APPENDIX – D

MODEL VILLAGES WITH RICE HUSK GAS ENGINE

Development Plan Appendix D-1

Project Examples 1: Rice Husk Gas Engine Electrification in Younetalin Village

Plans were prepared to electrify villages with rice husk gas engine in Ayeyarwaddi Division headed by Area Commander. Younetalin Village was the first to be electrified in accordance with the plans. The scheme at Younetalin village was completed quite quickly. It was conceived in January 2001 and the committee was formed then. The scheme commenced operation on 15 2001 April and therefore took barely 3 months to arrange the funding and building.

The project feature is as follows (as of Nov 2002):

	Basic Village Feature									
Household	1,100 households									
Industry and product	6 rice mills, BCS, Video/Kara	oke Shops								
	Paddy (Cultivation field is 25)	0 ares), fruits processing, rice								
	noodle processing)									
Public facilities	Primary school, monastery, st	ate high school, etc.								
	Project Cost and Fund	1								
Capital cost	K9,600,000 (K580,000 for en	gine and generator,								
	K3,800,000 for distribution lin	nes)								
Collection of fund	From K20,000 up to K40,000	was collected according to the								
	financial condition of each ho	use. Difference between the								
	amount raised by the villagers	and the capital cost of was								
K4,000,000. It was covered by loan from the Area										
	Commander of the Division with 2 % interest per month.									
	Unit and Fuel									
Spec of unit	Engine :140 hp, Hino 12 c	ylinder diesel engine								
	Generator : 135 kVA									
	Model : RH-14									
Rice husk	Rice husk> 12 baskets per hour is consumed									
consumption	➢ 6 rice mills powered by diesel generator. Rice husk is									
	Collected at free of charge	$h_{\rm constant}$								
	► Rice husk is distributed at K9/basket in the village for house fuel									
Waste	Ash is collected at free of cha	rge and provided farmers as								
Wable	fertilizer. It is also used as the	ne material of repairing roads								
	here.									
	Operation									
Operation hour	➤ 5:15~10:30 p.m. (depend)	s on season)								
	▶ 12a.m.~3 p.m., 3 days/we	eek to State high school in the								
	davtime	C C								
Nos. of operators	4 operators and voluntary con	nmittee members								
Nos. of consumer	420									
Power consumption	Each house can have 3 nos. of	two feet light. TV, radio,								
-	and Karaoke are used with da	ily additional tariff.								
Salary for operators	Operator	K9,000/month								
	Distribution line engineer	K8 000/month								
Running cost	K15.000~24.000/month other	than salary								
Committee member	Volunteers. Head is village	chief.								
	Tariff									
	20 W fluorescent light	K15/day								
Tariff for home	40 W fluorescent light	K20/day								
electronic devises	V20/dev									
	5W neon for home shrine	K50/uay								
Towiff form										
Larin Ior	Karaoke	K150/day								
electronic devises	video shop	K200/day								
	BCS	K250/day								

Photos in Younetalin Village



Rice husk gasification unit



Engine, generator, and control panel



Putting rice husk into the gasifier









Village feature with distribution line



Collection of rice husk by village children



Lighting in a glossary **S** shop

Development Plan Appendix D-2

Project Examples 2: Rice Husk Gas Engine Electrification in Panmati Village

1. Project

MIC (Myanmar Inventers Cooperative), a manufacturer of rice husk gasifier and engine generation system took over the Panmati electrification scheme, which was once implemented but stopped operation due to technical problems, for rehabilitation as an IPP (Independent Power Producer) project. Total project cost is K27.5 million, K137,500 per a household. It was commissioned in June 2003.

The land and buildings are owned by VPDC. Panmati is divided into nine blocks, of which 200 households in 1-4 blocks shown in the map below are the target of electrification at the first stage. After the first stage, MIC plans to supply to the remaining area with additional unit.

2. Features of Panmati Village

Panmati village is located in a suburb of Myitkyina, to the west of the airport. It is easy to access even in the rainy season as the road is paved and its condition is good. The income of villagers is K1,000/day at the minimum, and many households are thought to have higher income than this. Expense of thousands of Kyats for electricity is reportedly affordable for them.



Map of Panmati Village

Basic features of Panmati are shown in the table below.

Location	8 km from Myitkyina city center.						
	Coordinates: N25 ° 22'11.1", E97 ° 19'9.2"						
Population	Nos. of houses: 800, nos. of household: 968, population:5812						
Industry	Agriculture. Cultivation area is 863 acre.						
	Rice mills and sawmills.						
Product	> Fruits (pineapple, tannin, grapefruit, longan, etc.), paddy, and						
	timber.						
	Marble stones						
Income	K1,000/day, minimum.						
Public facilities	Primary school x 1, middle school x 1, computer collage x 1,						
	monastery x 5, Gawrka (Nepal) pagoda x 1,						
	Christian church x 5						
Condition of	5 private power suppliers of diesel generators of 7-10 kW. Tariff						
power supply	for 2 x 20 W tube light is K1,500 per month with 3 hours supply						
before the Project	e the Project (7~10 p.m.).						

Features of Panmati Village

3. Rice Husk Gas Engine Unit

The system is equipped with a 200 hp second-hand engine (when fueled by diesel oil) and 100 kVA generator. A starter engine of 5 hp is installed for starting gasifier.

4. Husk Consumption and Rice Mill

A rice mill is attached to the powerhouse that is invested by MIC. Husk is supplied to the powerhouse free of charge from the mill. It can produce husk at 160 bags per day when operated 8 hours/day. The husk consumption is about 17 bags/hr. The mill is powered by diesel engine which consumes diesel fuel at 2 gallons per day in 8 hours operation. They are planning to supply the milling power also from the husk power system in the future if the amount of rice husk is sufficient.

5. Operation and Maintenance

All of the operators and workers for operation and maintenance are from MIC.

Operation hour	5 p.m10 p.m.						
Nos. of operators	3 operators, 1 office worker,						
	2 line maintenance workers						
	All 6 persons are from MIC.						
Salary for operators	Operator: K15,000, office worker: K20,000, line						
	worker: K20,000 per month each.						
	(total: K105,000 /month)						

Operation and Maintenance

Ash is disposed in the back of the powerhouse. Farmers collect it for fertilizer free of charge.

6. Organisation and tariff system

MIC undertakes the system operation and tariff collection.

They installed a load limiter to each household, as they found that the rice husk gas engine system cannot follow large and abrupt load fluctuation. Tariff is defined according to the capacity of the load limiter selected and installed. There are five kinds of load limiter. The limit load can be set between 40-120 W, 120-200 W, 200-300 W, 300-500 W, and 500 W-800 W. Electricity power can be used in each household within these limits. If consumers use electricity beyond the load limit, fuse is cut. Operator will replace fuse. Consumers have to pay for it from the second time replacement. The cost for the load limiter is K5,000 per piece.

More than 70% of the customers use electricity within 200 W. In addition to lighting and TV/cassette, fan of 60-80 W is widely used.

As to the public facilities, electricity is supplied to one pagoda, one clinic, street lights, and SPDC building free of charge.

Load limit (W)	Tariff (Kyat)	Load limit (W)	Tariff (Kyat)
40	2,000	200	10,000
60	3,000	300	15,000
80	4,000	300-500	25,000
100	5,000	500-800	35,000

Tariff Imposed According to Load Limit

7. Distribution line

• Distribution line is at 220 V, 2.4 km long. The conductor is #6 copper wires from the power house to distribution line and 25 mm² ACSR and #8 copper lines are used for distribution line according to the location.

- SPDC erected poles and installed wires separately from the existing MEPE distribution lines. They utilize some of MEPE poles for their hanging lines.
- MIC purchased the distribution lines at K2 million from SPDC.
- No transformer is used.

