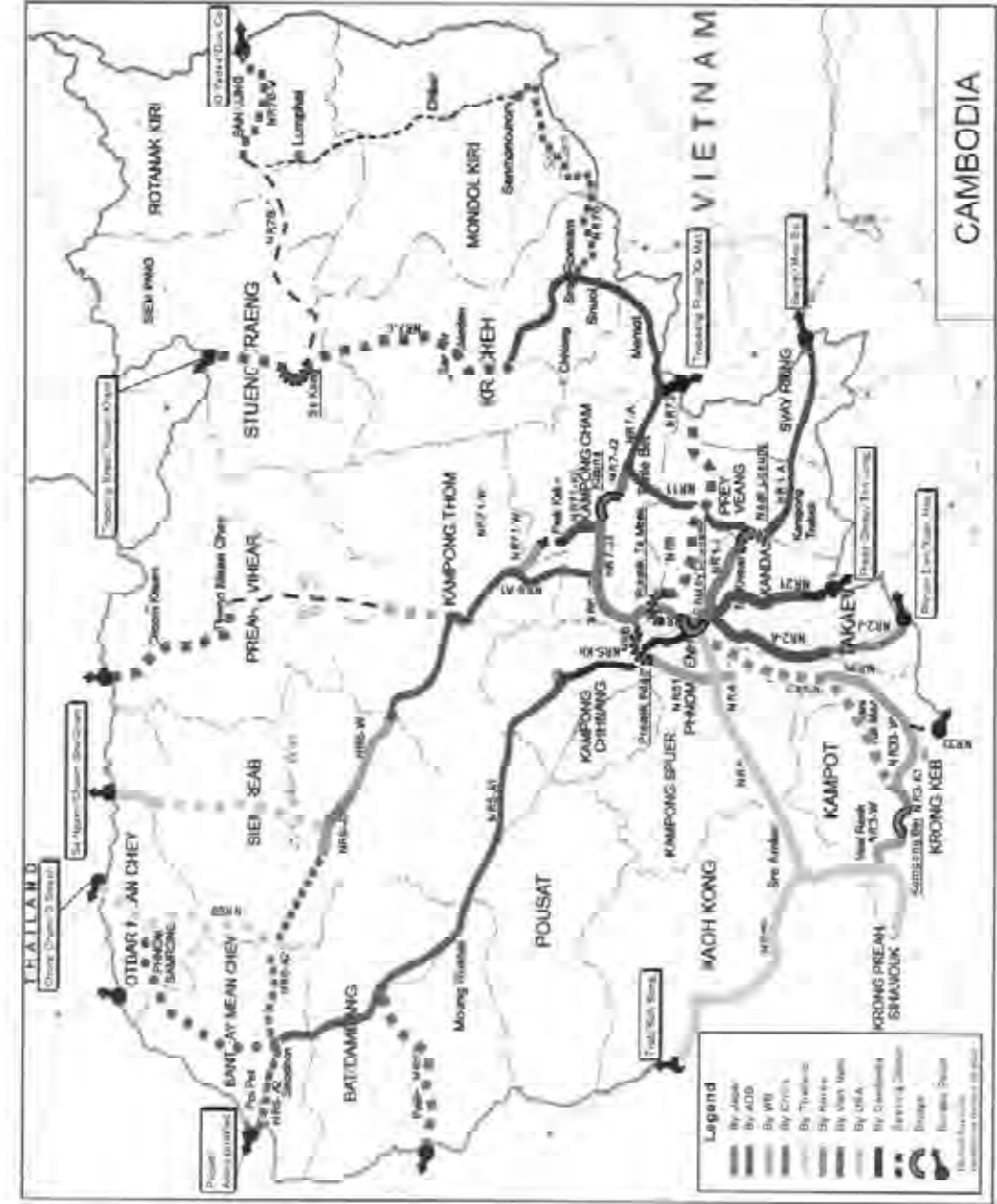


Figure 1.5: Status of Assistance by Development Partners

(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.

