



REFERENCES

- Antonissen, R., et al. 2000. Comment le New Deal améliore la qualité des soins de santé et remplace les anciens arrangements à Sotnikum, Siem Reap Province, Cambodia. Evaluation des réformes introduites par MSF, UNICEF et le Ministère cambodgien de la Santé. Travail de fin d'études de Master en Gestion et Evaluation des projets. RUCA, Université de Anvers.
- Brun, P, Chukmel, S., and Pelletier, J., 1996. Enquête Socio-économique, 8-9/1996. Swiss Red Cross dans la province de Takéo, Royal du Cambodge.
- Brun, P, Gerard P. J., Santepheap. Chuk. 1996. Enquête Socio-économique dans la province de Takeo.
- Budget and Finance Department. 2001. National Budget Book 2001, Ministry of health, Phnom Penh, Cambodia.
- Carrin, G. 1995. A method for the calculation of health care costs and their recovery Office of Intensified Cooperation World Health Organization, and Kodjo Evlo, University of Benin Lome, Togo
- Carrin ,G., Perrot, J., Sergent, F. The Influence of Financial Participation by the population on the Demand for health care: An analytical Tool for countries in Greatest Need. Division of intensified Cooperation with WHO Geneva. Printed in Switzerland, 1994, by WHO.
- Collins, W., 2000. Medical practitioners and traditional healers: a study of health seeking behavior in Kampong Chhanng, Cambodia.
- Creese, A., and David Parker. 1994. Cost Analysis in Primary Health Care: A training manual for programme managers. Geneva, Swizeland.
- Department of Planning and Health Information. 1997. Guidelines for developing

Operational Districts. In Collaboration with the World Health Organization. Ministry of Health, Phnom Penh, Cambodia.

Department of Planning and Health Information. 1999. Health Policies and Strategies 1999-2003. Ministry of Health, Phnom Penh, Cambodia.

Department of Planning and Health Information. 2000. National Health Statistics Report 1999. Ministry of Health, Phnom Penh Cambodia.

Drummond, M., et al. 1998. Methods For Economics Evaluation of Health Care Programme. 2 nd ed. Oxford: Oxford University Press.

Financial Planning Office. 1999. Ministry of Health Budget Book 1999, English Edition. Ministry of Health, Phnom Penh, Cambodia.

Forum on Health Sector Reform “ Lessons from Cost Recovery in Health ” [On line] available from: http://mosquito.who.int./hs95_5.htm [2002, May 5]

Health Economics Task Force, 2000. Introducing User Fees at Public Sector Health Facilities in Cambodia, an overview. Briefing paper, 9/2000. In Collaboration with WHO Health Sector Reform Project Phase III. Ministry of Health, Phnom Penh, Cambodia.

Institute of Public. 1999. National Health Survey 1998. Ministry of Health, Phnom Penh, Cambodia.

Ministry of Health. 1996. National Charter on Health Financing in the Kingdom of Cambodia. Ministry of Health, Phnom Penh, Cambodia.

Ministry of Health. 2000. Health Sector Reform Phase III Project: extension proposal, 8/2000. World Health Organization. Phnom Penh, Cambodia.

Ministry of Health. 2001. Health Service Achievement Report 2000 and Objectives

for 2001. Ministry of Health, Phnom Penh, Cambodia.

Mills, A., and Gilson, L. Health economics for developing countries: A SURVIVAL KIT. Evaluation and planning center for health care, London School of Hygiene and Tropical Medicine, Kepple Street (Gower Street).

National Institute of Statistics. 1999. General Population Census of Cambodia 1998, Final Result. Ministry of Planning, Phnom Penh, Cambodia.

National Institute of Statistics Ministry of Planning, Cambodia. 1999. Socio-economic survey. United Nations Development Programme, Swedish International Development Cooperation Agency. And executed by World Bank.

Oxfam UK & Ireland Policy Department 27 February 1997. Cost Recovery and Equity in the Health Sector. Issue for developing countries Kevin Walkins. <http://www.oxfam.org.uk/policy/research/helsinki.htm> [2002 March 18]

Pindyck R. S., and Rubinfeld, D. L., 2001. Microeconomics 5 th ed. Singapore: Prentice Hall International.

Schieber G. J. The World Bank Washington D.C. Proceedings of a World Bank Conference, March 10-11, 1997. Innovations in Health care Finance.

Shaw, R. P., and Ainsworth, M. 1996. WB Discussion Papers Africa Technical Department Series "Financing Health Services through User Fees and Insurance", case studies from Sub-Saharan Africa.

Shepard, D. S., Hodgkin, D., and Anthony, Y. E. 2002. Institute for Health Policy Heller Graduate School Brandeis University Waltham, MA, USA. Analysis hospital costs: manual for managers. World Health Organization Geneva

Swiss Red Cross. 2001. Takeo Referral Hospital, review of year 2000, financing scheme activities, 13/2/2001. Takeo Province, Cambodia.

Thomé, J., 1999. Takeo Hospital, Cambodia. Mission Report, 12/1999. Swiss Red Cross. Takeo Province, Cambodia.

Thomé, J., 2001. Economic follow-up after one year of implementaton of a 'new deal'in Sotnikum Operational District, Siem Reap, Cambodia. Médecins Sans Frontières, Cambodia, Association Européenne pour le Développement et la Santé.

Thomé, J. Swiss Red Cross, 2000. Takeo Hospital, Cambodia. Mission Report, 6/2000. , Takeo Province, Cambodia.

Van, D. W., and Meessen, B., 2001. Sotnikum New Deal, The first year. Better income for health staff: better services to the population. Médecins Sans Frontières, Cambodia. Siem Reap, Cambodia.

