

## **4.2 Data of Cost Estimation**

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**Table 1 Se Kong No. 4 Project Bills of Quantity (1/2)**

Item	Specification	Unit	Unit Price US \$	Q'ty	Amount US\$(x1000)
<b>Civil Works</b>					
<b>0 Temporary Works</b>		L.S.	-	1	34,841
<b>1 River Treatment</b>	Rock Excavation	m3	7	94,400	661
<b>Diversion Tunnel</b>	Common Excavation	m3	3	141,600	425
	Concrete	m3	130	34,000	4,420
	Tunnel Excavation	m3	70	286,000	20,020
	Lining Concrete	m3	140	90,000	12,600
	Reinforcing Bar	t	900	2,480	2,232
<b>Cofferdam</b>	Embankment	m3	8	513,000	4,104
	Concrete	m3	130	23,000	2,990
	Reinforcing Bar	t	900	460	414
	Rock Excavation	m3	7	34,000	238
	Common Excavation	m3	3	51,000	153
	Miscellaneous Work	L.S.		1	4,826
<b>2 Dam</b>	Rock Excavation	m3	7	1,059,200	7,414
	Common Excavation	m3	3	1,588,800	4,766
	Embankment	m3	8	14,400,000	115,200
	Reinforcing Bar	t	900	1,640	1,476
	Backfilling	m3	5	2,265,000	11,325
	Concrete Face	m3	220	164,000	36,080
	Curtain Grout	m	95	22,000	2,090
	Consolidation Grout	m	65	2,000	130
	Miscellaneous Work	L.S.		1	26,772
<b>3 Spillway</b>	Rock Excavation	m3	7	2,124,000	14,868
	Common excavation	m3	3	3,186,000	9,558
	Concrete	m3	130	208,000	27,040
	Reinforcing Bar	t	900	10,400	9,360
	Miscellaneous Work	L.S.		1	6,083
<b>4 Intake</b>	Rock Excavation	m3	7	41,600	291
	Common Excavation	m3	3	62,400	187
	Shaft Excavation	m3	80	2,600	208
	Concrete	m3	130	6,200	806
	Shaft Concrete	m3	150	800	120
	Reinforcing Bar	t	900	248	223
	Miscellaneous Work	L.S.		1	151
<b>5 Headrace Tunnel/ Penstock</b>	Rock Excavation	m3	7	48,000	336
	Common Excavation	m3	3	72,000	216
	Tunnel Excavation	m3	70	4,800	336
	Concrete	m3	130	22,000	2,860
	Lining Concrete	m3	140	7,500	1,050
	Filling Concrete	m3	110	1,600	176
	Reinforcing Bar	t	900	885	797
	Miscellaneous Work	L.S.		1	577
<b>6 Powerhouse/ Switchyard</b>	Rock Excavation	m3	7	18,400	129
	Common Excavation	m3	3	27,600	83
	Backfilling	m3	5	288,000	1,440
	Concrete	m3	130	24,400	3,172
	Reinforcing Bar	t	900	488	439
	Miscellaneous Work	L.S.		1	526
	Building	L.S.		1	4,608