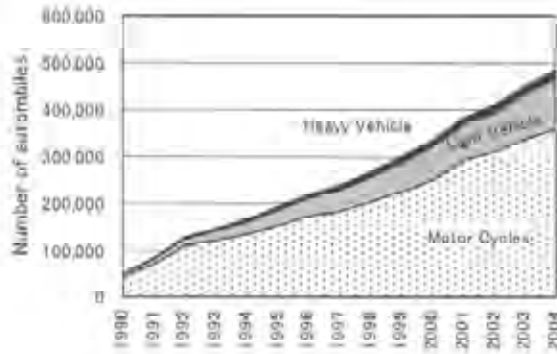


Fig. 1-9 Trends in number of registered automobiles

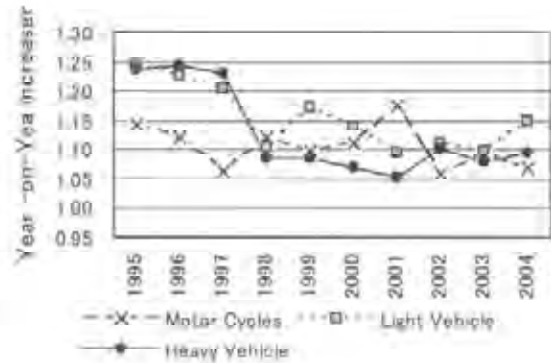


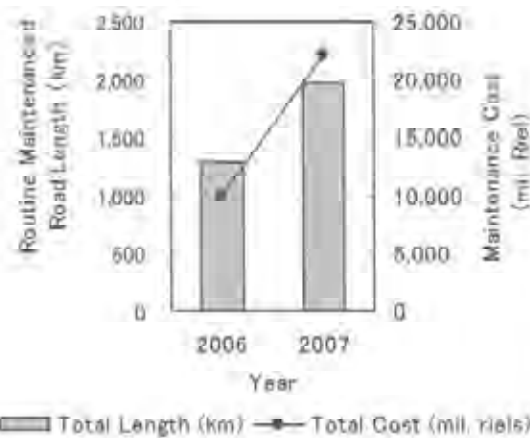
Fig. 1-10 Year-on-year increase in number of registered automobiles

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

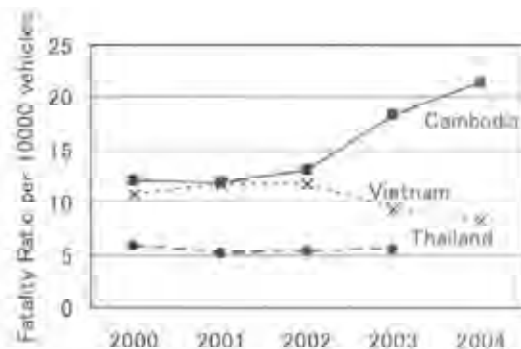
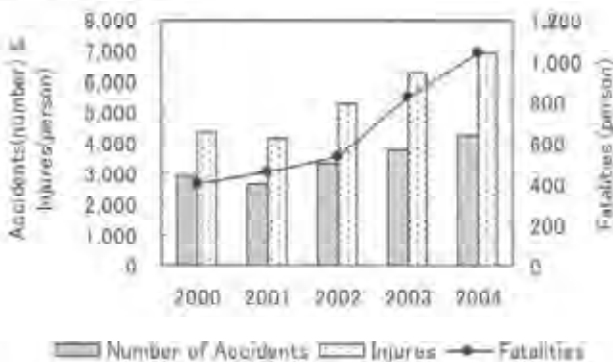
Item	Maintenance Road Length	Maintenance Cost		Unit Cost (US\$/km)
		(10 ⁸ Riels)	(US\$)	
National Road	1,730.59 km	19,730,359	4,812,283	2,780
Urban Road	238.46 km	2,330,902	568,513	2,384
Total	1,969.05 km	22,061,261	5,380,796	2,732

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.