World Bank website: Towards Sustainable Health care in sub-Saharan Africa.
[On line] Available from: [http://www.worldbank.org/afr/findings/english/find63 . htm](http://www.worldbank.org/afr/findings/english/find63.htm) [2002, February 18]

World Bank websites: World Development Indicators, database 1999; The World Bank in Cambodia, 2001. [On line] Available from: <http://www.worldbank.org/eap> [2002, April 29]

APPENDICES

APPENDIX A
GENERAL INFORMATION

Appendix 1: Table for data collection

1.Capital Cost (\$US, discount rate of 10 percent)

Input	Purchase Price	Year of Purchase	Useful life time	Annualization Factor	Annual Cost	Allocation factor %	Annual Hospital Cost
◆ Building: Space of the hospital ◆ Equipment: - Refrigerator - Sterilizer - X-Ray machine - Ultrasound - Equipment for operation room - Microscope - Other equipment with unit cost (price) of \$100 or more ◆ Vehicles ◆ Training-no-recurrent => 1 year							
Total Capital Cost							

Useful time will be obtained by interview with the administration, accountant
 Current price will be calculation following formula

$$C_{2003} = C_t (1 + r)^{2003-t}$$

Where C_{2003} : Current price, C_t : purchase price, r : discount rate, t : year since

Depreciation value of capital or annual cost will calculate by dividing value in year 2002 of item by the annualization factor obtain from the table or by multiplying the value in year 2002 of the item to the factor obtain from the annualization formula as the following equation.

$$\text{Annual economic cost} = \text{Current value} / \text{Annualization factor}$$

Appendix 1 (cont.): Table for data collection

2. Recurrent cost of the hospital

RECURRENT COST = LC + MC	1998	1999	2000	Allocation criteria	Total Cost US\$	Average Cost US\$/year
Personnel or Labor cost (LC): - Salaries - Bonus - Per diems & other payments						
Material cost (MC) - Drugs & Supplies - Electricity & water - Patient Food - Fuel & oil for vehicles - Office supplies - Ice for cold chain - Maintenance Buildings/Vehicles - 1% user fee to Treasury - Other running costs						
Total						

Appendix 1 (cont.)

Revenue data collection (in US\$)

Sources of revenue	1998	1999	2000	Average of 3 years
Government				
Other				
Total				

Appendix 2: Capital cost investment:

I. Building	Sqm²	Year of construct/Renovation	Purchase Prices (\$)	Useful life Time	Current Value (\$)	Annulization Factor	Annual Cost (\$)
OPD building	180.00	Last major renovation 1989	NA	5	0		
General medicine	336.00	Last major renovation 1989	NA	5	0		
Pediatric	308.00	Last major renovation 1990	NA	5	0		
Surgery ward	300.00	Construction 2001	48,800.00	30	59,048.00	9.4296	6,261.98
Maternity	460.00	Last major renovation 2000	2,787.00	5	3,709.50	3.7908	978.55
ICU	84.00	Last major renovation 2001	8,008.00	5	9,689.68	3.7908	2,556.10
Bloc & Post Operation.	410.00	Last major renovation 2000	14,856.00	5	19,773.34	3.7908	5,216.14
Pneumo & TB	198.00	Last major renovation 1985	NA	5	0		
Administration building	120.00	Last major renovation 1993	NA		0		
Lab-ray & Ultrasound	154.00	Last major renovation 1996	NA		0		
Pharmacy & medical storage	160.00	Last major renovation 1982	NA		0		
Kitchen (Catering)	159.00	Construct 1980	NA		0		
Generator building	160.00	Last major renovation 1987	NA		0		
Laundry	16.00	Construction 1999	2,626.00	30	3,844.73	9.4296	407.73
Other	178.00	Last major renovation 1989	NA	5	0		
Total	3,223.00						15,420.51

Appendix 2 (cont.)

II. Medical Equipment and non medical equipment investment

		Quantity per facility	Year of purchase	Unit Price US\$	Total cost US\$	Useful life Time	Current value US\$	Annualization factor	Annual cost US\$
OPD	General OPD								
	Bed	1	1989	60.00	60.00	10	0	6.1446	0
	Desk & chair	1	1990	115.00	115.00	10	0	6.1446	0
	Specialist OPD								
	Bed	1	1989	60.00	60.00	10	0	6.1446	0
	Desk & chair	1	1990	115.00	115.00	10	0	6.1446	0
	Dentist OPD							6.1446	0
	Desk & chair	1	1990	115.00	115.00	10	0	6.1446	0
	Dental Set6: Ds6B	1	1990	780.46	780.46	10	0	6.1446	0
	Small surgery								0
	Table small surgery	1	1989	NA	NA	10	0	6.1446	0
Minor surgery box	1	1995	180.00	180.0	5	0	3.7908	0	
IPD	Pediatric								
	Beds	30	1989	60.00	1,800.00	10	0	6.1446	0
Surgery	Desk & Chair	3	1990	115	345.00	10	0	6.1446	0
	Portance a perfusion	8	1989	20	160	10	0	6.1446	0
	G.Medercine								
	Beds	45	1989	60.00	2,700.00	10	0	6.1446	0
	Desk & Chair	3	1990	115.00	345.00	10	0	6.1446	0
	Portance a perfusion	10	1989	20	200.00	10	0	6.1446	0
	Maternity					5	0	3.7908	0
	Beds	25	1989	60.00	1,500.00	10	0	6.1446	0
	Desk & Chair	3	19	115.00	345.00	10	0	6.1446	0
	Portance a perfusion	8	1989	20	160.00	10	0	6.1446	0
	Beds	46	1989	60.00	2760.00	10	0	6.1446	0
	Desk & Chair	3	1990	115.00	345.00	10	0	6.1446	0
	Minor surgery box	1	1995	180.00	180.00	5	0	3.7908	0
	Portance a perfusion	14	1989	20	280.00	10	0	6.1446	0