**Table 1 Se Kong No. 4 Project Bills of Quantity (2/2)**

Item	Specification	Unit	Unit Price US \$	Q'ty	Amount US\$(x1000)
<b>7 Tailrace</b>	Rock Excavation	m3	7	15,600	109
	Common Excavation	m3	3	23,400	70
	Concrete	m3	130	16,000	2,080
	Reinforcing Bar	t	900	480	432
	Miscellaneous Work	L.S.		1	269
<b>8 Road Works</b>		L.S.		1	1,475
<b>9 Sub Total</b>					383,252
<b>Hydraulic Equipment</b>	Spillway Gate	t	4,000	2,800	11,200
	Intake Gate	t	4,000	140	560
	Tailrace Gate	t	4,000	230	920
	Penstock Pipe	t	3,500	4,660	18,640
	Closing Gate for				
	Diversion Tunnel	t	4,000	540	2,160
	Miscellaneous Work	L.S.		1	3,348
<b>Sub Total</b>					36,828
<b>Electrical Mechanical Equipment</b>	/1	L.S.		1	95,000
<b>Transmission Line Works</b>	/2	L.S.		1	12,600
<b>Preparatory Works</b>		L.S.		1	2,000
<b>Compensation Cost</b>		L.S.		1	4,500
<b>Total Direct Cost</b>					534,180
<b>Engineering Fee</b>		L.S.		1	26,709
					26,709
<b>Administration Cost</b>		L.S.		1	13,355
<b>Physical Contingency</b>					
<b>Preparatory Work</b>		L.S.		1	200
<b>Compensation</b>		L.S.		1	450
<b>Civil Works</b>		L.S.		1	57,488
<b>Hydraulic Equip.</b>		L.S.		1	1,841
<b>E/M Works</b>		L.S.		1	4,750
<b>T/L Works</b>		L.S.		1	630
<b>Engineering Fee</b>		L.S.		1	2,671
<b>Administration Cost</b>		L.S.		1	1,335
<b>Sub Total</b>					69,365
<b>Total Construction Cost</b>	/3				643,609

- Foot Note : /1 In case of independent transmission line( Case 2 ), one additional bank at switchyard is required and the cost is to be 95.8 million US\$.  
/2 In Case 1, for Ban Houaykong substation and T/L (500 kv) to Thailand border, the additional cost is to be 42.4 million US\$ as an allocation of the total cost for the said facilities and therefore, the total cost is to be 55 million US\$. In Case 2, (Independent T/L from power station to Thailand border ), the total cost of T/L will be 53 million US\$.  
/3 The total construction costs are as follows:  
For Case 1 : 693,552 thousand US\$  
For Case 2 : 690,269 thousand US\$

Table 2 Xe Kaman No. 1 Project Bills of Quantity (1/2)

Item	Specification	Unit	Unit Price US \$	Q'ty	Amount US\$(x1000)
<b>Civil Works</b>					
<b>0 Temporary Works</b>		L.S.	-	1	20,010
<b>1 River Treatment</b>					
<b>Diversion Tunnel</b>	Rock Excavation	m3	7	28,600	200
	Common Excavation	m3	3	42,900	129
	Concrete	m3	130	17,000	2,210
	Tunnel Excavation	m3	70	86,400	6,048
	Lining Concrete	m3	140	24,000	3,360
	Reinforcing Bar	t	900	1,230	1,107
<b>Cofferdam</b>	Embankment	m3	8	416,000	3,328
	Rock Excavation	m3	7	16,000	112
	Common Excavation	m3	3	24,000	72
	Miscellaneous Work	L.S.		1	1,657
<b>2 Dam</b>	Rock Excavation	m3	7	124,400	871
	Common Excavation	m3	3	186,600	560
	RCC	m3	70	1,528,000	106,960
	Mass Concrete	m3	100	90,000	9,000
	Reinforcing Bar	t	900	2,460	2,214
	Structural Concrete	m3	130	52,000	6,760
	Curtain Grout	m	95	13,000	1,235
	Consolidation Grout	m	65	7,000	455
	Miscellaneous Work	L.S.		1	25,611
<b>3 Spillway</b>	Rock Excavation	m3	7	97,200	680
	Common Excavation	m3	3	145,800	437
	Concrete	m3	130	32,100	4,173
	Reinforcing Bar	t	900	963	867
	Miscellaneous Work	L.S.		1	616
<b>4 Intake</b>	Rock Excavation	m3	7	32,000	224
	Common Excavation	m3	3	48,000	144
	Shaft Excavation	m3	80	1,600	128
	Concrete	m3	130	4,000	520
	Shaft Concrete	m3	150	600	90
	Reinforcing Bar	t	900	144	130
	Miscellaneous Work	L.S.		1	102
<b>5 Headrace/Penstock</b>	Rock Excavation	m3	7	84,000	588
	Common Excavation	m3	3	126,000	378
	Tunnel Excavation	m3	70	18,100	1,267
	Concrete	m3	130	18,000	2,340
	Lining Concrete	m3	140	4,300	602
	Filling Concrete	m3	110	600	66
	Reinforcing Bar	t	900	669	602
	Miscellaneous Work	L.S.		1	584
<b>6 Powerhouse/ Switchyard</b>	Rock Excavation	m3	7	10,600	74
	Common Excavation	m3	3	15,900	48
	Backfilling	m3	5	17,000	85
	Structural Concrete	m3	130	14,800	1,924
	Reinforcing Bar	t	900	296	266
	Miscellaneous Work	L.S.		1	240
	Building	L.S.		1	3,264