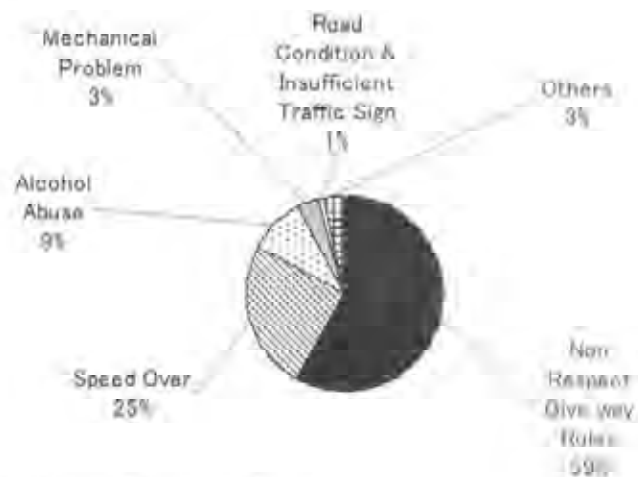


Source: JICA study, Land Transport Department and Road Safety Committee, MPWT

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)

Annex 4: Detailed Project Description
CAMBODIA: Road Asset Management Project

1. The objective of the project is to ensure continued effective use of the rehabilitated national and provincial road network in support of the economic development in Cambodia. It will do so by improving the institutional and technical capacity of the Ministry of Public Works and Transport for road maintenance planning, budgeting and operations, and by expanding and strengthening maintenance activities.

2. Of the total project cost amounting to US\$58.36 million, IDA will finance US\$30 million equivalent, along with Government investment of US\$17.56 million and contributions of US\$6 million and AUD6 million (US\$4.8 million equivalent) from an ADB loan and AusAID Grant, respectively. The overall project scope and costs by financier are outlined in the table below.

Table A4.1 Summary of Project Component Costs by Financier (US\$m)

Component	IDA	Govt	ADB	AusAID	Total
A1 Annual Maintenance Work Programs	24.80	17.04	4.86	3.94	51.65
A2 Implementation Support	2.85	0.11	0.13	0.19	3.28
B Capacity Development	1.85	0.20	0.30	0.23	2.73
C Merit Based Pay Initiative	0.50	0.20	-	-	0.70
TOTAL	30.00	17.55	6.00	4.80	58.36

3. The project has three main components that are designed to balance periodic maintenance investments with institutional support and capacity development for prioritization and planning, and technical aspects of maintenance activities. Part I of this Annex provides a description of the overall project financed by IDA, ADB and AusAID, including estimated base costs, while Part II provides a summary of the IDA-financed activities.

Part I. Overall Project Description

Component A - Road Asset Management (US\$53.3 million)

4. The component will support the preservation of MPWT's road network through annual programs for periodic maintenance works, and provide support for the implementation of the works, including preparation of the technical design, bidding documents, project management, construction supervision of civil works (including safeguard activities), financial and technical audits. It will also include funding to refurbish an office and a meeting room for the regular meetings with the project Team --who will be coming from several different departments within MPWT-- in GDPW, and to purchase two vehicles to carry on with the routine activities of the project.

Subcomponent A1 – Annual Work Programs (US\$51.65 million)

5. This subcomponent will support the implementation of periodic maintenance of selected MPWT's road network sections, including asphalt resurfacing, resealing, re-gravelling and minor drainage, spot improvements, road safety and small bridge repairs (about 1,000 km of roads). Works will be defined on a programmatic basis, for inclusion in five Annual Work Programs (AWPs) over the life of the project. It

will also support, through Government contributions only, approximately 600 km per year of routine maintenance, which will be carried out using an output-based contract approach piloted under this project.

6. **AWP1.** (*IDA – US\$2.37 million; ADB – US\$1.77 million*). The works to be undertaken in the first year of the project have been defined. The first year program consists of two ICB contract packages (one financed by ADB/AusAID, the other by IDA) for the following road sections and treatment types:

Table A4.2 – First Year Annual Work Program

	Section	Surface Type	Length (km)	Treatment	Cost (US\$ m)	Source of Funds
CW-WP1.1	NR5 (Km3.9 to Kampong Chhnang)	DBST	87.2	SBST	1.77	ADB/AusAid
CW-WP1.2	NR1 (Km69.2 to Km165.4)	AC	90.5	SBST/Slurry Seal	2.37	IDA

7. **AWP2-AWP5.** (*IDA – US\$22.76 million; ADB – US\$8.29 million*). The periodic maintenance annual work programs for years two through five are to be defined using the Road Management Decision Support system (RMDS), and could also include some rehabilitation. Preparation of future annual road preservation programs are to be based on the outputs of an upgraded RMDS, and will be dependent on the road condition at the time, engineering judgment and economic efficiency of proposed treatments. (The RMDS as it stands now does not have required functionality for this purpose. Technical assistance for its improvement and implementation is included in the consultancy under B2.)

