Ⅷ. 参　考　資　料

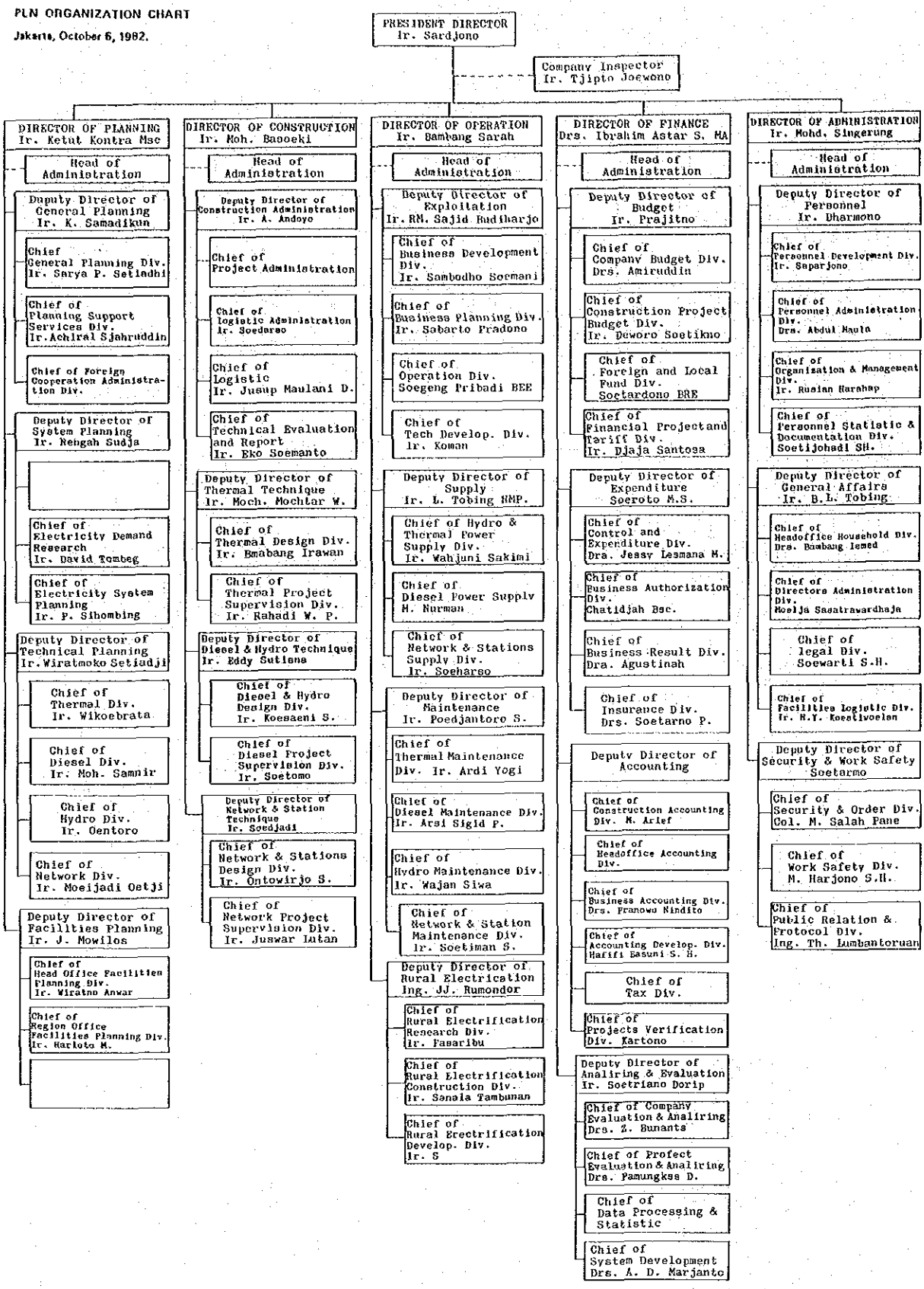