Table 2 Xe Kaman No. 1 Project Bills of Quantity (2/2)

Item	Specification	Unit	Unit Price US \$	Q'ty	Amount US\$(x1000)
7 Tailrace	Rock Excavation	m3	7	5,600	39
	Common Excavation	m3	3	8,400	25
	Concrete	m3	130	15,200	1,976
	Reinforcing Bar	t	900	456	410
	Miscellaneous Work	L.S.		1	245
8 Road Works		L.S.			5,080
9 Sub Total					220,113
Hydraulic Equipment	Spillway Gate	t	4,000	2,240	8,960
	Intake Gate	t	4,000	86	344
	Tailrace Gate	t	4,000	140	560
	Penstock Pipe	t	3,500	2,410	9,640
	Closing Gate for				
	Diversion Tunnel	t	4,000	465	1,860
	Miscellaneous Work	L.S.		1	2,136
Sub Total					23,500
Electrical and Mechanical Equipment	/1	L.S.		1	73,500
Transmission Line Works	/2	L.S.		1	17,200
Preparatory Works		L.S.		1	2,000
Compensation Cost		L.S.		1	900
Total Direct Cost					337,213
Engineering Fee		L.S.		1	16,861
Administration Cost		L.S.		1	8,430
Physical Contingency					
Compensation		L.S.		1	90
Civil Works		L.S.		1	33,017
Hydraulic Equipmnet		L.S.		1	1,175
E/M Works		L.S.		1	3,675
T/L Works		L.S.		1	860
Preparatory Works		L.S.		1	200
Engineering Fee		L.S.		1	1,686
Administration Cost		L.S.		1	843
Sub Total					41,546
Total Construction Cost	/3				404,050

Foot Note : 1/ In case of independent transmission line(Case 2), one additional bank at switchyard is required and the cost is to be 74.3 million US\$.

2/ In Case 1, for Ban Houaykong substation and T/L(500kv) to Thailand border, the additional cost is to be 28.4 million US\$ as an allocation of the total cost for the said facilities and therefore, the total cost for the transmission line is to be 45.6 million US\$. In Case 2 ( Independent T/L from power station to Thailand border), the total total cost of T/L will be 50 million US\$.

3/ The total construction costs are as follows;  
For Case 1 : 432,930 thousand US\$  
For Case 2 : 442,102 thousand US\$

Table 3 Xe Namnoy Midstream Project Bills of Quantity (1/2)