8. The AWP's will be financed on a sliding scale over a five year implementation horizon. This arrangement encourages government commitment to increasing budgetary resources and provides a mechanism for gradually introducing a maintenance culture, with greater focus on asset preservation. Table A4.3 provides the indicative costs allocated to the AWP's by financier. IDA's increased contribution to the fifth year program extends the investment cycle to provide coverage in the absence of other donor commitments. In the event future contributions become available, funding can be programmed into AWP5.

Table A4.3 – Annual Work Programs - Years 2 through 5

	IDA	%	ADB/AusAID	%	RGC	%	Total
AWP2	5,986,406	55	3,265,312	30	1,632,656	20	10,884,375
AWP3	5,578,242	50	2,789,121	25	2,789,121	25	11,156,484
AWP4	4,402,628	35	2,232,761	18	5,943,547	47	12,578,936
AWP5	6,794,827	53	-	-	6,098,582	47	12,893,409

Subcomponent A2 Implementation Support (US\$3.28 million)

9. Implementation support includes: (i) the preparation of designs and bidding documents for the first year works; (ii) advice to MPWT on technical designs, cost estimates, bidding documents, contract management, and safeguard activities for works in subsequent years; (iii) construction supervision of civil works throughout the project, and (iv) financial and technical audits annually.

10. **A2.1 – Year One Works Plan Preparation** (ADB US\$0.13 million). This subcomponent will provide support to MPWT in the preparation of periodic maintenance works treatment design for civil works, bill of quantities, technical parts of bidding documents (and commercial parts for ADB/AusAID financed contracts only) and the standard specifications and special condition works to be undertaken in the first year of the project.

11. **A2.2 – Project Implementation Advisors** (IDA US\$1.41 million). The subcomponent is for consultant services to advise the MPWT in all facets of project implementation, so as to ensure the efficient and effective completion of the works. The advice to be provided by the consultants will include:

- (a) Preparation of maintenance treatment designs and cost estimates beyond the first year of implementation;
- (b) Preparation of technical parts of bid documents (and commercial parts for ADB/AusAID financed contracts only), including expected Bill of Quantities and “Special Specification Clauses” in conjunction with MPWT, ADB and World Bank Standard Specifications (as appropriate depending on funding source
- (c) Technical aspects of the procurement of consultants,
- (d) Procurement of civil works contractors (for ADB/AusAID financed contracts only).
- (e) Contract management;
- (f) Reviewing the quality of major outputs, particularly with regard to construction monitoring and financial reporting and performance, adherence to disbursement schedules, construction progress, and compliance with requisite accounting and financial management practices;
- (g) Ensuring adherence to safeguard frameworks and compliance with safeguard policies; contributing to the preparation of all Monthly and Quarterly Reports to be submitted to higher MPWT authorities and donor partners; and
- (h) The provision of guidelines on the above topics.

Office refurbishing for a meeting room and an office, will support the management activities of the project carried out by the Deputy Director of GDPW at a cost of US\$30,000, financed by IDA.

The subcomponent also includes support for the RMDS data collection for road condition, inventory and traffic counts, including purchase of vehicles for these activities.