Appendix 2 (cont.)		Quantity per facility	Year of purchase	Unit Price US\$	Total cost US\$	Useful life Time	Current value US\$	Annualization factor	Annual cost US\$
	Pneumology & TB								
	Beds	22	1989	60.00	1320.00	10	0	6.1446	0
	Desk & Chair	1	1990	115.00	115.00	10	0	6.1446	0
	ICU								
	Beds	8	1997	60.00	480.00	5	0	3.7908	0
	Desk & Chair	1	1990	115.00	115.00	10	0	6.1446	0
3	Bloc operation								
	Aspirator electric 220V	1	1987	1,200.00	1,200.00	10	0	6.1446	0
	Bistory electric 220V	1	1887	2,500.00	2,500.00	10	0	6.1446	0
	Lamp scialitique	1	1987	2,413.00	2,413.00	10	0	6.1446	0
	Operating table	1	1980	1,180.00	1,180.00	10	0	6.1446	0
	Autoclave	1	1980	1,750.00	1,750.00	10	0	6.1446	0
	Anestesis+accessories	1	1980	1,661.00	1,661.00	10	0	6.1446	0
4	Diagnosis Support								
	X-Ray Machine	1	2001	5,476.00	5,476.00	10	6625.96	6.1446	1078.34
	Ultrasound machine	1	1990	0	0	10	0	6.1446	
5	Laboratory								
	Computer mecanique de table	1	1989	1,200.00	1,200.00	10	0	6.1446	0
	Microscope Olympus	1	2001	1,100.00	1,100.00	10	1,331.00	6.1446	216.61
	Centrifuges de table	1	1997	NA	NA	10	0	6.1446	0
	Centrifuges hematocrite	1	1998	NA	NA	10	0	6.1446	0
	Balance Lab	1	1997	NA	NA	10	0	6.1446	0
	Pharmacy					10	0	6.1446	0
	Refrigerator keros/elec/240	1	1989	1,375.00	1,375.00	10	0	6.1446	0
7	Administration								
	Computer	3	1995	750.00	2,250.00	10	4,823.07	6.1446	784.93
	Desk & Chair	3	1990	115.00	345.00	10	0	6.1446	0
8	Laundry								
	Washing machine	1	1995	160.00	0	5	0	3.7908	0
Subtotal 1									2,079.88

Appendix 2 (cont.):

III. Vehicle

	Quantity per facility	Year of purchase	Unit Price US\$	Total cost US\$	Useful life Time	Current value US\$	Annualization factor	Annual cost US\$
Toyota Land Cruiser (Second hand)	1	1986	NA	NA	10	0	6.1446	
4 Runner (Second hand)	1	2000	9,000.00	9,000.00	10	10,890.00	6.1446	1,772.29
Toyota Land Cruiser (UN provided)	1	1991	NA	NA	10	0	6.1446	
Ambulance	1	1998	NA	NA	10	0	6.1446	
Boat	1	1985	2,000.00	2,000.00	10	0	6.1446	
Ambulance	1	1989	35,000.00	35,000.00	10	0	6.1446	
Subtotal 2								1,772.29
Total								3,852.17

	Cost (\$US)	%
Building	15,420.51	80.01
Medical & non medical equipment	2,079.88	10.79
Vehicle	1,772.29	9.20
Total capital cost	19,272.68	100.00

N.B: The studies of capital cost in this case which item are over useful lifetime have no more cost, the cost will be zero. So, the calculations of the capital cost in this studies just for the other item that still have cost (Useful life time).

Appendix 3: Demand estimation method

Package of services	# Cases		Demand		Growth Rate population	lnQ ₁₉₉₈	lnQ ₁₉₉₉	lnQ ₂₀₀₀	lnQ ₂₀₀₁
	1998	1999	2000	2001					
OPD									
Generalist consultation	9,097.00	5,373.00	4,741.00	3,640.00	0.0230	9.115700	8.589142	8.464003	8.199739
Specialist	2,328.00	2,022.00	1,602.00	1,431.00	0.0230	7.752765	7.611842	7.379008	7.266129
Minor surgery	2,003.00	1,357.00	1,248.00	997.00	0.0230	7.602401	7.213032	7.129298	6.904751
Dentist									
Category I	1,896.00	1,132.00	858.00	775.00	0.0230	7.547502	7.031741	6.754604	6.652863
Category II	13.00	7.00	8.00	5.00	0.0230	2.564949	1.945910	2.079442	1.609438
Physiotherapy	147.00	53.00	26.00	35.00	0.0230	4.990433	3.970292	3.258097	3.555348
Diagnosis support									
X-ray, Echo, ECG	3,558.00	2,114.00	2,257.00	1,483.00	0.0230	8.176954	7.656337	7.721792	7.301822
Laboratory	1,579.00	1,032.00	1,259.00	602.00	0.0230	7.364547	6.939254	7.138073	6.400257
IPD									
Hospitalization									
Up to 1 week	5,976.00	5,571.00	5,317.00	5,650.00	0.0230	8.695507	8.625330	8.578665	8.639411
More than 1 week	444.00	425.00	459.00	550.00	0.0230	6.095825	6.052089	6.129050	6.309918
Maternity: Delivery	1,457.00	1,552.00	1,638.00	1,969.00	0.0230	7.284135	7.347300	7.401231	7.585281
Surgery									
Minor surgery	481.00	440.00	392.00	360.00	0.0230	6.175867	6.086775	5.971262	5.886104
Medium surgery	479.00	514.00	494.00	445.00	0.0230	6.171701	6.242223	6.202536	6.098074
Major surgery	944.00	953.00	884.00	825.00	0.0230	6.850126	6.859615	6.784457	6.715383
Total	30,402.00	22,545.00	21,183.00	18,767.00					
OPD	20,621.00	13,090.00	11,999.00	8,968.00					
IPD	7,877.00	7,548.00	7,414.00	8,169.00					
Bloc (Operation)	1,904.00	1,907.00	1,770.00	1,630.00					
Total	30,402.00	22,545.00	21,183.00	18,767.00					

Appendix 3 (cont.):