8. Market Price of Electric Appliances and House-wiring

The market prices of electric appliances in Myitkyina in June 2003 were as follows:

Items	Price (Kyat)	Made in		
Fluorescent bulb (15 W)	400	China		
Fluorescent bulb (20 W)	400	China		
2 ft fluorescent light (20 W)	500	China		
4 ft fluorescent light (40W)	650	China		
Extension code with 6 multi plugs	500	China		
Extension code with 8 multi plugs and voltage meter	700	China		
Watt-hour meter	4,200	China		
Inverter (1000 W)	3,500	China		
Small fan	11,000	Thailand		
Board with voltage meter, 3 plugs, 1 switch, and 1 bulb socket	2,400			
In-house wire (per 100 m)				
1/C 3 lines-29mm ²	4,035			
1/C 7 lines-64mm ²	20.280			
2/C 3 lines-29mm ²	5,300			
2/C 7 lines-44mm ²	21,850			
2/C 7 lines-83mm ²	62,680			

Market Price of Electric Appliances in Myitkyina

Source: Hearing by the JICA Study Team in June 2003.

Photos in Panmati Village





Distribution lines. Upper lines are of MEPE. Lower lines are installed by SPDC and transferred to MIC.

line and street light

Line from powerhouse to distribution



APPENDIX - E

HYDRO POTENTIAL

HYDROPOWER POTENTIALS THROUGHOUT MYANMAR (State & Division Wide)

					Under	1.0 M	V						1.0 MW to	o 10.0 N	ſW						Above	10 MW	/			Under 1.0 M W	
Sr.No	State & Division	In	stalled	L Con	Under struction	Und	er Study		Total	In	stalled	U Con	Jnder struction	Und	er Study	1	Fotal	In	stalled	U Con	Jnder struction	Und	er Study	-	Total	to Abov	ve 10MW Total
		No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity	No:	Capacity
		of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)	of Prj	(MW)
1	Kachin State	3	0.470	-	-	16	4.708	19	5.178	3	8.780	1	6.000	9	35.220	13	50.000	-	-	-	-	7	2006	7	2006	39	2061.178
2	Kayah State	1	0.108	-	-	1	0.050	2	0.158	-	-	-	-	-	-	-	-	2	196	-	-	3	3713	5	3909	7	3909.158
3	Kayin State	1	0.037	-	-	7	1.372	8	1.409	-	-	-	-	4	10.000	4	10.000	-	-	-	-	9	17009.5	9	17009.5	21	17020.909
4	Chin State	8	2.310	-	-	8	1.820	16	4.130	1	1.000	-	-	2	3.000	3	4.000	-	-	-	-	3	1304	3	1304	22	1312.130
5	Sagaing Division	1	0.050	-	-	11	2.565	12	2.615	1	1.260	-	-	2	3.300	3	4.560	-	-	1	30	5	2362	6	2392	21	2399.175
6	Tanintharyi Division	2	0.342	-	-	6	1.210	8	1.552	-		-	-	1	9.000	1	9.000	-	-	-	-	5	681	5	681	14	691.552
7	Bago Division	-	-	-	-	4	1.890	4	1.890	-	-	-	-	1	2.000	1	2.000	-	-	1	20	5	363	6	383	11	386.890
8	Magway Division	-	-	-	-	2	0.400	2	0.400	-	-	-	-	3	19.200	3	19.200	-	-	-	-	3	103	3	103	8	122.600
9	Mandalay Division	1	0.450	-	-	5	0.264	6	0.714	1	4.000	-	-	1	2.250	2	6.250	2	81	1	280	6	3114	9	3475	17	3481.964
10	Mon State	1	0.198	-	-	6	0.725	7	0.923	-	-	-	-	2	11.500	2	11.500	-	-	-	-	1	280	1	280	10	292.423
11	Rakhine State	-	-	-	-	9	1.673	9	1.673	-	-	-	-	1	1.500	1	1.500	-	-	-	-	4	243.5	4	243.5	14	246.673
12	Shan State	10	2.116	1	0.320	37	12.550	48	14.986	6	24.000	1	2.000	16	44.160	23	70.160	2	30	-	-	10	7584	12	7614	83	7699.146
	Total	28	6.081	1	0.320	112	29.227	141	35.628	12	39.040	2	8.000	42	141.130	56	188.170	6	307	3	330	61	38763	70	39400	267	39623.798

Total number of projects

Total capicity (MW)

= 267

Appendix E Hydro Potential (2/16)

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power	Minimum	Available	Project Status
		~	(sq miles)	(Installed) MW	Discharge (Cusec)	Head (ft)	2
	KACHIN STATE						
	<u>Under 1.0 MW</u>						
1	Putao (Nam Htun)	7 miles from Putao	52.00	0.160	170.00	24.00	Commissioned on March (1987)
2	Kampaiti	0.5 miles North of Kampaiti (93-K/3-899573)	-	0.150	12.36	92.21	Commissioned
3	Panwa	1.5 miles North of Panwa (92-K/6-824174)	-	0.160	17.756	119.09	Commissioned
4	Washaung Canal	8 miles from Waingmaw (97 - 36' E, 25 - 23' N)	158.00	0.140	75.00	8.00	Preliminary Report (1976)
5	Putao (Nam Hkan Tee)	3 miles from Putao (97 [•] - 27' E, 27 [•] - 20' N)	14.69	0.400	46.90	74.00	Feasibility Study (1982) WAPCOS
6	Taza Chaung	3.5 miles North-West of Naung Mun (93-E-384121)	6.00	0.066	6.00	31.00	Prefeasibility Report (1987)
7	Inbuhka Chaung	2.5 miles North of Malang Bun (92-E/11-220812)	2.75	0.022	3.00	31.00	Prefeasibility Report (1987)
8	Chibwe (Yitlaw)	1.5 miles South-East of Chibwe (92-K/1-130897)	0.65	0.025	2.94	162.00	Preliminary Study
9	Sarhmaw	12 miles from Mogaung (92-C/ 11-412302)	31.00	0.200	41.00	50.00	Preliminary Study (Dam Type)
10	Sihten Hka (Namti)	3 miles North-West of Namti village, Mogaung Township	-	0.400	21.25(Design)	303.00	Preliminary Study
		(92-C/15-652502)					
11	Nam Mn	3 miles South-West of Nam Mun village, 16 miles West of	4.00	0.500	4.00	400.00	Preliminary Study
		Hopin (92-D/ 5-959911)					
12	Lagar Hka (Hantha fall)	3.5 miles South-East of Namma, Mohnvin Township	2.00	0.640	2.00	610.00	Preliminary Study
		(92-D/ 5-149971)					
13	Waihkar Chaung (Saing Taung)	4 miles South-West of Hpa Kant (92-C/ 6-913663)	20.00	0.200	75.00	20.00	Preliminary Study
14	San Hka Chaung	3.5 miles North-East of Taw Hmaw village, which is	17.87	0.250	12.39	206.62	Preliminary Study
	e	7.5 miles North-West of Myitkyina. (B-898814)					5 5
15	Ahtan Chaung (Hkaung Lan Hpu)	1 miles North-East of Hkaung Lan Hpu, which is	-	0.400	60.00	120.00	Preliminary Study
-		140 miles North-East of Mvitkvina					
16	Phoung Ma Hka	13 miles South-East of Putao. (92-E-1168)	7.40	0.315	94.50	50.00	Preliminary Study
17	Chirihka	12 miles from Bhamo (97 - 26' E, 24' - 13' N)	15.50	0.360	19.00	240.00	Office Study
18	Run Hka Chaung	5 miles North-East of Sumprabum, (92-F-10)	5.00	0.150	19.00	150.00	Office Study
19	Namhsam Chaung	14 miles North-East of Bhamo $(92-H/7-224346)$	18.00	0.640	41.87	250.00	Preliminary Study (Feb 1998)
	Total = 19			Toal = 5.178			
	1.0 MW to 10 MW						
1	Hopin (Galing Chaung)	8 miles North-East of Hopin (96 - 36' E, 25 - 40' N)	9.00	1.260	30.00(Design)	625.00	Commissioned on September (1991)
2	Chinghkrang Hka	21 miles from Myitkyina (97 - 30' E, 25 - 39' N)	23.67	2.520	80.00(Design)	538.00	Commissioned on April (1993)
3	Namhkam Hka (Mokaung)	14 miles East of Mogaung	14.00	5.000	190.00(Design)	420.00	Commissioned on September (1996)
4	Tumpang Chaung	24 miles North-East of Waingmaw. (92-G/14 D-661671)	240.00	6.000	376.00	149.85	Under Construction
5	Namhsam Hka	23 miles from Bhamo (97 - 28' E, 24 - 21' N)	16.30	2.020	6.50	2416.00	Detailed Design (1957) Yugo
6	Nam tabet	17 miles South-East of Waingmaw (92-G/ 12-352184)	509.00	4.000	1998.00	42.65	Preliminary Report (High weir type)
7	Hta Hka	30 miles South-East of Putao. (92-E/ SE-4675)	15.00	6.000	140.00	350.00	Preliminary Study (1/6/97)
8	Umungya Hka (Sangha Fall, Diversion Type)	12 miles North-East of Momauk. (92-H/ 7-271258)	-	2.000	100.00	1800.00	Preliminary Study (Diversion Type)
9	Umungya Hka (Sangha Fall, Dam Type)	12 miles North-East of Momauk. (92-H/ 7-271258)	-	10.000	-	-	Preliminary Study (Dam Type)
10	Kasung Hka	24 miles North-West of Myitkyina (92-G/ 2-770655)	17.83	5.000	26.00	525.00	Preliminary Study
11	Nam Je Hka	9 miles from Mansi	79.00	2.000	-	200.00	Office Study
12	Ivanpnat Hka	17 miles North-East of Bamaw. (J-25/183)	/5.00	3.000	/0.00	400.00	Office Study (1993)
13	Leuon Chaung	12 miles Soun-west of wonnym.	22.00	1.200	-	300.00	Office Study
	Toal = 13			Total = 50.000			