参 考 資 料 リ ス ト

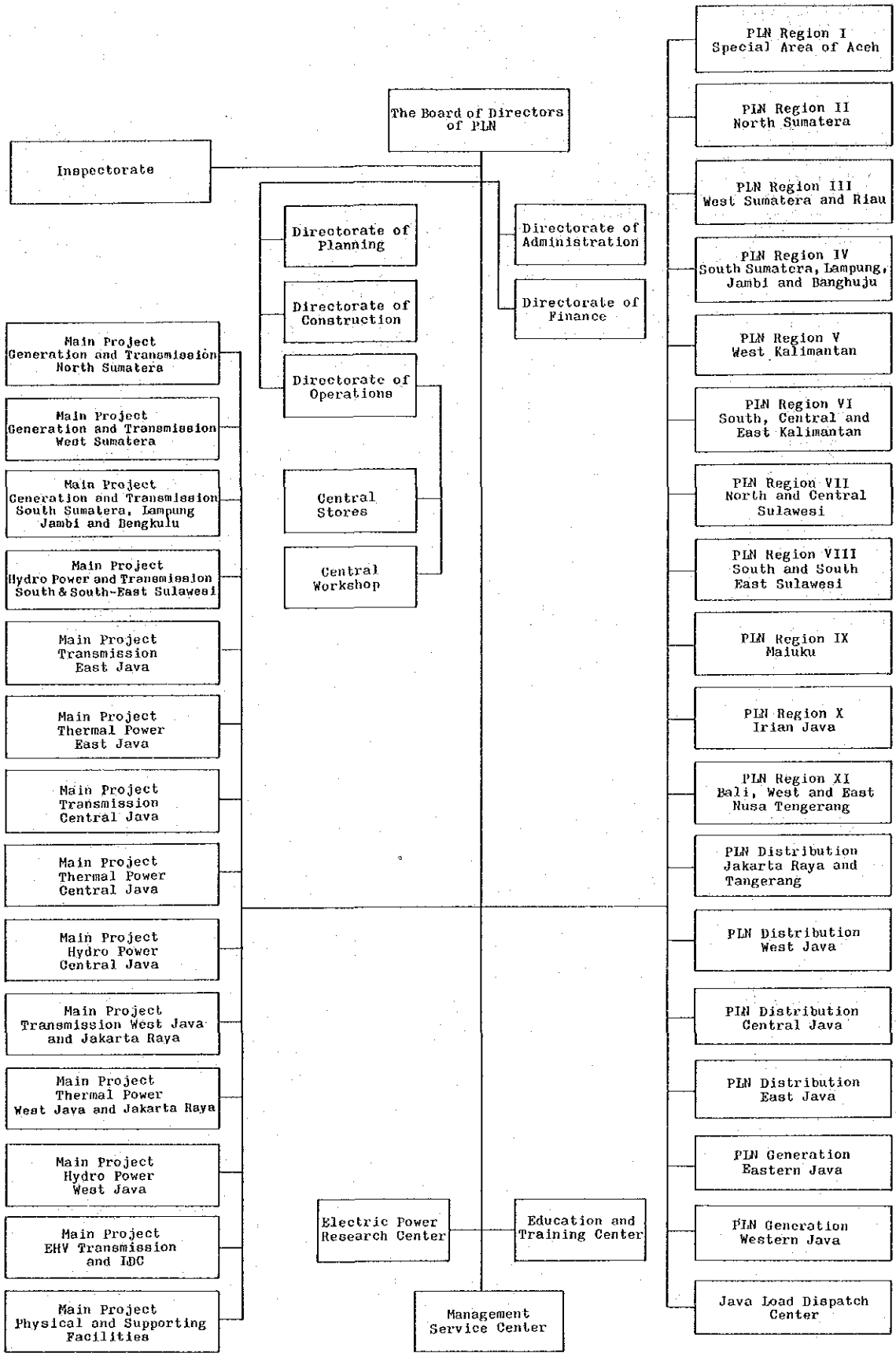
参考資料 1.