12. **A2.3 – Construction Supervision** (IDA US\$1.68 million). These services will ensure that contract management and construction supervision are commensurate with donor requirements and are utilized as effective tools for project implementation. Primary responsibilities include:

- (a) Providing assistance to MPWT in the monitoring of all works, including materials testing, verification of construction schedules, verification of quantities, adherence to contractually stipulated standards and conformance with approved engineering designs;
- (b) Reviewing contractors’ claims, and assisting MPWT in the resolution of such claims;

- (c) Assisting in the preparation of monitoring reports and all documentation that will ultimately be submitted to the donor agencies;
- (d) Assisting in the management of the safeguards (environmental and social) aspects of contract implementation; including on-the-job training for safeguards staff;
- (e) Augmenting the skills and knowledge of MPWT staff in the general area of construction practices and monitoring utilizing internationally accepted procedures, systems and standards; and

13. ***A2.4 – Independent Technical and Financial Audits (US\$0.26 million)***

- (a) ***A2.4.1 Independent Technical Audits (AusAID US\$0.18 million)***. An individual consultant will be employed to conduct an independent technical audit of the project implementation annually. The audit would review and assess the scope, location and quality of all activities implemented under the Project, in reference to achievement of the Project Development Objectives and physical outputs.
- (b) ***A2.4.2 Independent Financial Audits. (RGC US\$0.08 million)***. An independent external financial auditor, acceptable to donor partners, will prepare and submit audited financial statements and audit reports within six months of each financial year. The internal audit function within the implementing agencies is the responsibility of the respective implementing agencies but support will be provided for reviewing internal control systems, making recommendations for improvements and monitoring remedial actions taken. The internal audit reports will be available on semi-annual basis to IDA and the project external auditors. **Component B - Capacity Development (US\$2.73 million)**

14. This component will support the capacity development at the institutional, organizational and individual level for MPWT to perform its road asset management functions effectively and efficiently. It will include seven subcomponents to address: institutional road asset management capacity development of GDPW; capacity development of the Road Asset Management Office (RAMO); private sector development and divestment of force account units; road safety campaign; resettlement decree training; HIV/AIDS awareness; and monitoring and evaluation of project outcomes.

15. ***B1 – Institutional and Road Management Capacity Development (IDA US\$1.25 million)***. The objective of this subcomponent is to assist the Government in the development of its organization and business processes to undertake sustainable road asset management. This activity will build on analysis work undertaken during project preparation to:

- (a) Detail the current organizational structure of MPWT, MRD and MEF and any other agencies/ministries with responsibilities for road asset management including the roles, responsibilities of each functional unit;
- (b) Detail the administrative procedures used for planning, budgeting, and management of implementation for road maintenance works;
- (c) Evaluate the current structure, operational characteristics, organizational mandates and procedures, to identify strengths and weaknesses, and in particular the lack of any units responsible for any key function;

- (d) Develop revised structures, procedures, roles and responsibilities and develop recommendations for modification to the roles and responsibilities of three key departments within GDPW: the Heavy Equipment Centre (HEC) with the Road Maintenance Decision System (RMDS), the Technical Research Centre (TRC), and the Road Infrastructure Department (RID) construction units. This would include refinement of the long term roles and responsibilities of the RAMO and four departments with the GDAP: the Department of Accounts and Finance (DAF), the Social and Environment Unit (SEU) within the Department of Planning, the Department of Human Resources (DHR) and the Department of Administration (DOA);
- (e) Devise a process to implement the revised arrangements which takes due account of the changes required for improved results of the RGC road maintenance program and assist in the implementation of the agreed arrangements;
- (f) Evaluate the individual staff training needs, including the formulation of a human resource development plan; and
- (g) Develop an information technology and office support equipment needs assessment and propose a list of key equipment requirements.

16. A training program (including courses, suggested attendees, schedule and curricula) will be developed and implemented. It will be determined based on established needs, and will provide guidance for facilitating and coordinating training course implementation that strengthens the capacity and performance of the respective agencies. Training programs will be result-based, with planning and reporting focused on outputs. With a view to build internal capacity and self-sufficiency, the program will be evaluated at different levels, and will include participant's feedback on the program and suggested improvements, measure of learning by participants through skills enhancement, knowledge and attitudinal change, improvement in job performance and application of learning and overall impact of the learning programs on the MPWT operations. It is expected that it will include facilitation of implementation and operation of a functional organizational structure for efficient road management, training in all aspects of road maintenance management including planning, data collection, analysis, reporting, contract procurement, management and administration, construction, quality management monitoring and reporting. A cultural change program will be also devised and implemented.

