

ឧបសម្ព័ន្ធទី ៦:

- ការប៉ាន់ស្មានតំលៃសំរាប់ការពិនិត្យតាមដានការបន្តរបន្ថយបរិស្ថាន

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Mitigation measure cost estimation

No.	Description	Qty	Unit cost	Annual cost, USD	Frequency (Year)	Sub-Total, USD
A Pre-construction phase						
1	De-mines for proposed resettlement, total area approximately 3400ha.				(Base on the resettlement study results)	45,957,213.00
2	Land concession and forest concession compensation to the owners					
3	Compensation for whole resettlement of the project					
4	De-mines of remains bomb/UXO in reservoir , construction site, and quarries.					7,463,955.00
	Sub-total:					53,431,168.00
B Construction phase						
1	Fish center construction (Establishment)	400,000			1	400,000.00
2	Water quality examination	1,200		1,200.00	5	6,000.00
3	Traffic sign and facilitator	3,000		3,000.00	5	15,000.00
	Sub-total:					421,000.00
C Operation phase						
1	Implementation of fish and fisheries monitoring program (Bio-hydrology monitoring center, fish catch monitoring, migratory fish species monitoring, water quality monitoring related to the fish and fisheries resources), starting from 2010	80,000		80,000.00	10	800,000.00
2	Establishment of hatchery and breeding of Mekong indigenous fish program, starting from 2011	100,000		100,000.00	15	1,500,000.00
3	Water quality examination	1,000		1,000.00	30	30,000.00
4	Compensation to (in reservoir site) people livelihood due to the project will damage forest-byproduct by provide agricultural extension program and rural credit, etc.	1638	200	327,600.00	5	1,638,000.00
5	Compensation to upstream people livelihood due to the project will damage aquatic resources by provide agricultural extension program, feeding animal, feeding fish, and rural credit, etc.	5469	50	323,450.00	10	3,234,500.00
6	Environmental fund to MoE of RGC	1	500,000	500,000.00	30	15,000,000.00
	Sub-total:					22,202,500.00
	Total			1,336,250.00		76,054,668.00

Note: - # of HH living along the Sa San river in Rattanakiri
 - # of HH living along the Srepok river in Rattanakiri and Mondulkiri
 - # of HH living in project area
 4598 HH, data 2007, Obtain from commune profile of MoI
 1871 HH, data 2007, Obtain from commune profile of MoI
 1638 HH, data 2007 (commune profile)

SUMMARY MITIGATION AND MONITORING COST

Mitigation measure cost	76,054,668.00
Monitoring cost (staffs from MoE and other related agencies)	135,240.00
Grandt total	76,189,908.00

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Monitoring Cost Estimation (by KCC EIA study team)

No.	Description	Frequency	Qty	Lab cost	Transport	Engineer rate*	Person	Amount	Total
Pre-Construction phase									
1	Investigate new settlement area to screen the impact on social and environment in place.	One time for draft final design, and one time for final design	2	0	100	120	3	660	1,320.00
2	Check the alignment of detour road, access road, and new resettlement area	One time for draft final design, and one time for final design	2	0	20	20	2	80	160.00
3	Check the detail project report to make sure the solving committee for the land conflict ready established and work effectively	One time for draft final design, and 5 time for final design and completed compensate	5	0	100	120	4	880	4,400.00
4	Check the compensation and resettlement action plan implementation are effective as real result on the resettlement study	One time for draft final design, and 10 time for final design and completed solving	11	0	100	120	3	660	7,260.00
Sub-total:									13,140.00
Construction phase									
1	Inspect on release flow, dimension of diversion canal that can do navigate of small boat. Check the canal functioning	two times in first construction stage and quarterly in whole construction period	22	20	20	20	3	120	3,080.00
2	Check drainage system make sure project implementing company and contractor adequate provide	Along the road construction and other construction site	20	0	20	20	2	80	1,600.00
3	Inspect on the erosion and sediment laden protection facilities/method, make sure the mitigation measure are properly applied	Monthly in raining season entire construction period	20	0	20	20	2	80	1,600.00
4	Check waste management facility and its functioning use for protect	Quarterly in whole construction period	20	0	20	20	1	40	800.00
5	Control/check water quality. 10 parameters will take for examination such as pH, Conductivity or Total dissolved solid (TDS), DO, BOD5, COD, Tot-N, Tot-P, NO3-N, PO4-P, Tot-Coliform.	Quarterly in whole construction period	20	500	110	140	2	500	20,000.00
6	Control/check air quality that emitted from the construction activities. Parameters to be measure: TSP, NO2, SO2, CO, and Noise	Every 6 month entire construction period	6	2020	110	140	2	500	15,120.00

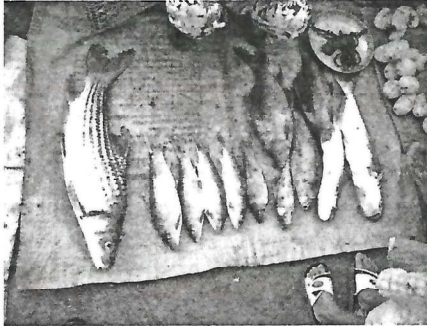
No.	Description	Frequency	Qty	Lab cost	Transport	Engineer rate*	Person	Amount	Total
6	Inspect on forest cutting for the project is exactly in the limit of project site required.	Weekly or Monthly in clearing for the construction site and clearing in reservoir area							
7	Inspect to make sure there is not illegal reclamation or hunting from the project staff	Weekly or Monthly in construction period	50	0	20	20	2	80	4,000.00
8	Inspect on the protection method and facilities	Weekly or Monthly in construction period	50	0	40	20	2	120	6,000.00
9	Control illegal fishing activities from project staff	Monthly in construction period	40	0	20	20	2	80	3,200.00
10	Inspect on the existing and access road that use	Quarterly in construction period	20	0	20	20	2	80	1,600.00
	Sub-total:								57,000.00
Operation phase									
1	Check any research on fauna and flora are carried out	Yearly in first 5 years operation period	5	0	110	140	2	500	2,500.00
2	Control/check water quality. 10 parameters will take for examination such as pH, Conductivity or Total dissolved solid (TDS), DO, BOD5, COD, Tot N, Tot-P, NO3 -N, PO4 -P, Tot-Coliform.	Every 6 month through operation phase	60	500	110	140	2	500	60,000.00
3	Check how was the fish research center worked?	Yearly in first 5 years of operation period	5	0	110	20	2	260	1,300.00
4	Check how was the agricultural supported program works.	Yearly in first 5 years of operation period	5	0	110	20	2	260	1,300.00
	Sub-total:								65,100.00
	Grand Total:								135,240.00

Note: * The above rate include accommodation, food, and pocket money per field work
 -, The cost above was counted with proposed operation period is 30 years

KINGDOM OF CAMBODIA

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APPENDIX OF EIA REPORT



FISHERY STUDY



TERRESTRIAL WILDLIFE
STUDY



SOCIO-ECONOMIC
STUDY

FOR
FEASIBILITY STUDY OF LOWER SE SAN 2 HYDROPOWER PROJECT,
STUNG TRENG PROVINCE, CAMBODIA

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Phnom Penh, July 2008