Organization Chart of PLN

PLN ORGANIZATION CHART

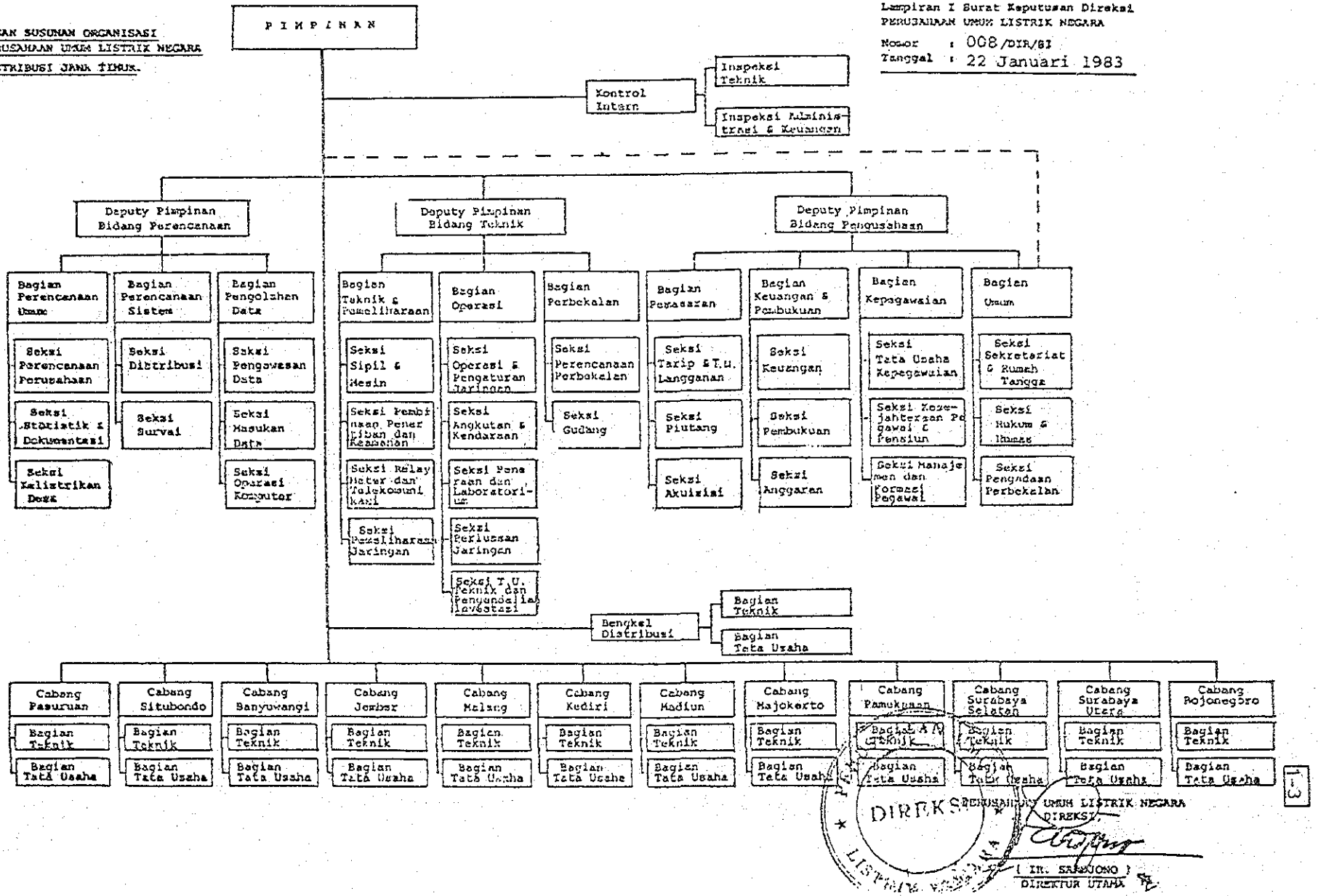
Jakarta, October 6, 1982.




The Board of Directors of PLN
Inspectorate
Directorate of Planning
Directorate of Construction
Directorate of Operations
Directorate of Administration
Directorate of Finance
Central Stores
Central Workshop
Main Project Generation and Transmission North Sumatera
Main Project Generation and Transmission West Sumatera
Main Project Generation and Transmission South Sumatera, Lampung Jambi and Bengkulu
Main Project Hydro Power and Transmission South & South-East Sulawesi
Main Project Transmission East Java
Main Project Thermal Power East Java
Main Project Transmission Central Java
Main Project Thermal Power Central Java
Main Project Hydro Power Central Java
Main Project Transmission West Java and Jakarta Raya
Main Project Thermal Power West Java and Jakarta Raya
Main Project Hydro Power West Java
Main Project EHV Transmission and IDC
Main Project Physical and Supporting Facilities
Electric Power Research Center
Education and Training Center
Management Service Center
PLN Region I Special Area of Aceh
PLN Region II North Sumatera
PLN Region III West Sumatera and Riau
PLN Region IV South Sumatera, Lampung, Jambi and Banghuju
PLN Region V West Kalimantan
PLN Region VI South, Central and East Kalimantan
PLN Region VII North and Central Sulawesi
PLN Region VIII South and South East Sulawesi
PLN Region IX Maiuku
PLN Region X Irian Java
PLN Region XI Bali, West and East Nusa Tengerang
PLN Distribution Jakarta Raya and Tangerang
PLN Distribution West Java
PLN Distribution Central Java
PLN Distribution East Java
PLN Generation Eastern Java
PLN Generation Western Java
Java Load Dispatch Center