Item	Specification	Unit	Unit Price US\$	Q'ty	Amount US\$(x1000)
<b>Civil Works</b>					
<b>0 Temporary Works</b>		L.S.		1	11,830
<b>1 River Treatment</b>					
<b>Diversion Tunnel</b>	Rock Excavation	m3	7	22,960	161
	Common Excavation	m3	3	34,440	103
	Concrete	m3	130	23,000	2,990
	Tunnel Excavation	m3	70	37,200	2,604
	Lining Concrete	m3	140	12,600	1,764
	Reinforcing Bar	t	900	1,194	1,075
<b>Cofferdam</b>	Embankment	m3	8	111,000	888
	Rock Excavation	m3	7	9,200	64
	Common Excavation	m3	3	13,800	41
	Miscellaneous Work	L.S.		1	969
<b>2 Dam</b>	Rock Excavation	m3	7	312,400	2,187
	Common Excavation	m3	3	468,600	1,406
	Embankment	m3	10	1,253,000	12,530
	Curtain Grout	m	95	20,000	1,900
	Consolidation Grout	m	65	2,500	163
	Miscellaneous Works	L.S.		1	3,637
<b>3 Spillway</b>	Rock Excavation	m3	7	355,200	2,486
	Common Excavation	m3	3	532,800	1,598
	Backfilling	m3	5	37,300	187
	Concrete	m3	130	152,000	19,760
	Reinforcing Bar	t	900	7,600	6,840
	Miscellaneous Work	L.S.		1	3,087
<b>4 Intake</b>	Rock Excavation	m3	7	13,200	92
	Common Excavation	m3	3	19,800	59
	Shaft Excavation	m3	80	1,600	128
	Concrete	m3	130	2,700	351
	Shaft Concrete	m3	150	400	60
	Reinforcing Bar	t	900	97	87
	Miscellaneous Works	L.S.		1	59
<b>5 Headrace Tunnel</b>	Tunnel Excavation	m3	70	199,000	13,930
	Lining Concrete	m3	140	56,000	7,840
	Adit Excavation	m3	70	70,000	4,900
	Rock Excavation	m3	7	5,000	35
	Common Excavation	m3	3	10,000	30
	Reinforcing Bar	t	900	2,240	2,016
	Miscellaneous Work	L.S.		1	2,875
<b>6 Surge Tank</b>	Rock Excavation	m3	7	2,800	20
	Common Excavation	m3	3	4,200	13
	Shaft Excavation	m3	80	31,000	2,480
	Shaft Concrete	m3	150	9,000	1,350
	Reinforcing Bar	t	900	360	324
	Miscellaneous Works	L.S.		1	386
<b>7 Penstock</b>	Rock Excavation	m3	7	70,800	496
	Common Excavation	m3	3	106,200	319
	Tunnel Excavation	m3	100	16,100	1,610
	Concrete	m3	130	4,000	520
	Filling Concrete	m3	110	5,800	638
	Reinforcing Bar	t	900	80	72
	Miscellaneous Works	L.S.		1	365

**Table 3 Xe Namnoy Midstream Project Bills of Quantity (2/2)**

Item	Specification	Unit	Unit Price US\$	Q'ty	Amount US\$(x1000)
<b>8 Powerhouse/ Switchyard</b>	Rock Excavation	m3	7	63,200	442
	Common Excavation	m3	3	94,800	284
	Backfilling	m3	5	54,000	270
	Structural Concrete	m3	130	9,200	1,196
	Reinforcing Bar	t	900	184	166
	Miscellaneous Work	L.S.		1	236
	Building	L.S.		1	2,208
<b>9 Tailrace</b>	Rock Excavation	m3	7	14,120	99
	Common Excavation	m3	3	21,180	64
	Concrete	m3	130	9,500	1,235
	Reinforcing Bar	t	900	285	257
	Miscellaneous Works	L.S.		1	165
<b>10 Road Works</b>		L.S.		1	4,180
<b>11 Sub Total</b>		L.S.		1	130,126
<b>Hydraulic Equipment</b>	Spillway Gate	t	4,000	1,260	5,040
	Intake Gate	t	4,000	50	200
	Tailrace Gate	t	4,000	40	160
	Penstock Pipe	t	3,500	6,200	24,800
	Closing Gate for				
	Diversion Tunnel	t	4,000	140	560
	Miscellaneous Work	L.S.		0.1	3,076
<b>Sub Total</b>					33,836
<b>Electrical and Mechanical Equipment</b>	/1	L.S.		1	44,600
<b>Transmission Line Works</b>	/2	L.S.		1	1,300
<b>Preparatory Works</b>		L.S.		1	2,000
<b>Compensation Cost</b>		L.S.			1,500
<b>Total Direct Cost</b>					213,362
<b>Engineering Fee</b>		L.S.		1	10,668
<b>Administration Cost</b>		L.S.		1	5,334
<b>Physical Contingency</b>					
Preparatory Works		L.S.		1	200
Compensation		L.S.		1	150
Civil Works		L.S.		1	19,519
Hydraulic Equipment		L.S.		1	1,692
E/M Works		L.S.		1	2,230
T/L Works		L.S.		1	65
Engineering Fee		L.S.		1	1,067
Administration Cost		L.S.		1	533
<b>Sub Total</b>					25,456
<b>Total Project Cost</b>	/3				254,820

Foot Note : /1 In case of independent transmission line( Case 2), one additional bank at switchyard is required and the cost is to be 45.4 million US\$.