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	KACHIN STATE						
	Above 10.0 MW						
1	Ayeyawady (Laphe)	21 miles from Myitkyina (97 - 32' E, 25 - 38' N)	1725.00	1500.00	13650.00	250.00	Preliminary Report
2	Ayeyawady (2nd Defile)	Near Sinkan (97 [•] - 00' E, 24 [•] - 09' N)	-	125.00	-	-	Preliminary Report
3	Nam Tabet (Dam Type)	15 miles Myitkyina. (97 [•] - 32' E, 25 [•] - 09' N)	-	150.00	3460.00	-	Preliminary Report, KTA
4	Nam Tabet (Diversion Type)	18 miles from South East of Waing Maw. (D-175500)	450.00	16.00	600.00	280.00	Preliminary Report (MEPE & WREUT)
5	Tarung Hka	70 miles from Hkamti (96 - 32' E, 26 - 44' N)	2370.00	150.00	-	335.00	Preliminary Report, UNDP
6	Tawang Hka	90 miles from Hkamti (96 - 52' E, 26 - 12' N)	753.00	50.00	-	350.00	Preliminary Report, UNDP
7	Tanaing Hka	70 miles from Myitkyina (97 [•] - 00' E, 26 [•] - 17' N)	1635.00	15.00	-	125.00	Preliminary Report, UNDP
	Total number of projects = 39	(< 1 MW to > 10 MW)		Total = 2006.00 Total (< 1 MW to	> 10 MW) = 2061.1	78 MW	

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power	Minimum	Available	Project Status
	KAYAH STATE Under 1.0 MW		(sq miles)	(Installed) MW	Discharge (Cusec)	Head (ft)	
1	Hpa Saung (Hwe Kabu Chaung)	Hpa Saung. (97 [°] - 19' E, 18 [°] - 52' N)	4.80	0.108	8.00	192.00	Commissioned on January (1988)
2	Hsataw	3 miles from Hsataw. (97 - 32' E, 19 - 34' N)	5.50	0.050	-	100.00	Office Study
	Total number of projects = 2			Total = 0.158			
	Above 10.0 MW			1.50.00	1200.00	1450.00	
1	Balu Chaung No.2	14 miles from Loikaw.	- 2075.00	168.00	1200.00	1450.00	Commissioned on (1960)
2	Balu Chaung No.1	10 miles from South-East of Loikaw. $(97 - 22 \text{ E}, 19 - 32 \text{ N})$	3075.00	28.00	500.00	201.00	Commissioned on August (1995)
3 4	Thanlwin (Vwathit)	17 miles South-Last of Loikaw. (97 - 10.5 E, 19 - 50 N)	3105.00	48.00	500.00	398.00	Office Study
- -	Nom Tombrok	25 miles North East of Laikan	1180.20	165.00	1102.00	1506.00	Dro fassibility Study (NIDDON KOEI)
5	таштрак	Near confluence to Pawn Chaung	1109.20	105.00	1102.00	1500.00	FIE-reasionity Study (NIFFON KOEI)
	Total number of projects = 5			Total = 3909.00			
	Total number of projects = 7	(< 1 to > 10 MW)		Total (< 1 MW -	> 10 MW) = 3909.	158 MW	

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power	Minimum	Available	Project Status
	KAVIN STATE		(sq miles)	(Installed) WIW	Discharge (Cusec)	Head (II)	
	Under 1.0 MW						
1	Papun (Lekapaw Chaung)	1.5 miles from Papun (97 - 28' E, 18' - 04' N)	1.25	0.037	3.35	80.00	Commissioned on March (1987)
2	Pathi Chaung No.1	3 miles from Thandaung. (96 - 37' E, 19 - 02' N)	8.95	0.400	5.00	400.00	Detailed Survey
3	Tadanku Chaung	4 miles East of Kawkareik	20.00	0.100	30.00	24.00	Prefeasibility Report (1986)
4	Khuket Chaung	1.5 miles South of Leiktho	2.31	0.062	4.90	57.00	Prefeasibility Report (1987)
5	Koko Chaung	9 miles East of Kawkareik	17.00	0.200	5.66	90.00	Office Study
6	Kyakhat Chaung	5 miles North East of Kyain Seikkyi.	2.00	0.030	-	50.00	Office Study
7	Azin	30 miles South-East of Kya-in Seik-Kyi(95-1/9-299254)	2.12	0.320	12.00	400.00	Feasibility Report (1997)
8	Kyonhtaw	13 miles North-East of Myainggyi Ngu(94-G/15-449135)	38.00	0.26	277.00	50.00	Feasibility Report (1995)
	-						
	Total number of projects $= 8$			Total = 1.409			
	1 5						
	1.0 MW to 10.0 MW						
1	Donthami Chaung	43 miles from Hpa-an. (97 - 25' E, 17 - 32' N)	45.60	3.000	180.00	100.00	Office Study
2	Metan	24 miles East of Kya-in-Seik-Kyi (94-L/8-227469)	27.45	3.000	120.00	400.00	Feasibility Report (1997)
3	Kyeik	22 miles North-East of Kya-in-Seik-Kyi (94-L/ 8-158574)	20.00	2.000	120.00	350.00	Feasibility Report (1997)
4	Pathi Chaung No.2	1 miles from Thaundaung (96 - 36' E, 19 - 1.5' N)	10.68	2.000	6.00	300.00	Detailed Survey
	Total number of $projects = 4$			Total = 10.00			
	Above 10.0 MW						
1	Thanlwin (Mekaung)	18 miles from Papun (97 [•] - 42' E, 17 [•] - 56' N)	91015.00	6000.000	-	500.00	Office Study
2	Thanlwin (Hutkyi) (Low Dam)	4 miles from Hutkyi Falls. (97 - 43' E, 17 - 36' N)	106922.00	300.000	-	45.00	Prefeasibility Study 1998
3	Thanlwin (Hutkyi) (High Dam)	4 miles from Hutkyi Falls. (97 - 43' E, 17 - 35' N)	106922.00	10000.000	-	500.00	Office Study
4	Yunzalin	Near Papun. (97' - 25' E, 18' - 20' N)	-	100.000	-	-	KTA Report (1953)
5	Thaukyegat	26 miles from Taungoo. (96 - 40' E, 18 - 55' N)	649.00	150.000	88.00	510.00	Predesign Report (1977) ECL, USA
6	Lampha	55 miles East of Moulmein. (98 - 19' E, 16 - 19' N) 94L/ 7-371977	12.00	19.500	86.00	2500.00	KTA Report (1953)
7	Moei - 1	55km East of Moulmein. (98 - 39' E, 16 - 25' N)	698.84	70.000		262.46	Office Study
8	Moei - 2	28.5km South-East of Hlaingbwe. (98 - 21' E, 17 - 03' N)	2478.77	120.000		164.04	Office Study
9	Moei - 3	21 km North-East of Kamamaung. (97 - 47' E, 17 - 41' N)	3362.95	250.000		131.25	Office Study
							KTA Report
	Total number of projects =9			Total = 17009.50			
	I.2						
	Total number of projects $= 21$	(<1 to > 10 MW)		Total (< 1 MW -	> 10 MW) = 17020.	909 MW	
	1.5	Ň Ś		, i i i i i i i i i i i i i i i i i i i	,		