Expect Ouput1999 lnQ ₁₉₉₉	Expect Output2000 lnQ ₂₀₀₀	Ouput2001 lnQ ₂₀₀₁	Output2002 lnQ ₂₀₀₂	Price		Price increase		
				1998-99	2000-2003	10%	20%	50%
9.1387	8.612142	8.487003	8.222739	5,700.00	6,240.00	6,864.00	7,488.00	9,360.00
7.7758	7.634842	7.402008	7.289129	6,700.00	8,190.00	9,009.00	9,828.00	12,285.00
7.6254	7.236032	7.152298	6.927751	19,000.00	20,670.00	22,737.00	24,804.00	31,005.00
7.5705	7.054741	6.777604	6.675863	8,360.00	9,360.00	10,296.00	11,232.00	14,040.00
2.5879	1.968910	2.102442	1.632438	19,000.00	20,670.00	22,737.00	24,804.00	31,005.00
5.0134	3.993292	3.281097	3.578348	4,180.00	4,680.00	5,148.00	5,616.00	7,020.00
8.2000	7.679337	7.744792	7.324822	11,400.00	12,480.00	13,728.00	14,976.00	18,720.00
7.3875	6.962254	7.161073	6.423257	4,180.00	4,680.00	5,148.00	5,616.00	7,020.00
8.7185	8.648330	8.601665	8.662411	35,340.00	39,000.00	42,900.00	46,800.00	58,500.00
6.1188	6.075089	6.152050	6.332918	78,660.00	84,240.00	92,664.00	101,088.00	126,360.00
7.3071	7.370300	7.424231	7.608281	35,340.00	39,000.00	42,900.00	46,800.00	58,500.00
6.1989	6.109775	5.994262	5.909104	57,000.00	71,760.00	78,936.00	86,112.00	107,640.00
6.1947	6.265223	6.225536	6.121074	114,000.00	143,520.00	157,872.00	172,224.00	215,280.00
6.8731	6.882615	6.807457	6.738383	152,000.00	195,000.00	214,500.00	234,000.00	292,500.00

Appendix 3 (cont.)

Price elasticity	lnQ ₂₀₀₃	Q ₂₀₀₃	lnQ expect 10%	Q expect 10%	lnQ expect 20%	Q expect 20%	lnQ expect 50%	Q expect 50%
(3.17)	8.2457390	3,811.35	7.94325294	2,816.51	7.6671048	2,136.89	6.958914	1,052.49
(0.68)	7.3121288	1,498.36	7.24763538	1,404.78	7.1887575	1,324.46	7.037763	1,138.84
(2.94)	6.9507508	1,043.93	6.67068789	788.94	6.4150105	610.95	5.759317	317.13
(1.10)	6.6988630	811.48	6.59363758	730.43	6.4975743	663.53	6.251217	518.64
(5.85)	1.6554379	5.24	1.09767659	3.00	0.5884804	1.80	(0.717370)	0.49
2.43	3.6013481	36.65	3.83269320	46.19	4.0438948	57.05	4.585528	98.05
(4.89)	7.3478223	1,552.81	6.88138076	973.97	6.4555530	636.23	5.363504	213.47
(6.73)	6.4462574	630.34	5.80447071	331.78	5.2185653	184.67	3.715992	41.10
0.38	8.6854108	5,915.97	8.72191764	6,135.93	8.7552458	6,343.88	8.840717	6,909.94
2.30	6.3559183	575.89	6.57546175	717.28	6.7758892	876.46	7.289892	1,465.41
1.63	7.6312811	2,061.69	7.78704244	2,409.18	7.9292414	2,777.32	8.293915	3,999.46
(0.47)	5.9321040	376.95	5.88733800	360.44	5.8464698	346.01	5.741662	311.58
(0.55)	6.1440743	465.95	6.09131865	442.00	6.0431565	421.22	5.919643	372.28
(0.37)	6.7613834	863.84	6.72615702	833.94	6.6939979	807.54	6.611525	743.62
		19,650.45		17,994.37		17,188.00		17,182.51
OPD		9,390.16		7,095.59		5,615.56		3,380.22
IPD		8,553.55		9,262.39		9,997.66		12,374.82
Surgery		1,706.73		1,636.38		1,574.78		1,427.48
Total		19,650.45		17,994.37		17,188.00		17,182.51

From 1998 - 1999 exchange rate was \$US 1 equal to 3,800 R (Riels)

From 2000 to present \$US 1 equal to 3,900 Riels, we assume that in year 2003 the exchange rate will be Constant.

Appendix 4: Revenue estimated (Price constant)

Package of services	Q.estimated	Price constant	Price constant	Revenue estimated (Riels)	Revenue estimated (\$US)
OPD	Q ₂₀₀₃				
Generalist consultation	3,811.35	6,240.00	1.60	23,782,824.00	6,098.16
Specialist	1,498.36	8,190.00	2.10	12,271,568.40	3,146.56
Minor surgery	1,043.93	20,670.00	5.30	21,578,033.10	5,532.83
Dentist				-	-
Category I	811.48	9,360.00	2.40	7,595,452.80	1,947.55
Category II	5.24	20,670.00	5.30	108,310.80	27.77
Physiotherapy	36.65	4,680.00	1.20	171,522.00	43.98
Diagnosis support				-	-
X-ray, Echo, ECG	1,552.81	12,480.00	3.20	19,379,068.80	4,968.99
Laboratory	630.34	4,680.00	1.20	2,949,991.20	756.41
IPD				-	-
Hospitalization				-	-
Up to 1 week	5,915.97	39,000.00	10.00	230,722,830.00	59,159.70
More than 1 week	575.89	84,240.00	21.60	48,512,973.60	12,439.22
Maternity Delivery	2,061.69	39,000.00	10.00	80,405,910.00	20,616.90
Surgery				-	-
Minor surgery	376.95	71,760.00	18.40	27,049,932.00	6,935.88
Medium surgery	465.95	143,520.00	36.80	66,873,144.00	17,146.96
Major surgery	863.84	195,000.00	50.00	168,448,800.00	43,192.00
Total	19,650.45			709,850,360.70	182,012.91