/2 In Case 1, for Ban Houaykong substation and T/L (500kv) to Thailand border, the additional cost is to be 29.2 million US\$ as an allocation of the total cost for the said facilities and therefore, the total cost is to be 30.5 million US\$.

In Case 2 (Independent T/L from power station to Thailand border ), the total cost of of T/L will be 26 million US\$.

/3 The total construction costs for  
For Case 1 : 289,248 thousand US\$.  
For Case 2 : 283,699 thousand US\$



**Table 4 Xe Namnoy Downstream Project Bills of Quantity (1/2)**

Item	Specification	Unit	Unit Price US\$	Q'ty	Amount 1000xUS\$
<b>Civil Works</b>					
<b>0 Temporary Works</b>		L.S.	-	1	7,104
<b>1 River Treatment</b>					
<b>Diversion Tunnel</b>	Rock Excavation	m3	7	18,800	132
	Common Excavation	m3	3	28,200	85
	Concrete	m3	130	13,500	1,755
	Tunnel Excavation	m3	70	80,400	5,628
	Lining Concrete	m3	140	26,300	3,682
	Reinforcing Bar	t	900	1,457	1,311
<b>Cofferdam</b>	Embankment	m3	8	75,500	604
	Rock Excavation	m3	7	7,640	53
	Common Excavation	m3	3	11,460	34
	Miscellaneous Works	L.S.		1	1,328
<b>2 Dam</b>	Rock Excavation	m3	7	42,800	300
	Common Excavation	m3	3	64,200	193
	Mass Concrete	m3	100	124,500	12,450
	Structural Concrete	m3	130	8,700	1,131
	Reinforcing Bar	t	900	1,245	1,121
	Curtain Grout	m	95	5,500	523
	Consolidation Grout	m	65	1,000	63
	Miscellaneous Works	L.S.		1	3,156
<b>3 Spillway</b>	Rock Excavation	m3	7	28,200	197
	Common Excavation	m3	3	42,300	127
	Backfilling	m3	5	24,000	120
	Concrete	m3	130	32,000	4,160
	Reinforcing Bar	t	900	1,600	1,440
	Miscellaneous Works	L.S.		1	604
<b>4 Intake</b>	Rock Excavation	m3	7	3,200	22
	Common Excavation	m3	3	4,800	14
	Shaft Excavation	m3	80	600	48
	Concrete	m3	130	1,900	247
	Shaft Concrete	m3	150	200	30
	Reinforcing Bar	t	900	65	59
	Miscellaneous Works	L.S.		1	34
<b>5 Headrace Tunnel</b>	Tunnel Excavation	m3	70	133,300	9,331
	Adit Excavation	m3	70	38,000	2,660
	Common excavation	m3	3	10,000	30
	Rock Excavation	m3	7	5,000	35
	Lining Concrete	m3	140	36,400	5,096
	Reinforcing Bar	t	900	1,456	1,310
	Miscellaneous Works	L.S.		1	1,846
<b>6 Surge Tank</b>	Rock Excavation	m3	7	1,800	13
	Common Excavation	m3	3	2,700	8
	Shaft Excavation	m3	80	12,000	960
	Shaft Concrete	m3	150	3,500	525
	Reinforcing Bar	t	900	175	158
	Miscellaneous Works	L.S.		1	166
<b>7 Penstock</b>	Rock Excavation	m3	7	4,800	34
	Common Excavation	m3	3	7,200	22
	Tunnel excavation	m3	100	16,000	1,600
	Concrete	m3	130	2,700	351
	Filling Concrete	m3	110	4,900	539
	Reinforcing Bar	t	900	54	49
	Miscellaneous Works	L.S.		1	259

Table 4 Xe Namnoy Downstream Project Bills of Quantity (2/2)