Lampiran I Surat Keputusan Direksi
PERUSAHAAN UMUM LISTRIK NEGARA
Nomor : 008/DIR/83
Tanggal : 22 Januari 1983

BAGAN SUSUNAN ORGANISASI
PERUSAHAAN UMUM LISTRIK NEGARA
DISTRIBUSI JAWA TIMUR.



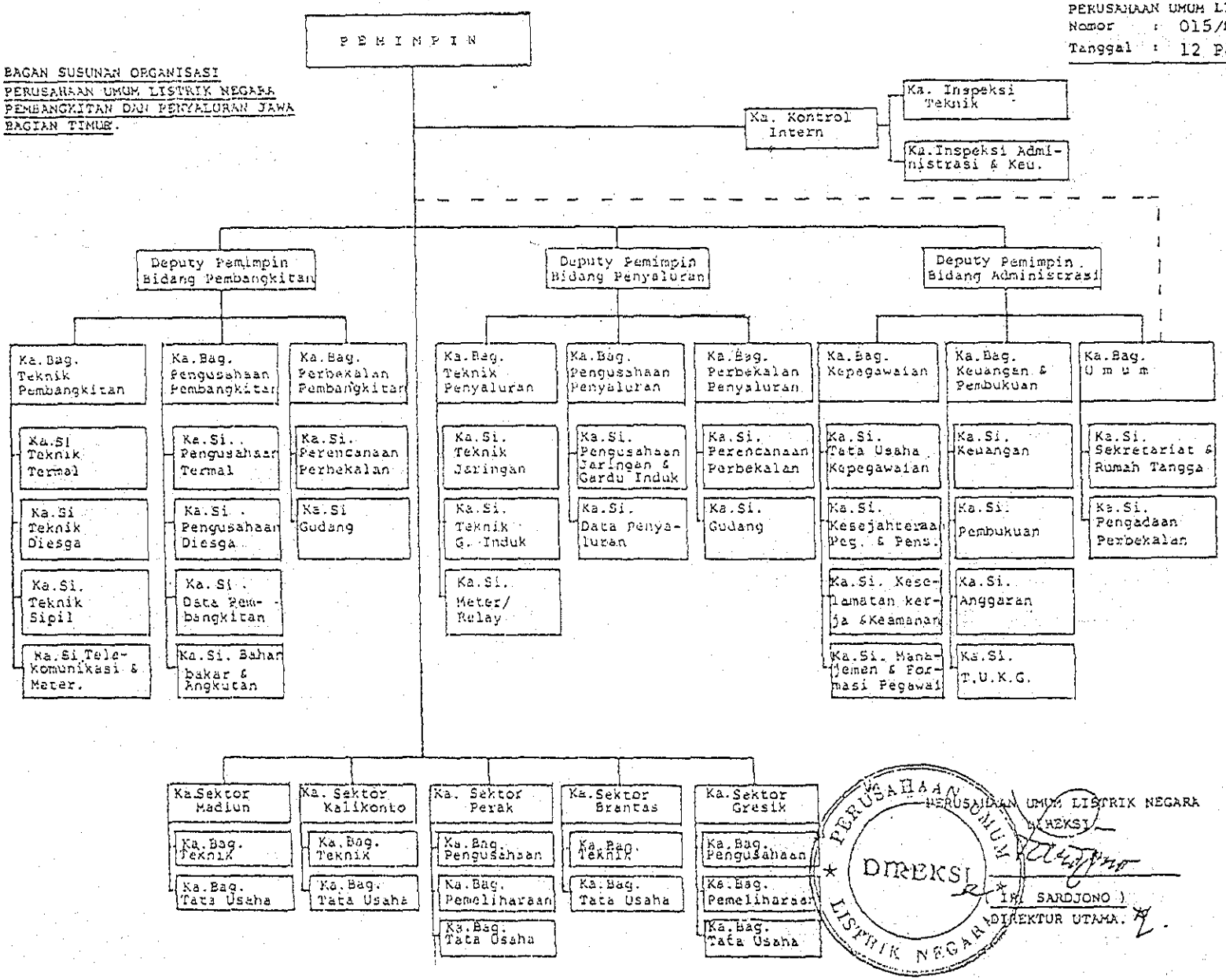
PERUSAHAAN UMUM LISTRIK NEGARA
DIREKSI

(IR. SARWONO)
DIREKTUR UTAMA

1-3

Lampiran I Surat Keputusan Direksi
PERUSAHAAN UMUM LISTRIK NEGARA
Nomor : 015/DIR/83
Tanggal : 12 Pebruari 1983

BAGAN SUSUNAN ORGANISASI
PERUSAHAAN UMUM LISTRIK NEGARA
PEMBANGKITAN DAN PENYALURAN JAWA
BAGIAN TIMUR.