Appendix E Hydro Potential (6/16)

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	CHIN STATE				0 < /		
	Under 1.0 MW						
	1 Dhohi Chaung	2 miles from Falam $(93^{\circ}, 13' + 22^{\circ}, 53' + N)$		0.0600			Commissioned on (1975)
		4 miles from Tiddim $(93 - 41 + 23 - 23 + 10)$	9 160	0.0000	6.00	488.00	Commissioned on February (1984)
	3 Daung Va	8 miles from Haka $(93^{\circ} - 35^{\circ} + 23^{\circ} - 40^{\circ} N)$	24 720	0.4000	6.00	260.00	Commissioned on September (1984)
	4 Paletwa	0.5 miles from Paletwa. (92 - 52 E, 21 - 18 N)	1.000	0.0500	0.01	140.00	Commissioned on August (1988)
	5 Matupi (Namlaung Chaung)	8 miles from Matuni	16,000	0.2000	17.00	143.00	Commissioned on May (1992)
	6 Laiva	10 miles Sourth-West of Falam.	3.240	0.6000	8.78	636.00	Commissioned on April (1992)
	7 Tui Saung Chaung	2 miles North-East of Tonzang.	20.000	0.2000	32.00	150.00	Commissioned on July (1997)
	8 Che Chaung (Mindat)	7.5 miles Sourth-West of Mindat. (94 - 00' E, 21 - 22' N)	113.000	0.4000	17.00	92.00	Commissioned on September (1997)
	9 Long Ngol Chaung	2 miles from Haka. (93' - 35' E, 23' -40' N)	5.000	0.1500	2.00	240.00	Preliminary Survey (1976)
1	0 Teingla Chaung	4 miles North-East of Paletwa.	12.000	0.0500	5.00	30.00	Pre-feasibility Report (1986)
1	1 Kwa Lui Chaung	10 miles East of Tiddim.	3.200	0.0500	4.60	85.00	Pre-feasibility Report (1987)
1	2 Saw Chaung	12 miles Sourth-West of Kanpetlet.	43.100	0.2000	7.10	119.00	Pre-feasibility Report (1988)
1	3 Zou Lui Chaung	12 miles North of Tiddim. (925875)	2.400	0.1000	11.00	430.00	Pre-feasibility Report (1989)
1-	4 Amlaung Chaung	8 miles from Mindat. (93 [•] - 50' E, 21 [•] - 20' N)	5.000	0.1200	2.00	300.00	Office Study
1	5 Mulaung Chaung (Mindat)	15 miles from Mindat. (93 - 53' E, 21 - 26' N)	5.000	0.9000	3.00	1500.00	Office Study
1	6 Ran Chaung (Mindat)	1.5 miles North-East of Ranpan Village. (84-K/NW-220238)	-	0.2500	6.61	342.00	Preliminary Survey (1995)
	Total number of projects $= 16$			Total = 4.130			
	1.0 MW to 10.0 MW						
	l Ngalsip Va	12 miles from Falam. $(93 - 43' \text{ E}, 22 - 51' \text{ N})$	45.00	1.000	16.60	384.00	Commissioned on December (1986)
	2 Anya Katin	1.2 miles North-West of Kanpetlet. (84-K / 4-258782)	-	1.200	91.82	748.00	Preliminary Survey (1987)
	3 Buntala	15 miles from Matupi. $(93 - 28^{\circ} \text{E}, 21 - 42^{\circ} \text{N})$	81.76	1.800	16.00	600.00	Office Study
				T 1 1 000			
	Total number of projects $= 3$			Total = 4.000			
	A h 10.0 MW						
	Above 10.0 MW	16 miles from Paletwa (03° 04' F 21° 07' N)	732.00	200.000	114.00	235.00	Office Study
		$30 \text{ miles from Mychaung (93 \cdot 10' E, 20' - 51' N)}$	2526.00	200.000 600.000	535.00	460.00	Preliminary Peport (1973)
	3 Kalewa (Mainpur)	12 miles Sourth-East of Ealam $(93^{\circ} - 48^{\circ} \text{ E} 22^{\circ} - 43^{\circ} \text{ N})$	4530.00	504.000	1660.00	400.00	Preliminary Report (1974)
	(Wanpur)	12 Inites Sourch-Last of Falani. (75 - 46 E, 22 - 45 N)	4550.00	504.000	1000.00	470.00	remininary Report (1974)
	Total number of projects -3			Total - 1304.000			
	Total number of projects = 5			1000 - 1504.000			
	Total number of projects = 22	(<1 to > 10 MW)		Total (< 1 MW -	> 10 MW) = 1312.13	0MW	
	real number of projects = 22			10mi (11 min	/ 10 10100 / = 1012.10	011111	

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	SAGAING DIVISION						
	Under 1.0 MW						
1	Lahe (Hwe Hngwin Neu Chaung)	1.5 miles Sourth-East of Lahe. (83-N/SW)	2.52	0.0500	4.00	195.00	Commissioned on February (1997)
2	Wuntho (Mangin Chaung)	4.5 miles North-West of Wuntho. (95' - 36' E, 23' - 57' N)	4.70	0.1000	14.00	140.00	Preliminary Report
3	Na Nge Chaung	2.5 miles North-East of Wuntho. (84-M/13)	157.00	0.0400	40.00	24.00	Preliminary Report (1987)
4	Tatwe Chaung	24 miles North-West of Kyun-Hla. (84-M/2)	10.20	0.0200	1.06	34.00	Preliminary Report (1988)
5	Pinlebu (Kaba Chaung)	20 miles from Pinlebu. (95' - 36' E, 24' -09' N)	62.00	0.4000	-	70.00	Office Study
6	Pinlebu (Panwe Chaung)	24 miles from Pinlebu. (95 - 39' E, 24 - 10' N)	13.00	0.1300	-	100.00	Office Study
7	Nam Sake	15 miles from Hkamti. (83-0/ NE.NW-128059)	3.32	0.2000	10.00	400.00	Office Study
8	Chaung-daung	12 miles from Tigvaing. (93-A/2-314693)	2.30	0.1500	-	250.00	Office Study
9	Daungu Chaung	Near Wuntho (84-M/ 9-330694 STN)	64.00	0.9500	-	35.00	Office Study
10	Matugi	3 miles Sourth-West of Lashe (83-K/8E-4138)	13 79	0.1000	5.30	140.00	Preliminary Report
11	Khwe Lon (Kaw Ta Fall)	16 miles Sourth-West of Banmauk (83-P/11 15-435040)		0.4000	20.00	355.00	Preliminary Report
12	Pyanshar Chaung	3 miles North-Fast of Lahe (83-N/ SW-9053)	_	0.0750	4 10	275.00	Preliminary Survey
12	i yunshu Chuung	5 miles North East of Earle. (65 N/ 5W 5055)		0.0750	4.10	275.00	r tenninary burvey
	Total number of projects -12			Total - 2 615			
	Total number of projects = 12			10001 - 2.015			
	1.0 MW to 10.0 MW						
1	Zi Chaung	12 miles from Kalemyo (97 - 53' E. 23 - 11' N)	115.00	1.260	140.00	134 50	Commissioned on July (1996)
2	Buk Va	30 miles from Kalemyo (93' - 55' E 23' - 04' N)	9 44	1.200	15.00	600.00	Office Study
3	Navinzava Chaung	22 miles from Kalewa $(94^{\circ}-05')$ F 23 $^{\circ}-37'$ N)	133.60	1.500	30.00	150.00	Preliminary Report (ID)
5	i vayinzaya Chaung	22 miles from Kalewa. ()+ -05 L, 25 - 57 W)	155.00	1.500	50.00	150.00	r telininary Report (ID)
	Total number of projects -3			$T_{otal} = 4.560$			
	Total number of projects = 5			10ta1 = 4.500			
	Above 10.0 MW						
1	Tamanthi	31 miles from Homalin (95° - 00' F 25° - 00' N)	15130.00	1200.00	2500.00	172.00	Prefeasibility Report (1974)
2	Mawlaik	Near Mawlaik $(94^{\circ}-34') = 23^{\circ} = 50' N$	26788.00	400.00	76000.00	70.00	Preliminary Report LINDP
3	Shwezave	15 miles North of Mony (95 - 00' E 22' - 20' N)	41050.00	600.00	70000.00	160.00	Preliminary Report UNDP
1	Hamalin	10 miles from Homalin $(94^{\circ}-54^{\circ}) \ge 24^{\circ} = 54^{\circ} \ge 10$	16946.00	150.00	2500.00	33.00	Preliminary Report UNDP
5	Mu (Thanhanseik)	$40 \text{ miles from Ve II} (05^{\circ} 23.5' \text{ E}, 24^{\circ} - 54^{\circ} \text{ N})$	10940.00	30.00	2500.00	70.00	Under Construction
5		$10 \text{ miles from Homelin} (95^{\circ} - 15^{\circ} \text{ E}, 25^{\circ} - 15^{\circ} \text{ N})$	-	12.00	-	70.00	Broliminary Report (UNDR)
0	olu	10 mmes from From anni. (95 - 18 E, 24 - 45 N)	-	12.00	-	50.00	Fremmary Report (UNDF)
				T (1 2202.00			
	1 otal number of projects = 6			1 otal = 2392.00			
				m . 1 / . 4) // ·			
	Total number of projects $= 21$	(<1 to > 10 MW)		Total ($< 1 \text{ MW}$ -	> 10 MW) = 2399.1	/5 MW	