17. Consultant services will also assist the revised organization in the development of intermediate and short-range business planning models, and for monitoring the extent to which business plan milestones are being met. A budget of US\$150,000 has been allocated for purchase of information technology and office support related to road asset management functions.

18. ***B2 – Asset Management Capacity Development (IDA – US\$0.4 million)***. This subcomponent will assist in the development and implementation of a program to strengthen the MPWT technical capacity for road asset management through human resource development and training, in support of the asset management strategies and the annual maintenance work programs. The program should be developed within the framework of overall Action Plan under preparation by JICA as part of separate donor assistance provided by Japan. It will assist in modernizing the technical capability of MPWT. Technical assistance will be provided to help MPWT:

- (a) Mainstream the planning procedures and the RMDS developed under the PRIP to a fully operational and sustainable status, with enhancements as required;
- (b) Ensure the RAMO is operating effectively without the need for outside support;
- (c) Update the technical guidelines, standards and procedures involved in the management of road assets, and covering the whole process of planning, preparation, implementation, supervision and monitoring; and
- (d) Train staff in the whole process of planning, design, cost estimation, implementation, supervision and monitoring

19. **B3 – Private Sector Development (IDA – US\$0.1 million).** The subcomponent will provide support to enhance private sector capacity for the undertaking of maintenance works. The main focus will be the preparation and delivery of training programs for contractors on contract bidding procedures, road maintenance techniques, works management, bid preparation, cost monitoring and construction management and quality control. The objective is to strengthen the capacity of the local construction industry, including equitized SOEs and private firms, to enhance their competitiveness and ability to deliver high quality maintenance operations. This will also support the creation and strengthening of an Association of Road Contractors and Road Consultants, such that they can take over the training and business improvement programs once the project is completed.

20. The subcomponent will also assist in initiating the process of spinning-off force account maintenance works units in MPWT to the private sector. The divestiture is to be managed and financed by the RGC.

21. **B4 – Road Safety Campaign (ADB/AusAID US\$ 0.23 million).** The subcomponent will support implementation of six out the fifteen key activities of the National Road Safety Action Plan. The activities have been identified by the implementing ministries as their key priorities, based on activities conducted by a variety of stakeholders active in the sector and approved by the NRSC¹. This will include awareness campaigns designed to provide road safety training and information to road users about the recently approved legislation/regulations concerning motorcycle helmets, drink-drive limits and vehicle speed limits, while building upon MPWT capacity to effectively coordinate road safety activities supported by various donors.

22. **B5 – Resettlement Decree Training (ADB/AusAID US\$0.30 million).** This subcomponent, financed and monitored by ADB, will assist MPWT and MEF with training ministerial staff and resettlement specialist on the consultation and compensation processes related to the implementation of the recently formulated Resettlement Sub-Decree, prepared by the Involuntary Resettlement Committee (IRC). The resettlement sub-decree² will ensure uniform and sufficient implementation of resettlement of affected people in all infrastructure projects, irrespective of funding source and implementing agency, thus facilitating harmonization and alignment for the use of Government systems (to be confirmed by ADB).

¹ Road Safety Action Plan Proposal Year 2008. *National Road safety Committee July 2007*

² TA 4490-CAM, Enhancing the Resettlement Legal Framework, approved by the President on 12 June 2004 for \$400,000.

23. **B6 – HIV/AIDS Awareness (IDA US\$0.10 million).** The subcomponent will support HIV/AIDS awareness campaigns targeting staff of MPWT, the supervision consultant, construction workers, administrative staff of construction companies and residents adjacent to construction sites. The objectives are to (i) raise the awareness of HIV/AIDS and Sexual Transmitted Diseases (STDs); (ii) lower the risk of HIV/AIDS and STD transmission; (iii) reduce the rate of HIV/AIDS and STD infections, and (iv) support institutional strengthening within MPWT to address the issue. Activities under this subcomponent include baseline survey, intervention design, program implementation, and monitoring and evaluation. The activities will start simultaneously with the construction stage for concerned communities and workers. Construction contracts will stipulate that contractors must facilitate the HIV/AIDS prevention program and make construction personnel (the construction workers and their administrators) available for HIV/AIDS educational activities at appropriate times. The MPWT will monitor, through the project management office, the compliance of the contractors in facilitating the awareness campaigns.