Item	Specification	Unit	Unit Price US\$	Q'ty	Amount 1000xUS\$
<b>8 Powerhouse/ Switchyard</b>	Rock Excavation	m3	7	20,480	143
	Common excavation	m3	3	30,720	92
	Backfilling	m3	5	6,500	33
	Structural Concrete	m3	130	9,200	1,196
	Reinforcing Bar	t	900	184	166
	Building	L.S.		1	2,208
	Miscellaneous Works	L.S.		1	384
	<b>9 Tailrace</b>	Rock Excavation	m3	7	5,640
Common Excavation		m3	3	8,460	25
Concrete		m3	130	6,400	832
Reinforcing Bar		t	900	192	173
Miscellaneous Works		L.S.		1	107
<b>10 Sub Total</b>					78,147
<b>Hydraulic Equipment</b>	Spillway Gate	t	4,000	1,180	4,720
	Intake Gate	t	4,000	50	200
	Tailrace Gate	t	4,000	50	200
	Penstock	t	3,500	1,450	5,800
	Closing Gate for				
	Diversion Tunnel	t	4,000	305	1,220
	Miscellaneous Works	L.S.		1	1,214
	Sub Total				
<b>Electrical and Mechanical Equipment</b>		L.S.			34,000
<b>Transmission Line Works</b>		L.S.			1,300
<b>Preparatory Works</b>		L.S.			0
<b>Compensation Cost</b>		L.S.			0
<b>Total Direct Cost</b>		L.S.			126,801
<b>Engineering Fee</b>		L.S.		1	6,340
<b>Administration Cost</b>		L.S.		1	3,170
<b>Physical Contingency</b>					
Civil Works		L.S.		1	11,722
Hydraulic Equipment		L.S.		1	668
E/M Works		L.S.		1	1,700
T/L Works		L.S.		1	65
Engineering Fee		L.S.		1	634
Administration Cost		L.S.		1	317
Sub Total					15,106
<b>Total Construction Cost</b>					151,417

**Table 5 Xe Namnoy Midstream Project  
Xe Pian River Diversion Channel**

**Bills of Quantity**

Item	Specification	Unit	Unit Price US\$	Q'ty	Amount 1000xUS\$
<b>Civil Works</b>					
<b>0 Temporary Works</b>		L.S.	-	1	1,991
<b>1 Xe Pian Intake Weir</b>					
	Rock Excavation	m3	7	3,600	25
	Common Excavation	m3	3	3,600	11
	Concrete	m3	130	11,000	1,430
	Reinforcing Bar	t	900	118	106
	Miscellaneous Works	L.S.		1	157
<b>2 Xe Pian Diversion Channel</b>					
	Rock Excavation	m3	7	52,800	370
	Common Excavation	m3	3	79,200	238
	Concrete	m3	130	3,300	429
	Reinforcing Bar	t	900	100	90
	Backfilling	m3	5	3,240	16
	Miscellaneous Works	L.S.		1	127
<b>3 H. Lieng Riverbed Excavation</b>					
	Rock Excavation	m3	7	3,700	26
	Common Excavation	m3	3	14,900	45
	Miscellaneous Works	L.S.		1	7
<b>4 H. Lieng Intake Weir</b>					
	Rock Excavation	m3	7	10,000	70
	Common Excavation	m3	3	14,900	45
	Concrete	m3	130	19,800	2,574
	Reinforcing Bar	t	900	200	180
	Miscellaneous Works	L.S.		1	287
<b>5 H. Lieng Diversion Channel (1) Open Channel</b>					
	Rock Excavation	m3	7	176,000	1,232
	Common Excavation	m3	3	234,000	702
	Backfilling	m3	5	25,200	126
	Concrete	m3	130	26,400	3,432
	Reinforcing Bar	t	900	800	720
	Miscellaneous Works	L.S.		1	621
<b>6 H. Lieng Diversion Channel (2) Tunnel</b>					
	Tunnel Excavation	m3	70	24,000	1,680
	Lining Concrete	m3	140	8,700	1,218
	Reinforcing Bar	t	900	260	234
	Miscellaneous Works	L.S.		1	313
<b>7 Others</b>	Miscellaneous Works	L.S.		1	1,850
<b>8 Road Works</b>		L.S.			1,545
<b>9 Sub Total</b>					21,897
<b>Total Direct Cost</b>					21,897
<b>Engineering Fee</b>		L.S.		1	1,095
<b>Administration Cost</b>		L.S.		1	547
<b>Physical Contingency</b>					
Civil Works		L.S.		1	3,284
Engineering Fee		L.S.		1	109
Administration Cost		L.S.		1	55
<b>Sub Total</b>					3,448
<b>Total Construction Cost</b>					26,987