Sr.No 1	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
]	FANINTHARYI DIVISION						
<u>-</u>	Under 1.0 MIW						
11	Kattalu Chaung	Kyunsu Township Katan Island	6.80	0.150	2.50	172.00	Commissioned on July (1991)
21	Mali Kvun	Mali Kvun	0.80	0.192	12.00	351.00	Commissioned on July (1992)
31	Maliwun	24 miles North of Kawthaung. (98 - 36' E, 10 -13' N)	10.30	0.450	6.00	106.60	Feasibility Study WAPCOS(1982)Under Planning.
4 J	Kanbauk	40 miles from Dawei. (98 - 05' E, 14 - 45' N)	-	0.400	-	208.50	Prefeasibility Report (1976)
51	Bokpyin	16 miles from Dawei. (98 - 45' E, 11 - 15' N)	1.60	0.150	2.25	380.00	Prefeasibility Report (1976)
67	Thayet Chaung	1/2 miles from Thayet Chaung	5.00	0.050		50.00	Office Study
7 J	Ka-an Chaung	Kyunsu Township Katan (King) Island	3.78	0.080	15.00	80.00	Office Study
8 J	Kapa Chaung	Kyunsu Township Katan (King) Island	2.85	0.080	10.00	120.00	Office Study
ŗ	$\Gamma otal = 8$			Total = 1.552			
1	1.0 MW to 10.0 MW						
14	Anyabya	12 miles from Dawei. (98 - 19' E, 14 - 04' N)	41.75	9.000	20.20	150.00	Feasibility Report (1982) HYDROPLAN (FRG)
Ţ	$\Gamma otal = 1$			Total = 9.000			
<u> </u>	Above 10.0 MW						
1 F	Hpaungdaw	45 miles from Dawei. (98 - 30' E, 14 - 04' N)	16.05	5.00		1460.00	Feasibility Report (1982) HYDROPLAN (FRG)
2 F	Khlong Kra	33 miles from Kawthaung.	275.00	40.00		197.00	Preliminary Study (MEPE + NEA)
37	Fanintharyi	31 miles North East of Mergui, near Mayon.	3811.00	600.00	16580.00	420.00	Office Study (NIPPON KOEI)
4 5	Sarawa Chaung	37 miles North East of Mergui, ner Mayon.	295.00	11.00	70.00	197.00	Office Study (NIPPON KOEI)R.O.R. Type
57	ГheinKun Chaung	50 miles East of Tanintharyi. 96-M/ 5-567888	160.00	25.00	50.00	240.00	Preliminary Study (ID) Dam Type
]]	$\Gamma otal = 5$			Total = 681.000			
					10 101 501 55		
	$1 \text{ otal} = 14 \ (< 1 \ \text{ to} > 10 \ \text{MW})$			Total ($< 1 \text{ MW}$ -	> 10 MW) = 691.552	2 MW	

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	BAGO DIVISION Under 1.0 MW						
1	Buyo Chaung	20 miles from Padaung. (94 - 55' E, 18 -45' N)	54.00	0.150	8.00	100.00	Office Study on (1987)
2	Kayin Chaung	12 miles from Yedashe. (96 - 28' E, 19 -09' N)	29.73	0.700	36.00	297.00	Feasibility Study (1982) WAPCOS
3	North Nawin	30 miles from Pyay. (95 - 27' E, 19 -04' N)	228.00	0.890	82.00	32.40	Feasibility Study
4	Kyaukkyi (Matzagaing Chaung)	3 miles from Kyaukkyi. (96 - 49' E, 18 -18' N)	6.80	0.150	40.00	75.00	Feasibility Study
	Total = 4			Total = 1.890			
1	<u>1.0 MW to 10.0 MW</u> South Nawin	Yatthet Village Paukkaung. (95 [°] - 35' E, 18 [°] - 55' N)	247.00	2.000	-	78.00	Under Study
	Total = 1			Total = 2.000			
	Above 10.0 MW						
1	Bago (Zaungtu)	36 miles North-West of Bago. (96 - 12' E, 17 - 45' N)	427.00	20.000	2750.00	118.00	Under Construction
2	Bawgada	17 miles from Kyaukkyi. (96 - 53' E, 18 - 17' N)	55.00	168.000	497.00	1850.00	KTA Report (1953)
3	Yenwe	18 miles from Pyuntaza. (96 - 26' E, 18 - 06' N)	297.00	16.000	3770.00	223.00	Feasibility Report (1977)
4	Pyu Chaung	9 miles from Phu. (96' - 21' E, 18' - 31' N)	406.00	65.000	-	315.00	Preliminary Report (1962) UNDP
5	Kun Chaung	8 miles South-West of Pyu. (96 - 23' E, 18 - 25' N)	345.00	84.000	1695.00	375.00	Feasibility Report (1981)
6	Kabaung	18 miles from Taungoo. (96 - 15' E, 18 - 54' N)	418.00	30.000	-	164.00	Preliminary Report (UNDP)
	Total = 6			Total = 383			
	Total = 11 (< 1 to > 10 MW) f			Total = 386.890	MW (<1 - > 10 MW)		

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power	Minimum	Available	Project Status
			(sq miles)	(Installed) MW	Discharge (Cusec)	Head (ft)	
	MAGWAY DIVISION						
	Under 1.0 MW						
	l Mon Chaung	12 miles from Ngape. (94 - 30' E, 19 -54' N)	49.60	0.300	21.53	205.00	Feasibility Study (1982) WAPCOS
4	2 Ngape	12 miles from Ngape. (94' - 24' E, 20' -05' N)	2.00	0.100	-	150.00	Office Study
	Total $= 2$			Total = 0.400			
	1.0 MW to 10.0 MW						
	1 Bwetgyi Chaung	12 miles from Aunglan. (95 - 33' E, 19 - 29' N)	600.00	9.000	800.00	80.00	Office Study
2	2 Zarthaw Chaung	6.5 miles North-West of Gangaw. (84-J/ 4-292987)	586.00	1.200	9.00	44.00	Preliminary Report (1996)
	3 Salin Chaung		-	9.000	-	125.00	I.D Report
							-
	Total = 3			Total = 19.200			
	Above 10.0 MW						
	1 Mindon	3 miles from Mindon. (94' - 42' E, 19' - 22' N)	362.00	18.000	37.00	125.00	Interim Report (1976)
	2 Mone	35 miles from Mindon. (94' - 17' E. 20' - 17' N)	1905.00	75.000	4240.00	164.00	Preliminary Report (1966) CHINA
	3 Mvittha	60 miles from Kalaymyo. (94' - 07' E. 22' - 40' N)		10.000		80.00	Preliminary Report (UNDP)
				101000		00100	
	T			T-4-1 102 000			
	1 otal = 3			10tal = 103.000			
	Total = 8 (< 1 to > 10 MW)			Total = 122.600	MW (<1 - > 10 MW)		