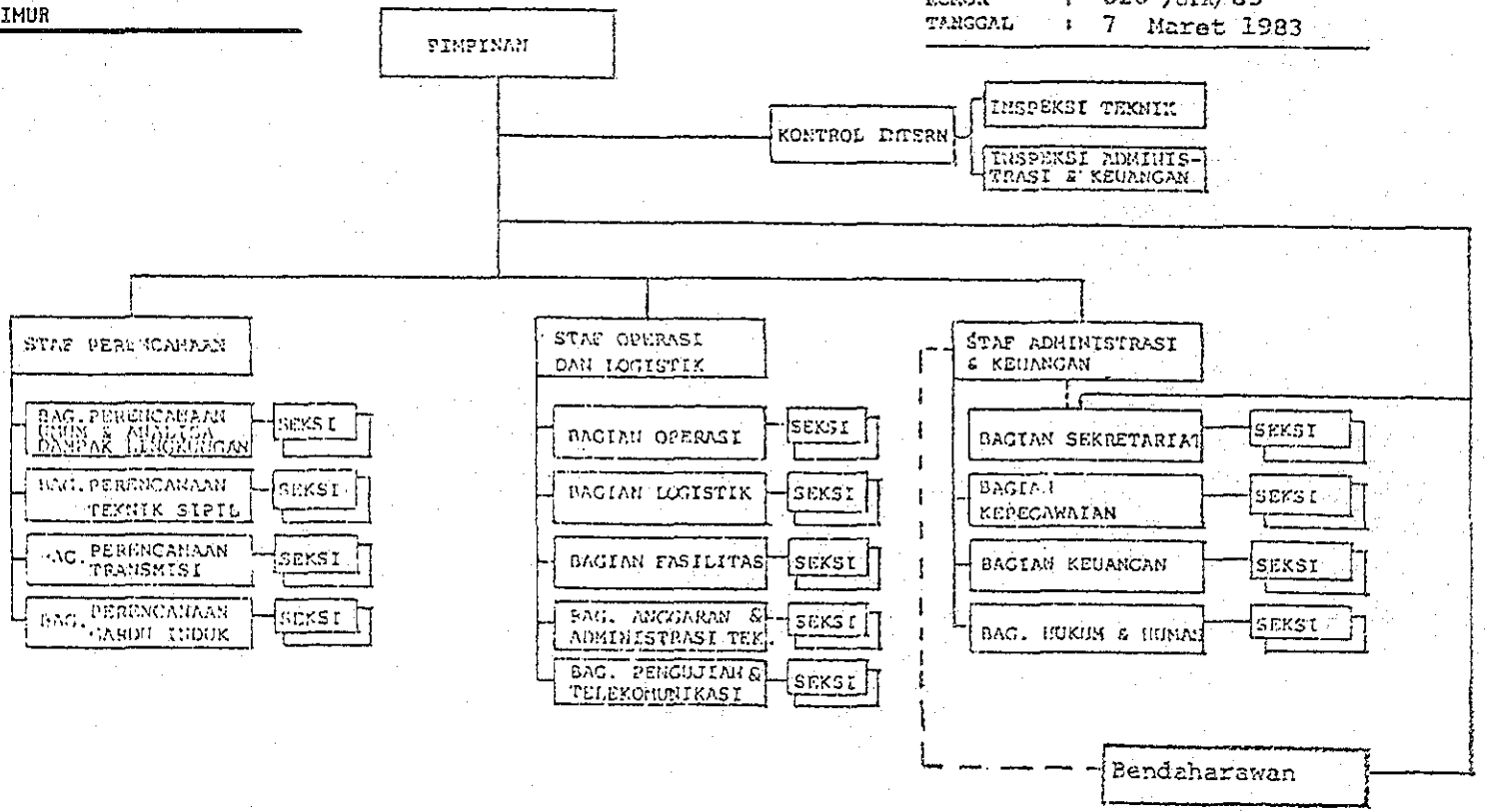


PERUSAHAAN UMUM LISTRIK NEGARA
DIREKSI
(IR. SARDJONO)
DIREKTUR UTAMA.

1-4

LAMPIRAN I SURAT KEPUTUSAN DIREKSI
PERUSAHAAN UMUM LISTRIK NEGARA
NOMOR : 020 /DIR/ 83
TANGGAL : 7 Maret 1983

BAGAN SUSUNAN ORGANISASI PROYEK INDUK JARINGAN JAWA TIMUR



PERUSAHAAN UMUM LISTRIK NEGARA
DIREKSI,

(IR. SARDJONO)
DIREKTUR UTAMA

1-5

参考資料 2.

Past record on Electric Power System

in

Whole Indonesia

NET GENERATION BY ENERGY SOURCES

(GWh)

TYPE OF PLANT	Y E A R										
	72	73	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83
1. OIL											
- Steam	656.56	768.97	839.01	897.00	974.88	1,065.04	1,523.10	2,930.74	3,900.93	4,565.46	6,436.45
- gas turbine	145.03	153.05	160.78	347.88	753.25	1,139.20	1,156.73	800.06	1,050.37	998.21	1,173.71
- diesel	424.57	462.99	537.42	551.85	607.31	741.66	845.53	1,035.95	1,205.24	1,414.04	1,449.32
2. GEOTHERMAL	-	-	-	-	-	-	-	-	-	-	77.66