Appendix 5: revenue estimated if price increase by 10%

Package of services	Q. estimated	Price increase	Price increase	Revenue	Revenue
OPD	Q ₂₀₀₃ (10%)	10%	10%	estimated (Riels)	estimated (\$US)
Generalist consultation	2,816.51	6,864.00	1.76	19,332,524.64	4,957.06
Specialist	1,404.78	9,009.00	2.31	12,655,663.02	3,245.04
Minor surgery	788.94	22,737.00	5.83	17,938,128.78	4,599.52
Dentist				-	-
Category I	730.43	10,296.00	2.64	7,520,507.28	1,928.34
Category II	3.00	22,737.00	5.83	68,211.00	17.49
Physiotherapy	46.19	5,148.00	1.32	237,786.12	60.97
Diagnosis support				-	-
X-ray, Echo, ECG	973.97	13,728.00	3.52	13,370,660.16	3,428.37
Laboratory	331.78	5,148.00	1.32	1,708,003.44	437.95
IPD				-	-
Hospitalization				-	-
Up to 1 week	6,135.93	42,900.00	11.00	263,231,397.00	67,495.23
More than 1 week	717.28	92,664.00	23.76	66,466,033.92	17,042.57
Maternity, Delivery	2,409.18	42,900.00	11.00	103,353,822.00	26,500.98
Surgery				-	-
Minor surgery	360.44	78,936.00	20.00	28,451,691.84	7,295.31
Medium surgery	442.00	157,872.00	40.48	69,779,424.00	17,892.16
Major surgery	833.94	214,500.00	55.00	178,880,130.00	45,866.70
Total	17,994			782,993,983.20	200,767.69

Appendix 6: revenue estimated if price increase by 20%

Package of services	Q. estimated	Price increase	Price increase	Revenue	Revenue
OPD	Q ₂₀₀₃ (20%)	20%	20%	estimated (Riels)	estimated (\$US)
Generalist consultation	2,136.89	7,488.00	1.92	16,001,032.32	4,102.83
Specialist	1,324.46	9,828.00	2.52	13,016,792.88	3,337.64
Minor surgery	610.95	24,804.00	6.36	15,154,003.80	3,885.64
Dentist				-	-
Category I	663.53	11,232.00	2.88	7,452,768.96	1,910.97
Category II	1.80	24,804.00	6.36	44,647.20	11.45
Physiotherapy	57.05	5,616.00	1.44	320,392.80	82.15
Diagnosis support				-	-
X-ray, Echo, ECG	636.23	14,976.00	3.84	9,528,180.48	2,443.12
Laboratory	184.67	5,616.00	1.44	1,037,106.72	265.92
IPD				-	-
Hospitalization				-	-
Up to 1 week	6,343.88	46,800.00	12.00	296,893,584.00	76,126.56
More than 1 week	876.46	101,088.00	25.92	88,599,588.48	22,717.84
Maternity: Delivery	2,777.32	46,800.00	12.00	129,978,576.00	33,327.84
Surgery				-	-
Minor surgery	346.01	86,112.00	22.08	29,795,613.12	7,639.90
Medium surgery	421.22	172,224.00	44.16	72,544,193.28	18,601.08
Major surgery	807.54	234,000.00	6.00	188,964,360.00	48,452.40
Total	17,188.01			869,330,840.04	222,905.34

Appendix 7: Revenue estimated if price in crease by 50%

Package of services	Q.estimated	Price increase	Price increase	Revenue	Revenue
OPD	Q ₂₀₀₃ (50%)	50%	50%	estimated (Riels)	estimated (\$US)
Generalist consultation	1,052.49	9,360.00	2.40	9,851,306.40	2,525.98
Specialist	717.11	12,285.00	3.15	8,809,696.35	2,258.90
Minor surgery	317.13	31,005.00	7.95	9,832,615.65	2,521.18
Dentist				-	-
Category I	518.64	14,040.00	3.60	7,281,705.60	1,867.10
Category II	0.49	31,005.00	7.95	15,192.45	3.90
Physiotherapy	98.05	7,020.00	1.80	688,311.00	176.49
Diagnosis support				-	-
X-ray, Echo, ECG	213.47	18,720.00	4.80	3,996,158.40	1,024.66
Laboratory	41.10	7,020.00	1.80	288,522.00	73.98
IPD				-	-
Hospitalization				-	-
Up to 1 week	6,909.94	58,500.00	15.00	404,231,490.00	103,649.10
More than 1 week	1,465.41	126,360.00	32.40	185,169,207.60	47,479.28
Maternity: Delivery	3,999.46	58,500.00	15.00	233,968,410.00	59,991.90
Surgery				-	-
Minor surgery	311.58	107,640.00	27.60	33,538,471.20	8,599.61
Medium surgery	372.28	215,280.00	55.20	80,144,438.40	20,549.86
Major surgery	743.62	292,500.00	75.00	217,508,850.00	55,771.50
Total	16,760.77			1,195,324,375.05	306,493.43

Appendix 8: Step down allocation method

1. Allocate from space related cost center to all cost centers

Overhead departments	TDC	Unit of measurement sq.ft.	Cost allocate	Total
Space related cost	19,272.68	0	-	-
Administration	57,686.41	458.00	2,738.72	60,425.13
Catering	32,732.31	159.00	950.78	33,683.09
Laundry	4,924.44	16.00	95.68	5,020.12
Pharmacy	208,193.06	160.00	956.76	209,149.82
Laboratory	14,363.50	64.00	382.70	14,746.20
X - ray & ultrasound	7,524.56	90.00	538.18	8,062.74
OPD	17,802.93	180.00	1,076.35	18,879.28
IPD	101,027.53	1,686.00	10,081.83	111,109.36
Bloc	22,705.23	410.00	2,451.69	25,156.92
Total	486,232.65	3,223.00	19,272.68	486,232.65

2. Allocate from Administration to others RPCC, NRPC, and PSCC

Overhead departments	TDC	Unit of measurement salary & bonus	Cost allocate	Total
Administration	60,425.13	-	-	-
Catering	33,683.09	4,156.17	1,399.83	35,082.92
Laundry	5,020.12	4,156.17	1,399.83	6,419.95
Pharmacy	209,149.82	7,669.06	2,583.00	211,732.82
Laboratory	14,746.20	14,363.50	4,837.74	19,583.95
X - ray & ultrasound	8,062.74	7,524.56	2,534.33	10,597.07
OPD	18,879.28	17,802.93	5,996.17	24,875.46
IPD	111,109.36	101,027.53	34,026.90	145,136.26
Bloc	25,156.92	22,705.23	7,647.31	32,804.23
Total	486,232.65	179,405.15	60,425.13	486,232.65

Appendix 8 (cont.)