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	MANDALAY DIVISION						
	Under 1.0 MW						
1	Wet Wun	13 miles from Maymyo. (96 - 40' E, 22 - 05' N)	73.12	0.450	11.00	698.00	Commissioned on (1933)
2	Dattaw Chaung	5 miles South-West of Pyin Oo Lwin.	28.00	0.120	12.00	60.00	Prefeasibility Report (1987)
3	May Myo(Pyin Oo Lwin) Gelaung Chaung	Near Yenge Village	-	0.020	8.00	21.00)
4	May Myo(Pyin Oo Lwin) Pinlein Chaung	Near Setalon Village	-	0.020	10.00	23.00	Prefeasibility Report (1987)
5	May Myo(Pyin Oo Lwin) Sitha Chaung	near Sitha Village	-	0.004	2.00	12.00, 15.00	J
6	Sitha Chaung	8 miles from Maymyo. (96 - 26' E, 21 - 57' N)	3.00	0.100	-	100.00	Office Study
	Total $= 6$			Total = 0.714			
	1.0 MW to 10.0 MW						
1	Mogok	Mogok Township. (96 - 30' E, 22 - 54' N)	26.40	4.000	138.00	395.00	Commissioned on September (1989)
2	Chaungmagyi Fall	30 miles from Naunghkio (96 - 18' E, 22 - 18' N)	1.39	2.250	10.05	1017.00	Preliminary Report
	Total = 2			Total = 6.250			
	Above 10.0 MW						
1	Kinda	21 miles from Kume. (96 - 03' E, 21' - 30' N)	865.00	56.000	324.00	204.00	Commissioned on January (1986)
2	Sedawgyi	40 miles from Mandalay. (96 - 18' E, 22 - 18' N)	1322.00	25.000	3570.00	96.00	Commissioned on June (1989)
3	Paunglaung	7 miles from Pyinmana. (96 - 20' E, 19 - 47' N)	1691.00	280.000	-	377.20	Under Construction
4	Yeywa	30 miles South-East of Mandalay.(96 - 24' E, 21 - 41' N)	10890.00	600.000	5133.00	320.00	Feasibility Study
5	Paunglaung (UNDP)	23 miles from Pyinmana. (96 - 36' E, 19 - 46' N)	1259.00	342.000	-	470.00	Preliminary Study (1982)
6	Thabeikkyin	6 miles from Thabeikkyin. (95 - 58' E, 22 - 54' N)	44142.00	1800.000	325000.00	82.50	Office Study
7	Lwegyi	15 miles from Pyinmana. (96 - 28' E, 19 - 51' N)	1312.00	140.000	-	190.00	Office Study (1978)
8	Nancho	16 miles from Pyinmana. (96 - 26' E, 19 - 45' N)	295.00	152.000	-	710.00	Office Study (1978)
9	Paunglaung Nge	27 miles from Pyinmana. (96 - 38' E, 19 - 48' N)	345	80.000	-	740	Office Study (1978)
	Total $= 9$			Total = 3475.000			
	Total = $17 (< 1 \text{ to} > 10 \text{ MW})$			Total = 3481.964	MW (<1 - > 10 MW)		

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power	Minimum	Available	Project Status
		, , , , , , , , , , , , , , , , , , ,	(sq miles)	(Installed) MW	Discharge (Cusec)	Head (ft)	
	MON STATE						
	<u>Under 1.0 MW</u>						
1	Zingyaik	6 miles North-East of Paung. $(97 - 26' \text{ E}, 16' - 42' \text{ N})$	1.00	0.198	9.00	358.50	Commissioned on October (1984)
2	Kinmum	11 miles from Kyaikhto. (97 - 06' E, 17 - 26' N)	4.45	0.200	2.00	360.00	Detailed Survey
3	Bambwegon	4 miles from Paung. (97 - 29' E, 16 - 36' N)	2.25	0.200	1.00	300.00	Preliminary Report (1979)
4	Kanni	12 miles East of Ye. (95-1/3-951055)	0.31	0.050	10.00	100.00	Preliminary Report (1979)
5	Kyaukkatin Chaung	6.5 miles South-East of Ye. (95-E/163,E/12-878937)	4.73	0.125	5.44	102.00	Preliminary Report (1988)
6	Mobaw Chaung	14 miles North of Kyaikhto. 94G/3-606213	3.99	0.100	1.24	351.00	Preliminary Report (1987)
7	Sapar Chaung	3 miles North of Mawkanin village. 95E/14-482838.	1.90	0.050	117.00	29.30	Preliminary Report (1991)
	Total number of projects $= 7$			Total = 0.923			
	1.0 MW to 10.0 MW						
1	Abit	1.5 miles East of Satthwe village,	15.30	1.500	50.00	170.00	Preliminary Survey (1994)
		Mudon. (94-H/12-413461)	-	10.000	1680.00	100.00	Preliminary Survey (1992)
2	Myet Taw Chaung	1.5 miles North East of Lamaing Town. (Ye township)					
		95E/ 14-642992					
	Total number of projects $= 2$			Total = 11.500			
	Above 10.0 MW						
1	Bilin	12 miles from Bilin. (97 [•] - 15' E, 17 [•] - 23' N)	870.00	280.00	561.00	235.00	Feasibility Study
	Total number of project $= 1$			Total = 280.00			
	1 5						
	Total number of projects $= 10$	(<1 to > 10 MW)		Total = 292.423	MW (<1 - > 10 MW)		
	1 5						

Appendix E Hydro Potential (13/16)

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	RAKHINE STATE						
	<u>Under 1.0 MW</u>						
1	Vo Chauna	16 miles from Knowleton, (02, 50 E 20, 51 N)	106 71	0.450	105 20	105.00	Esseihilitz Study (1082) WADCOS
	Thoda Chourg	16 miles from Kyauktaw. $(92 - 50 \text{ E}, 20 - 51 \text{ N})$	100.71	0.430	103.20	105.00	Office Study
2	Dentin Chaung	1/2 miles from Minbus (02, 16/E 20, 22/N)	52.80	0.800	20.00	110.00	Dince Study
3		1/2 miles from Mildya. (95 - 16 E, 20 - 22 N)	0.10	0.023	4.50	110.00	Preniminary Report
4	Ale Chaung	18 miles East of Thandwe	12.00	0.020	9.00	25.00	Office Study
5	Male Chaung	12 miles Notur-East of Gwa. (94 - 41 E, 17 - 58 N)	11.00	0.130	-	100.00	Office Study
0		9 miles nom raunggup. (94 - 18 E, 18 -47 N)	1.00	0.100	-	100.00	
/	Khut Chaung	16 miles North-East of Thandwe.	1.80	0.100	1.50	40.00	Preliminary Report (1987)
8	Hpayataung Chaung	10 miles from Buthidaung & 6 miles from Maungdaw.	1.40	0.010	1.00	30.00	Preliminary Report
9	Pyaung Chaung	6 miles North-West of Kyauktaw. (84-D/13-928453)	20.00	0.018	61.12	60.00	Preliminary Report
	T (1)			T (1 1 (72)			
	1 otal = 9			1 otal = 1.6/3			
	1 0 MW 40 10 0 MW						
1	1.0 WI W 10 10.0 WI W	17 miles Newly of Marcels Oc. (04 H/1 100227)	76.00	1.500	522.00	20.00	Due l'inclusione Discussion
1	i an Chaung	17 miles North of Myauk Oo. (84-H/1-190327)	/6.00	1.500	522.00	20.00	Preniminary Report
	Total – 1			$T_{otol} = 1.500$			
	1 otal = 1			10tal = 1.500			
	Above 10.0 MW						
1	Kveintali	54 miles from Thandwe (94' - 37' F. 17' - 53' N)	298.00	28.00	22.00	220.00	Preliminary Report (1979) DPRK
2	Thande	15 miles North ward of Thandwe $(94^{\circ} - 22' + 18^{\circ} - 38' + N)$	467.00	100.00	49.00	290.00	Preliminary Report (1976)
3	Saingdin	50 miles from Sittwe $(92' - 38' + 21' - 54' + N)$	354.00	76 50	1910.00	161.00	Preliminary Report
4	Thandwa	10 miles due South East of Thandwa ('E' N)	270.00	39.00	1910.00	103.00	Preliminary Report (Dam type)
4	Thandwe	To finites due South East of Thandwe (E, N)	270.00	39.00	-	105.00	Fremmary Report (Dam type)
	Total - 4			$T_{otal} = 243.5$			
	10tal = 4			10tal = 243.3			
	Total $= 14 (< 1 \text{ to } > 10 \text{ MW})$			Total - 246 673	MW(<1 - 10 MW)		
				10tar = 240.075			