3. HYDRO	686.42	903.46	1,093.71	1,192.38	1,092.19	1,094.65	1,384.28	1,433.92	1,345.36	1,628.50	1,315.56
4. PURCHASE	585.90	644.01	714.32	781.19	699.75	684.83	813.18	803.63	918.48	1,531.69	1,517.00
5. T O T A L	2,498.48	2,932.48	3,345.24	3.770.30	4,127.38	4,725.38	5,722.82	7,004.30	8,420.38	10,137.90	11,969.70

INSTALLED CAPACITY BY TYPE OF PLANT

(MW)

TYPE OF PLANT	Y E A R										
	72	73	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83
1. Oil :											
- Steam	225.00	225.00	250.00	250.00	250.00	250.00	556.25	756.25	756.25	1,156.25	1,356.25
- gas turbine	42.00	42.00	126.00	284.86	482.66	828.70	882.07	896.29	896.29	897.18	897.18
- diesel	213.08	230.31	266.91	274.00	323.08	461.49	499.40	505.85	523.77	580.83	685.93
2. GEOTHERMAL	-	-	-	-	-	-	-	-	-	-	30.00
3. HYDRO	183.97	278.77	278.77	320.56	320.78	322.46	350.67	377.52	378.55	398.23	437.03
T O T A L	664.05	776.08	921.68	1.129.42	1.376.52	1.862.74	2,288.39	2,535.91	2,554.86	3.032.49	3,406.39