3. Allocate from Catering to other PS cost centers:

Overhead departments	TDC	Unit of measurement No of patients	Cost allocate	Total
Catering	35,082.92	0	-	-
Laundry	6,419.95	0	-	6,419.95
Pharmacy	211,732.82	0	-	211,732.82
Laboratory	19,583.95	0	-	19,583.95
X - ray & ultrasound	10,597.07	0	-	10,597.07
OPD	24,875.46	0	-	24,875.46
IPD	145,136.26	8,554.00	29,246.59	174,382.86
Bloc	32,804.23	1,707.00	5,836.33	38,640.56
Total	486,232.65	10,261.00	35,082.92	486,232.65

4. Allocate from laundry cost centers to PSCC:

Overhead departments	TDC	Unit of measurement No of pts	Cost allocate	Total
Laundry	6,419.95	0	-	-
Pharmacy	211,732.82	0	-	211,732.82
Laboratory	19,583.95	0	-	19,583.95
X - ray & ultrasound	10,597.07	0	-	10,597.07
OPD	24,875.46	9,390.00	3,067.70	27,943.15
IPD	174,382.86	8,554.00	2,794.58	177,177.43
Bloc	38,640.56	1,707.00	557.67	39,198.23
Total	486,232.65	19,651.00	6,419.95	486,232.65

Appendix 8 (cont.)

5. Allocate from Pharmacy cost center to Laboratory, X-ray, and PSCC

Overhead departments	TDC	Unit of measurement %	Cost allocate	Total
Pharmacy	211,732.82	0	-	-
Laboratory	19,583.95	0.16	338.77	19,922.72
X - ray & ultrasound	10,597.07	0.64	1,355.09	11,952.16
OPD	27,943.15	8.94	18,928.91	46,872.07
IPD	177,177.43	80.62	170,699.00	347,876.43
Bloc	39,198.23	9.64	20,411.04	59,609.27
Total	486,232.65	100.00	211,732.82	486,232.65

6. Allocate from Laboratory cost center to PSCC

Overhead departments	TDC	Unit measurement %	Cost allocate	Total
Laboratory	19,922.72	0	-	-
X - ray & ultrasound	11,952.16	0	-	11,952.16
OPD	46,872.07	0.20	3,984.54	50,856.61
IPD	347,876.43	0.45	8,965.22	356,841.66
Bloc	59,609.27	0.35	6,972.95	66,582.23
Total	486,232.65	1.00	19,922.72	486,232.65

Appendix 8 (Conti.)**7. Allocate from X-ray & Ultrasound cost center to PSCC**

Overhead departments	TDC	Unit of measurement %	Cost allocate	Total
X - ray & ultrasound	11,952.16	0	-	-
OPD	50,856.61	0.30	3,585.65	54,442.26
IPD	356,841.66	0.38	4,541.82	361,383.48
Bloc	66,582.23	0.32	3,824.69	70,406.92
Total	486,232.65	1.00	11,952.16	486,232.65

8. Full cost allocation and Unit cost

Unit cost	Total cost	No. of pt.	Unit cost
OPD	54,442.26	9,390.00	5.80
IPD	361,383.48	8,554.00	42.25
Bloc	70,406.92	1,707.00	41.25
Total	486,232.65	19,651.00	24.74

APPENDIX B
GENERAL INFORMATION

Appendix 9: HEALTH SOCIO-DEMOGRAPHIC INDICATORS

Total population 1998(1)	11,437,656
Males	48%
Females	52%
Sex Ratio-males for 100 females	93
Distribution of population by age group	
0-4 years	12.8%
5-14 years	30 %
15-64 years	53.7%
>64 years	3.5%
Number of households	2,188,663
Average household size	5.2
Population Growth Rate (1)	23‰
Crude Death Rate (per 1000)	12‰
Crude Birth Rate (per 1000 population) (2)	38‰
Total Fertility Rate (2)	5.3
Density of population per km. sq. (1)	64
Percentage of population living in urban areas (1)	15.7%
Percentage of population living in rural areas (1)	84.3%
Health (3)	
Under 5 Mortality Rate in 1998	115
Infant Mortality Rate in 1998	89.4
Maternal Mortality Rate in 1997 (per 100,000 live births)	473
Percentage of couples using modern contraceptive (1998)	16%
Life expectancy at birth of male	54.4
Life expectancy at birth of female	58.3
Education (1)	
Percentage of literate adult (>15years)	67.3%
Percentage of literate female adult	57%
Percentage of literate male adult	79.5%
Economy	
Government budget (running cost) devoted to health (US \$ per capita per year in 2001) (4)	3.1
Gross National Product per Capital (US \$ per capita per year in (1999) (4)	310
GDP (2001) (4)	283.52
Household expenditure on health US \$ per capita per year in 2001 (WHO)	\$36
Percentage of population under poverty line (5)	36%

(1) *General Population Census of Cambodia 1998, Final Census Result, NIS, Ministry of Planning, July 1999*

(2) *Ministry of Planning*

(3) *National Health Statistics Report 1998, Ministry of Health, Cambodia, April 1999*