Sr.No	Name of Project	Location of Project Site	Catchment Area	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	SHAN STATE		(64 11100)	(mound) m	Disenarge (Casee)	11044 (11)	
	Under 1.0 MW						
1	Namhsan	1.5 miles from Namhsan. (97 - 10' E, 22 - 55' N)	6.50	0.030	5.00	90.00	Commissioned on 1936 (Existing)
2	Muse (Namkhum Chaung)	4 miles East of Muse. (97 - 57' E, 24 - 00' N)	9.87	0.192	3.50	154.50	Commissioned on April (1988)
3	Namkham (Nammahla Chaung)	6 miles South of Namkham. (97 - 41' E, 23 - 46' N)	11.13	0.300	2.30	140.00	Commissioned on March (1988)
4	Kunhing (Namsham Chaung)	2 miles East of Kunhing. (98 - 27' E, 21 - 18' N)	26.00	0.150	12.00	85.00	Commissioned on September (1991)
5	Kyaington-2 (Name Lat Chaung)	8 miles South-East of Kyaington.	42.00	0.480	15.00	131.00	Commissioned on November (1991)
6	Chinshwehaw (Pachethaw Chaung)	13 miles North of Kunlong.	2.75	0.300	100.00	14.00	Commissioned on February (1992)
7	Maing Lar	56 miles from Kyaington.	12.36	0.060	6.35	65.00	Commissioned on March (1992)
8	Selu (Nam Lat Chaung)	7 miles East of Mongyaung.	4.50	0.024	3.50	66.00	Commissioned on March (1992)
9	Kunlong (Name Hsawn Chaung)	15 miles East of Kunlong.	27.41	0.500	7.42	135.00	Commissioned on January (1996)
		3 miles East of Hopan (98 -55' E, 23 - 27' N)					
10	Pan Hsan (Namnga Chaung)	South-West of Pan Hsan (Pan Hkam).	-	0.080	-	262.00	Commissioned
11	Kyukok (Name Hkan Chang)	4 miles from Kyukok. (0/930912)	30.00	0.320	18.00	196.00	Under Construction
12	Mong Hsat	12 miles from Mong Hsat. (99' - 10' E, 20' - 28' N)	24.30	0.300	4.00	440.00	Interim Report (1975)
13	Nam Tam Chaung	11 miles North-West of Langhko. (93-H/15-625700)	231.67	0.890	10.00	39.00	Pre-feasibility Report (1986)
14	Nam Uon Chaung	2 miles South of Maing Pyin. (93-0/3-893816)	-	0.100	50.00	45.00	Pre-feasibility Report (1994)
15	Namlin Chaung	4.5 miles South of Tangyan. (93-J/7-204148)	-	0.800	80.00	180.44	Preliminary Report (1991), (1994)
16	Nam Na Nin	2 miles from Mong Ton. (98 - 53' E, 20 - 19' N)	23.10	0.600	15.70	200.00	Office Study
17	Mong Hkak	2 miles from Mong Hkak.	7.80	0.110	3.50	150.00	Office Study
18	Ho Kan Chaung	6 miles from Loilem.	-	0.100	-	100.00	Office Study
19	Namhsan (Northern Shan State)	1.5 miles from Namhsan. (97 - 11' E, 22 - 57' N)	6.50	0.090	15.00	90.00	Office Study (Extension)
20	Nam Teng Chaung	5 miles South of Mong Kung.	2.83	0.060	-	150.00	Office Study
21	Nam Khai Chaung	5.5 miles North-East of Kut Kai, (93-E/14-920263)	60.00	0.500	266	40.00	Office Study (6/10/1989)
22	Nam La Chaung	(1) 1 mile East of Maw Wawm (Maw Hpa Region)	1.30	0.080, 0.200	-	200.00	Office Study
23	Nam La Chaung	(2) 1 mile North-West of Maw Wawm (Maw Hpa Region)	1.60	0.030, 0.500	-	50.00	Office Study
24	Nam Kone Chaung	1/2 mile South-East of Man Ton. (93-E/4-967006)	-	0.400	65.00	100.00	Preliminary Study (17/12/1994)
25	Rwan Kyu Chaung	1 mile North-West of Mongmao. (93-J/13-033674)	-	0.300	10.00	250.00	Preliminary Study (1994)
26	Nam Hu Chaung	2 miles North-East of Maing Hkat. (93-0/5-410330)	-	0.030	7.00	80.00	Preliminary Study (1996)
27	Hwe Nam Kal	5 miles East of Maing Pauk. (Ho Tong Region)	-	0.720	88.28	164.04	Preliminary Study (UNDCP) (1994)
28	Nam Hpaktu Hpa	1/2 mile South-West of Talae. (102-D/2-135908)	-	0.015	3.30	30.00	Preliminary Study (1996)
29	Nam Ya	8 miles North of Kyaington. (93-0/11-536953)	-	0.150	3.30	350.00	Preliminary Study (1996)
30	Hwe Kkanmong Chaung	2 miles South-East of Ho-mong. (94-E/14-701880)	21.75	0.400	41.00	146.00	Preliminary Study (1996)
31	Nam Me Le	3 miles South-West of Ho-mong. (94-E/14-659905)	-	0.225	35.68	189.00	Preliminary Study (1996)
32	Nam Ko	4 miles South-East of Mong Ko.	70.59	0.960	75.00	202.53	Preliminary Study (2/5/1996)
33	Nam Hu Mun Chaung(Kaung Hka)	8 miles East of Kutkai. (93-1/3-015190)	-	0.320	47.69	118.00	Preliminary Study 911/11/1996)
34	Nam Hsai Chaung	2 miles North West of Mong Wi village, Nam Hkam Township.	-	0.200	17.00	190.00	Preliminary Study
35	Nam Lan	18 miles South-East of Hsipaw, 1/2 mile from West of Hosang village	-	0.400	35.00	216.00	Preliminary Study (30/9/1994)
		(93-F/7-057993)					
36	Hwe Pa Lem	9 miles South-West of Mong Kung. (93-G/6-113114)	4.30	0.600	4.00 (80)	120.00	Preliminary Study (5/9/1993)
37	Char Haw Fall	6 miles South-West of Lauk Kai (93-1/10-680511)	-	0.500	2.50	1050.00	Prliminary Study (1997)
38	Nam Kaung Hsak(Marshihtan falls)	1.2 miles South-West of Kone Kyan. (93-1/9-501672)	-	0.100	1.68	545.00	Preliminary Study (March, 1997)
39	Me Han Chaung	13 miles South of Mong Ton. (/16-765307)	-	0.060	57.00	22.00	Preliminary Study 95/6/1992)
40	Nam Hkan	8 miles East of Mong Hpayak. (102-D/1-090076)	-	0.050	5.00	98.00	Preliminary Study (1992)

Appendix E Hydro Potential (15/16)