Table 6 Electro-mechanical Equipment Cost of Sekong No. 4 Project

(Unit : 1,000 USD)

Item	Number	Unit	Total Price	Remarks
Large Turbine Pt=151,000kW, H=137 m	2	Set	16,400	Francis Turbine
Small Turbine Pt=75,100kW, H=137 m	2	Set	10,400	Francis Turbine
<b>Turbine Total</b>			<b>26,800</b>	
Large Generator Pg=174,000kVA, Pf=0.85	2	Set	16,600	Semi-Umbrella type
Small Generator Pg=86,200kVA, Pf=0.85	2	Set	10,500	Semi-Umbrella type
<b>Generator Total</b>			<b>27,100</b>	
Main Transformer 174,000kVA	2	Set	3,400	Single Phase type
Main Transformer 86,200kVA	2	Set	1,800	Single Phase type
<b>Main Transformer Total</b>			<b>5,200</b>	
Over Head Traveling Crane	1	Set	2,400	190 ton ×2 unit
Switch Yard Equipment	1	Set	7,500	230kVTL ×1, 22kVTL ×1
Cubicles, control panel, and others	1	Set	26,000	
<b>Total Cost</b>			<b>95,000</b>	

Table 7 Electro-mechanical Equipment Cost of Xe Kaman No. 1 Project

(Unit : 1,000 USD)

Item	Number	Unit	Total Price	Remarks
Turbine Pt=63,600kW, H= 129.9 m	4	Set	19,200	Francis Turbine
Generator Pg=72,900kVA, Pf=0.85	4	Set	19,200	Semi Umbrella Type
Main Transformer 40,400kVA	1	Set	3,200	Single Phase Type
Over Head Traveling Crane	1	Set	1,100	Wt=128 ton
Switch Yard Equipment	1	Set	5,800	230 kVTL ×1, 22kVTL ×2
Cubicles, control panel, and others	1	Set	25,000	
<b>Total Cost</b>			<b>73,500</b>	

**Table 8** Electro-mechanical Equipment Cost of Xe Namnoy Mid-stream Project  
(Unit : 1,000 USD)

Item	Number	Unit	Total Price	Remarks
Turbine Pt=121,000kW, H= 463.0 m	2	Set	9,600	Francis Turbine
Generator Pg=140,000kVA, Pf=0.85	2	Set	10,200	Semi Umbrella Type
Main Transformer 140,000kVA	2	Set	2,800	Single Phase Type
Over Head Traveling Crane	1	Set	1,200	Wt=200 ton
Switch Yard Equipment	1	Set	5,800	230 kVTL×2, 22kVTL×2
Cubicles, control panel, and others	1	Set	15,000	
<b>Total Cost</b>			<b>44,600</b>	

**Table 9** Electro-mechanical Equipment Cost of Xe Namnoy Down-stream Project

(Unit : 1,000 USD)

Item	Number	Unit	Total Price	Remarks
Turbine Pt=34,600kW, H= 81.0 m	2	Set	7,500	Francis Turbine
Generator Pg=39,500kVA, Pf=0.85	2	Set	7,500	Semi Umbrella Type
Main Transformer 39,500kVA	2	Set	1,000	Single Phase Type
Over Head Traveling Crane	1	Set	1,000	Wt=150 ton
Switch Yard Equipment	1	Set	3,000	230 kVTL×1
Cubicles, control panel, and others	1	Set	14,000	
<b>Total Cost</b>			<b>34,000</b>	

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