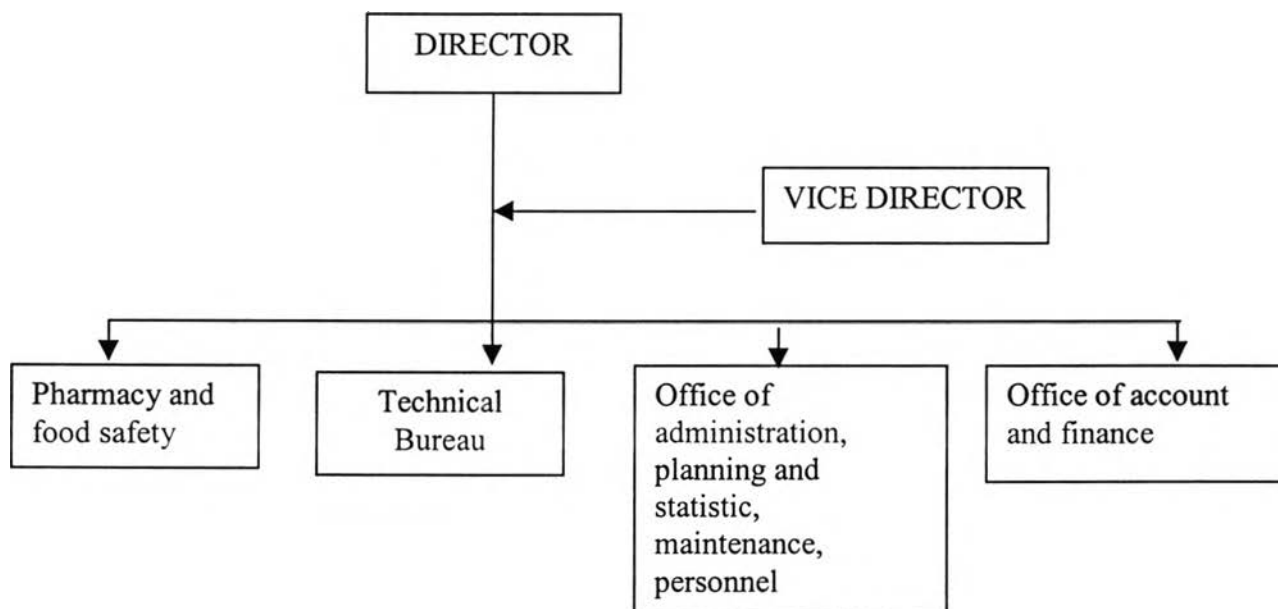
(4) *Ministry of Health Budget Book 1999, English Edition, Financial Planning Office, Ministry of Health Cambodia*

(5) *Cambodia Socio-economic Survey 1997, NIS, Ministry of Planning*

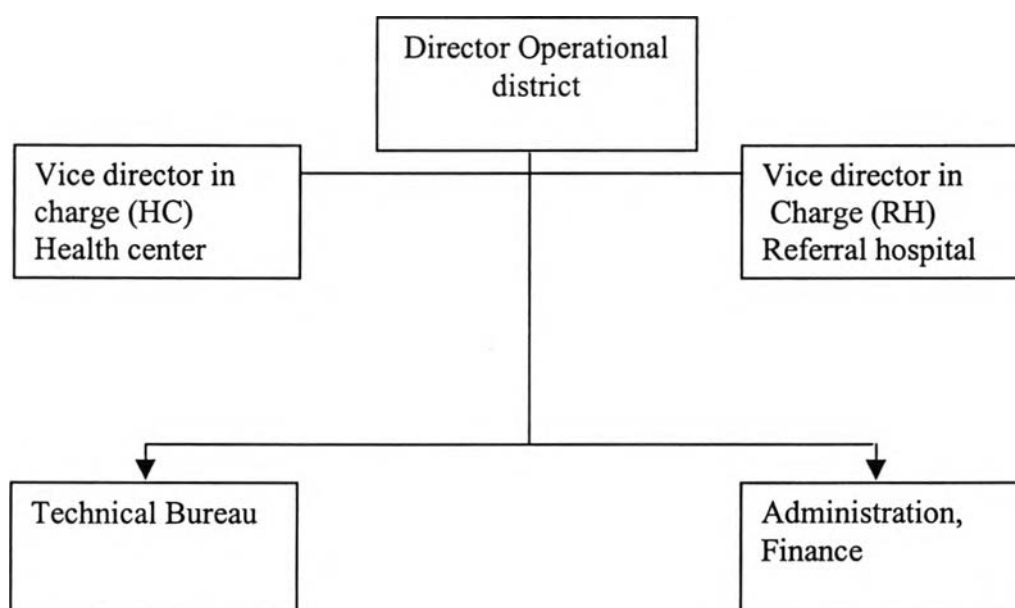
General Population Census of Cambodia 1998, Analysis of census result, NIS, Ministry of Planning, December 1999