24. **B7 – Monitoring and evaluation of project outcomes (ADB/AusAID US\$0.15 million).**

The purpose of this subcomponent is to assist MPWT to develop within MPWT a permanent capacity to undertake monitoring and evaluation (M & E). Technical assistance (TA) funded by AusAID will be provided to assist the MPWT in the M & E of the impacts, outcomes and outputs of the project. The TA will assist in the design of the monitoring program and the organizational arrangements required, the undertaking of the baseline and initial project monitoring data collection and analysis, and quality management for later years. The cost of the monitoring operations will be met from counterpart funds. The organizational arrangements for permanent M & E will be put in place, and through this assistance, the permanent capacity developed within MPWT to undertake M & E.

Component C - Merit Based Pay Initiative (US\$0.70 million) (TO BE CONFIRMED)

25. **Merit Based Pay Initiative (MBPI) (IDA US\$0.50 million; RGC US\$0.20 million).** This subcomponent will support MPWT with IDA funding for the introduction of the Merit Based Pay Initiative (MBPI) being trialed in selected RGC ministries. To improve civil service accountability and work discipline, the Ministry of Economy and Finance (MEF) and the Department of Personnel (DP) have agreed to implement performance based incentives through the MBPI. The MBPI provides a performance-based incentives structure for civil servants contributing to the implementation and monitoring of the project, ensuring recruitment of capable and committed staff, greater accountability and improved work discipline. A civil servant can receive supplementary incentive pay from a single project only. The project will (i) provide assistance to assess and prepare possible future introduction of the MBPI in selected departments of the GDPW and GDPA of MPWT, and if agreed between RGC and IDA; and (ii) financing on a sliding scale over five years as part of the project's operating cost.

26. The *Merit Based Pay Incentive Manual*, issued by the Ministry of Economy and Finance in June 2007, presents the incentive levels based on target rates. The target rate is the total salary level which includes base salary, functional allowance,

PMG allowance, and PFM/MBPI allowance. The table below present the annualized cost based on the target rates for 88 staff members. US\$70,000 is allocated for the preparatory work and design for the MPWT MBPI, to be conducted by an individual consultant.

27. The MBPI will be financed on a sliding scale, over five years as part of the project's operating cost.

Part II. IDA-financed Project Activities

28. The majority of IDA resources (US\$24.8 million) are dedicated to ensuring that adequate funding is available for the planned maintenance regimes. Two critical pieces of implementation support (an Implementation Advisor and Construction Supervision Consultant) will be financed through the Credit. The Credit will also support four capacity building programs related to Institutional and Road Management Capacity Development, Management Capacity Development, Private Sector Development, and HIV/AIDS Awareness. Additionally, IDA will provide resources to assist in the introduction of the Merit Based Pay Initiative within MPWT. Specific project components being financed by the Credit and their indicative costs are provided in Table A4.6 below.

Table A4.6 - IDA-Financed Components and Value

Component	IDA amount
Component A	
A1 - Annual Work Plans	24,796,000
AWP1	2,033,900
AWP2	5,986,406
AWP3	5,578,242
AWP4	4,402,627
AWP5	6,794,826
A2 - Implementation Support	4,248,947
A2.2 Implementation Advisor	1,285,194
<i>Technical Assistance</i>	780,663
<i>RDMS support</i>	504,530
A2.3 Construction Supervision Consultant	1,678,560
Component B	
B1 - Institutional & Road Management Capacity Development	1,250,000
<i>Analytic & Advisory Service</i>	1,100,000
<i>Information Technology</i>	150,000
B2 - Management Capacity Development	400,000
B3 - Private Sector Development	100,000
B6 - HIV/AIDS Awareness	100,000
Component C	
C1 - MBPI	500,000