TRANSMISSION AND DISTRIBUTION FACILITIES

FACILITIES	YEAR								
	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83
1. TRANSMISSION LINES									
(circuit km)									
- 150 kV	105.00	425.00	626.41	910.50	1,553.78	1,761.88	2,895.08	3,230.56	3,575.24
- 70 kV	351.73	419.85	1,963.05	2,082.74	2,178.73	2,202.81	2,326.88	3,090.86	3,185.46
30/25 kV	644.25	2,408.21	2,705.29	2,893.54	2,969.63	2,739.50	2,798.12	2,429.51	2,579.61
2. SUBSTATION INSTALLED CAPACITY (MVA)	423.74	764.27	3,248.43	4,111.62	4,967.22	4,772.55	5,478.59	6,267.07	6,640.31
3. DISTRIBUTION LINES									
(circuit km)									
- 20/15 kV	632.62	847.98	1,575.35	3,905.55	4,649.10	7,133.77	8,537.53	10,170.02	11,790.73
- 12/10 kV	759.70	921.51	971.13	1,274.68	1,563.61	1,336.24	1,355.36	1,269.63	2,261.65
- 6kV and lower	4,955.70	5,513.51	6,787.65	8,507.65	7,647.67	8,232.62	8,336.93	9,453.41	8,205.45
- Low voltage	17,264.99	18,874.41	18,624.93	21,631.20	23,537.61	32,337.84	34,779.77	38,616.04	41,460.69

Table 4－3 Peak Demand

(Unit MW)

Island	'72	73	74	75	76	77	78	79	80	81	82
WIL I	3.6	4.0	4.2	4.6	5.5	7.2	7.7	10.0	12.2	15.3	17.2
II	23.8	24.6	25.0	27.6	31.3	40.0	54.0	72.1	94.3	109.1	123.5
III	8.9	10.6	13.1	13.8	15.2	18.2	21.5	28.0	34.0	40.7	47.3
IV	20.6	22.4	28.5	33.9	36.2	38.2	43.2	50.8	61.5	67.4	78.3
V	4.2	4.7	5.5	5.7	6.5	8.4	10.1	14.0	16.4	19.0	21.1
VI	6.7	8.8	11.9	14.6	17.9	23.7	32.6	39.8	46.5	53.4	62.0
VII	7.7	10.0	11.1	10.2	11.3	15.6	18.7	22.8	28.4	35.0	38.2
VIII	11.6	13.1	12.4	15.3	19.5	26.0	30.2	38.3	44.0	50.0	60.7
IX	2.4	2.7	2.9	3.3	3.4	4.6	5.4	6.6	7.8	9.1	10.5
X	4.5	5.3	5.3	6.0	6.6	7.3	7.9	8.7	10.1	11.3	12.4
XI	6.3	8.3	10.7	11.0	12.8	16.2	21.5	31.6	38.1	41.7	48.0
XII	84.7	96.7	100.7	111.4	120.6	136.3	182.5	230.9	284.6	339.1	397.5
XIII	50.2	51.9	53.6	57.9	65.6	78.6	101.3	115.7	137.2	176.9	233.4
DIST. JAYA/JAN6											
DIST. JABAR											
KIT. JABAR	230.0	254.7	290.9	321.0	348.9	414.5	494.7	604.2	758.7	902.2	1132.0
	465.2	517.8	575.8	636.3	701.3	834.8	1031.3	1273.5	1573.8	1872.2	2282.1

Note 1. to be prepared by Island and East Java

PERUSAHAAN UMUM LISTRIK NEGARA

PEAK DEMAND, GENERATION, SALES AND LOSSES IN 1982/1983

Wilayah (Region)	Peak Demand MW	GENERATOR (Gwh)							Sales (Gwh)	LOSSES	
		Hydro	Steam	Diesel	Gas Turbine	Geothermal	Purchased	Total		Gwh	
I	17.17	-	-	77.22	-	-	0.55	77.77	57.01	20.76	26.69
II	123.52	0.17	-	210.74	441.85	-	11.06	663.82	463.80	200.02	30.13
III	44.67	37.02	-	181.02	0.67	-	3.68	222.39	158.45	63.94	28.75
IV	77.95	6.50	89.45	180.85	123.33	-	0.04	400.17	300.58	99.59	24.88
V	21.07	-	-	104.37	-	-	-	104.37	78.67	25.70	24.62
VI	62.03	89.20	-	202.58	-	-	0.82	292.60	229.37	63.23	21.61
VII	37.54	30.83	-	131.27	-	-	-	162.10	116.34	45.76	28.23
VIII	60.69	6.77	108.75	82.24	65.78	-	0.70	264.24	192.30	71.94	27.22
IX	10.54	-	-	47.08	-	-	-	47.08	34.44	12.64	26.85
X	12.36	0.62	-	60.23	-	-	-	60.85	48.27	12.58	20.67
XI	47.77	0.70	-	87.23	-	-	118.28	206.21	166.22	39.99	19.39
Outside Java	515.31	171.81	198.20	1,364.83	631.63	-	135.13	2,501.60	1,845.45	656.15	26.23
D.E.J.	-	-	-	46.76	-	-	-	46.76	1,835.53	-	-
D.C.J.	-	-	-	21.42	-	-	-	21.42	812.76	-	-
D.W.J.	-	3.30	-	9.39	-	-	-	12.69	1,449.18	-	-
D.JAYA	-	-	-	-	-	-	-	-	3,162.76	-	-
K.JBT	)	628.92	1,523.78	-	97.94	-	-	2,250.64	-	-	-
	) 1,608.50										
K.JBB	)	511.53	4,714.47	6.92	444.14	77.66	1,381.87	7,136.59	-	-	-
Java	1,608.50	1,143.75	6.238.25	84.49	542.08	77.66	1,381.87	9,468.10	7,260.23	2,207.87	23.32
Indonesia	2,123.81	1,315.56	6,436.45	1,449.32	1,173.71	77.66	1,517.00	11,969.7	9,105.60	2,864.02	23.93