Appendix 10: Takeo Provincial Health Department & Operational District diagram

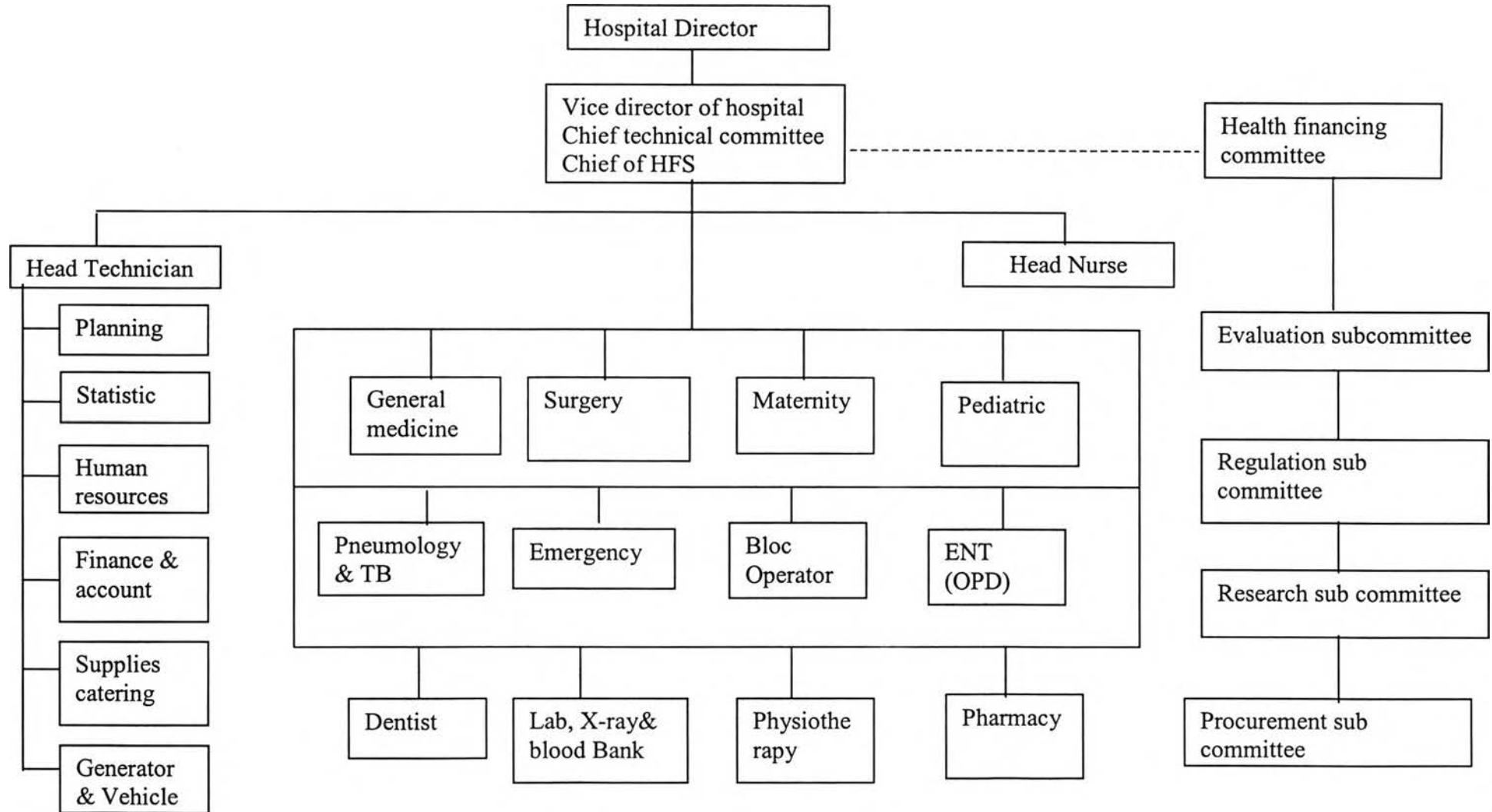
Provincial Health Department Diagram



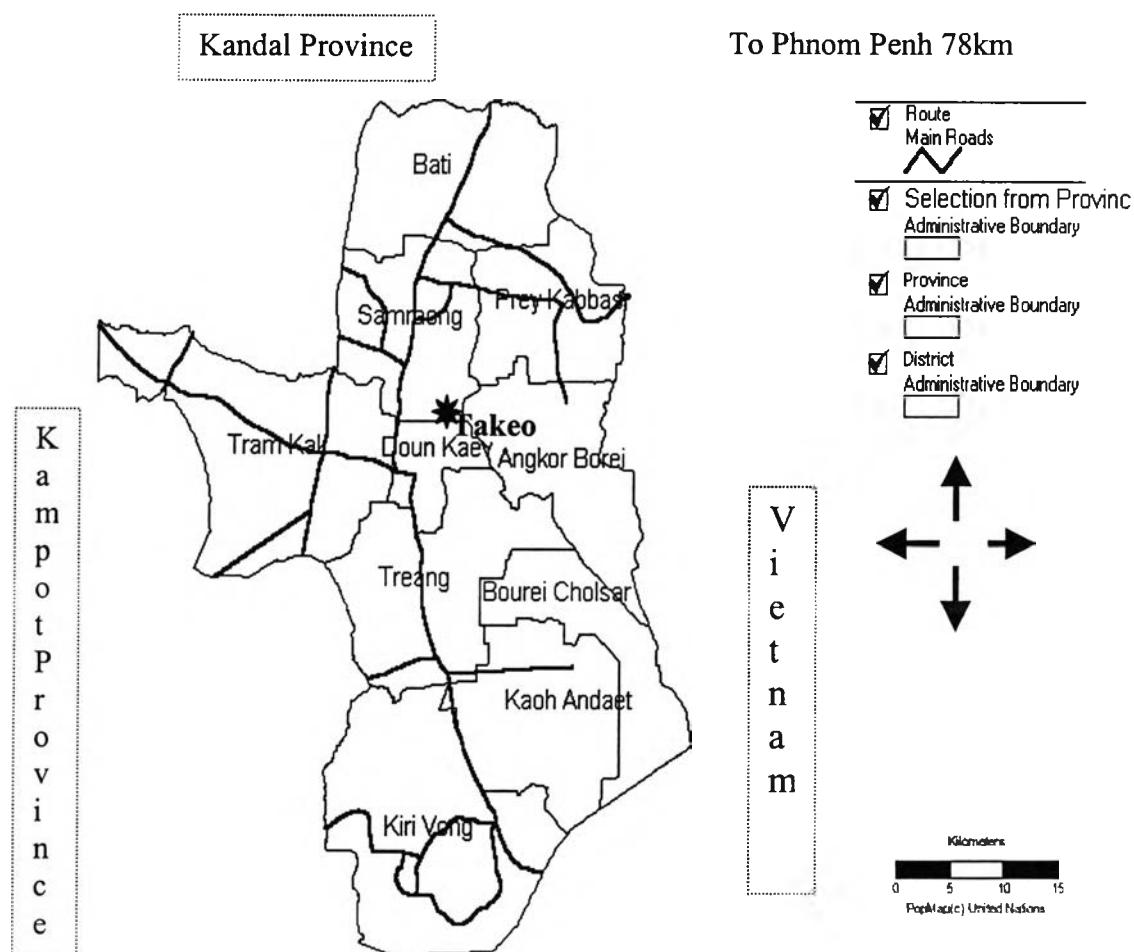
Operational District Diagram



Appendix 11: STRUCTURE OF TAKEO REFERRAL HOSPITAL



Appendix 12: Map and population statistics of Takeo Province



Operational Districts, Referral hospital, Health centers, and population under catchment area:

	Operational Districts	Number of Referral Hospital	Number of Health Center	Population Under catchments area
1	Daun Keo	1	15	180,678.00
2	Kirivong	1	20	202,258.00
3	Bati	1	13	171,477.00
4	Ang Rokar	1	9	110,907.00
5	Prey Kabas	1	13	146,412.00
	Total Population			811,732.00

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