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	SHAN STATE						
41	Under 1.0 MW	49 miles Name Base of Taskilaita (100 D/5 555090)		0.400	70.19	174.00	Derlinsinger Strate (Oct. 1007)
41	Nam Hpaung Chaung	48 miles North-East of Tachileik. (102-D/5-555082)	-	0.400	/0.18	1/4.00	Preliminary Study (Oct, 1997)
42	Nam wuam Chaung	48 miles North-East of Tachileik. $(102-D/5-4/3084)$	-	0.800	118.74	210.00	Preliminary Study (Oct, 1997)
43	Nam Hpakar	29 miles from Kutkaing	-	0.050	50.00	20.00	Preliminary Study (1990)
44	Pacharkalo	His Hsaing Township.	-	0.130	4.00	230.00	Preliminary Study
45	Hotant	8 miles North-west of Nam San. (95-H/9-289359)	-	0.200	7.00	200.00	Preliminary Study (5/4/1991)
40	Hu Chaung	(04 A/15 278520)	-	0.300	10.52	175.00	Prenninary Study (2/3/1993)
17	Namhaaumkha Chaung	(94-A/15-578550) 20 miles South Fast of Knowleng (C 802068)	28.00	0.750	14.00	240.00	Proliminary Study (27/2/1000)
47	Semnei	6.5 miles Foot of Thibaw (H 220110)	50.00	0.730	14.00	240.00	Preliminary Study (27/2/1999)
48	Sempor	0.5 miles East of Thioaw (H-520119)	30.00	0.020	4.00	40.00	Prenninary Study (23/2/1999)
	Total = 48			Total = 14.986			
	1.0.3.4.10.0.3.4.14						
1	<u>LUMW to LUUWW</u> Kong Nyaung (1)	24 miles from Lashio (97 - 35' F 22' - 50' N)	505.00	6 800	210.00	150.00	Commissioned on (1985)
2	Tatkvi Falls	7 miles Fast of Yat Sauk $(96 - 53' + 21' - 17' N)$	500.00	1 200	670.00	29.50	Commissioned on July (1987)
2	Norwoo (Kong Nyoung 2)	14 miles South West of Lachie	525.00	1.200	565.00	105.00	Commissioned on April 1004
3 4	Kyaington -1 (Nam Won Chaung)	10 miles South of Kyaington (99 - 33' F 21 - 08' N)	10.00	4.000	15.00	1109.00	Commissioned on July 1994
5	Kyaukme (Nam Saung Ngau Chaung)	6 miles East of Kyaukme $(97 - 07 - 24 - 34' N)$	69.50	4,000	25.00	485.60	Commissioned on September 1996
5	Menan	6 miles North-East of Mong Heat $(99^{\circ} - 18^{\circ} \text{ F} 20^{\circ} - 33^{\circ} \text{ N})$	6.00	2 000	7.00	1100.00	Under Construction
7		2 miles from Heanvi	12.40	2.000	6.84	1000.00	Dealineiro ary Demort
/	Hsenwi 2 (Nommulat Chaung &	2 miles from Hsenwi. 2 miles West of Hearwi (02 E/15 865017)	12.40	2.000	0.84 50	1000.00	Preliminary Report
0	Hani Hang Channe)	3 miles west of Hsenwi. (93-E/15-803017)	10.55	0.000	50	899.00	Preniminary Report 1991.
Q	Mong Mit (Vetagun Chaung)	12 miles South-West of Mong Mit (96 - 32' F 23 - 04' N)	18.00	1 300	81.25	240.00	Preliminary Report 1085
10	Nom Dow Choung	4 miles South - West of Wing Witt. (70 - 52 E, 25 - 04 H)	285.00	1.500	892.92	240.00 68.00	Proliminary Report 1901
10	Nam Het	21 miles from Lashio $(97 - 57' \text{ F} 22' - 59' \text{ N})$	37.60	4.000	882.83 262.00	300.00	Office Study
12	Nam Wi	1 mile North West of Mong Wi village Nam Sam Townshin	57.00	1.000	441.42	96.50	Preliminary Study 1004
12		(93-E/6-366368)	-	4.000	441.42	90.50	Tremmary Study 1994
13	Nam Pan Chaung (High Weir Type)	10 mile Sourth-West of Pan Hsan, Wa Region. (93-N/4-899804)	-	5.000	627.09	37.07	Commissioned on April, 1999
14	Nam Hkun Chaung	6 miles South-West of Kyaung Ton. (93-0/12-488680)	-	2.000	-	1100.00	Preliminary Study 1996
15	Kyaing Hkong (Nam Hkat Chaung)	8 miles South-West of Maing Hkat. (93-0/6-291264)	10.48	1.000	12.00	542.00	Preliminary Study 1996.
16	Nam Mawng Chaung	8 mile North-East of Selu. (Wan Has Lo)	-	2.000	-	-	Map Study
17	Nam Hok Chaung	7 miles North-East of Tachileik. (93-P/14-930853)	-	3.000	393.41	150.00	Preliminary Study 1996. (Dam Type)
18	Par Shwe Haw	4 miles North-East of Ma Li Pa(Lauk Kai) village, Kokan Region.	-	1.000, 1.200	20.00, 21.33	1056.00, 971.00	Preliminary Study 1991.
19	Par He Chaung	11 miles South-East of Naungcho. (93-B/12-309880).	-	1.260	44.85	197.00	Preliminary Study 1994.
20	Sa Par Haw	4 miles East of Haleo Kai (Shauk Kai) village, Kokan Region.	-	4.000	70.00	100.00	Preliminary Study
21	Nam Ywon Chaung	3.5 miles North of Mwkmai. (93-H/11-411562)	66.50	1.200	14.83	246.00	Pre-feasibility Report 1995
22	Nam Mehsai	1 mile West of Tachileik (93-P/15-856747).	367.00	8.200	100.00	121.00	Feasibility Report (1992) MEPE+EPDC
23	Nam Hka Chaung	12 miles East of Nam Lan (H-296927)	116.00	1.800	150.00	62.00	Feasibility Report (26/2/1999 MEPE).
		Tatal - 22		$T_{abal} = 70.160$			
		10(4) - 23		10tal = 70.100			

Appendix E Hydro Potential (16/16)

Sr.No	Name of Project	Location of Project Site	Catchment Area (sq miles)	Available Power (Installed) MW	Minimum Discharge (Cusec)	Available Head (ft)	Project Status
	SHAN STATE						
	<u>Above 10.0 MW</u>						
			520.00	10.00		100.00	
1	Zawgyi (I)	13 miles North of Yat Sauk. $(96 - 54 \text{ E}, 21 - 23 \text{ N})$	529.00	18.00	667.00	400.00	Commissioned on 18th July, 1995
2	Zawgyi Dam (Zawgyi II)	26 miles from Bahtu. $(96 - 53^{\circ} \text{ E}, 23 - 19^{\circ} \text{ N})$	523.00	12.00	126.00	100.00	Commissioned on October, 1998
3	Namteng	4 miles from Wankunlong. $(98 - 20^{\circ} \text{E}, 20^{\circ} \text{-42^{\circ} N})$	-	75.00	750.00	369.00	KTA Report (1953)
4	Shweli	20 miles South-West of Nam Hkam (93-E/10-362445) (97 - 20' E, 23 - 41' N)	-	60.00 ~200.00	2470.00	853.00	Preliminary Report
5	Namtu	7 miles from Namtu. (97' - 20' E, 22' -14' N)	2400.00	36.00	1385.00	130.00	Preliminary Report (1963)
6	Pyaungsho	32 miles from Naunghkio. (96 - 54' E, 21 - 58' N)	9820.00	60.00	2660.00	188.00	Preliminary Report (1996) CHINA
7	Heho	2.5 miles from Heho. (96' - 52' E, 20' -42' N)	954.00	12.00	32.00	480.00	Interim Report (1978)
8	Nam Kok	36 miles South of Mong Hsat, 2 miles from Myanmar &	-	54.00	10590.00	150.00	Feasibility Study (Consortium +
		Thai border line.					MEPE)
9	Nam Long	27 miles North East of Zawgyi II Dam. ('- 'E, '- 'N)	1676.00	177.00	1621.00	1115.00	Preliminary Study, NIPPON KOEI
10	Thanlwin (Tasan)	(98 [•] - 40' E, 20 [•] - 20' N)	-	3600.00	2700.00	533.00	Preliminary Study (Dam Type)
11	Thanlwin (Nam Naing)	(98 [•] - 45' E, 22 [•] -10' N)	74518.00	3200.00	89699.00	574.00	Preliminary Study (Dam Type)
							NIPPON KOEI
12	Nam Pawn	45 miles North of Baluchaung Power Station II. (- 'E, - 'N)	1244.00	170.00	1151.00	1480.00	Preliminary Study (Dam Type)
	Total = 12			Total = 7614.00			
	Total = 86 (<1 - > 10 MW)			Total = 7699.146	MW (<1 MW ->10MW)		
					, , , , , , , , , , , , , , , , , , ,		