参考資料 3.

Electric Power Plant Development Program in Whole Indonesia

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY
PLN R E G I O N : JAWA

			1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	[4]	
1. S a l e s	(GWh)		7212	8656	10392	12476	14597	17222	20496	24185	28540	33391	39067	45319		
Increase	(%)			20	20	20	17	18	19	18	18	17	17	16		
2. Losses T & D	(GWh)		1583	1772	1979	1542	2181	2573	3062	3613	4264	4989	5837	6771		
	(%)	[1]	18	17	16	11	13	13	13	13	13	13	13	13		
3. Sent Out Energy	(GWh)		8795	10428	12372	14018	16778	19795	23558	27798	32804	38380	44904	52090		
4. Station Use	(GWh)		422	488	487	899	1020	1125	1638	2137	2567	3008	3747	4356		
5. Gross Generation	(GWh)	[2]	9204	10904	12855	14917	17798	20920	25247	29926	35372	41388	48652	56447		
6. System Peak	(MW)		1564	1831	2158	2615	2987	3512	4238	5028	5938	6948	8167	9479		
7. System L.F.	(%)		68	68	68	68	68	68	68	68	68	68	68	68		
8. Installed Capacity	(MW)															
H y d r o :																
Basis		[3]	482	482	482	482	482	482	482	482	482	482	482	482		
Mini Hydro			-	-	-	-	-	-	-	-	-	-	-	-		
Cirung #1-3			28	28	28	28	28	28	28	28	28	28	28	28	1)	
Wadas Lintang 1&2			-	-	-	-	-	16	16	16	16	16	16	16	2)	
Saguling #1-3			-	-	-	700	700	700	700	700	700	700	700	700	3)	
Mrica #1-3			-	-	-	-	-	-	-	-	-	-	-	-	4)	
Wlingi			-	-	-	-	-	-	-	-	-	-	180	180	5)	
Mrica #4			-	-	-	-	-	-	-	-	-	-	-	-	4)	
Wonogiri			-	13	13	13	13	13	13	13	13	13	13	13	5)	
Lodoyo			-	5	5	5	5	5	5	5	5	5	5	5	5)	
Sengguruh			-	-	-	185	185	200	200	200	200	200	200	200	5)	
Kesamben			-	-	-	-	-	-	30	30	30	30	30	30	5)	
Curug			-	-	-	-	6	6	6	6	6	6	6	6	5)	
Cirata			-	-	-	-	-	250	500	500	500	750	750	750	10)	
Jatigede			-	-	-	-	-	-	-	-	-	-	-	175	*)	
T O T A L			517	535	535	1235	1241	1536	1819	1819	1819	2069	2259	2434		
S t e a m :																
Basis			1106	1106	1106	1106	1106	1056	1056	1006	1006	1006	1006	1006		
Muara Karang #5			200	200	200	200	200	200	200	200	200	200	200	200	11)	
Semarang #3			-	200	200	200	200	200	200	200	200	200	200	200	12)	
Gresik #3-4			-	-	-	-	200	400	400	400	400	400	400	400	13)	
T O T A L			1306	1506	1506	1506	1706	1856	1856	1806	1806	1806	1806	1806		
Steam Coal :																
Suralaya #1-6			-	-	-	800	800	800	1600	2200	2800	2200	2800	2800	14)	
Paiton #1-5			-	-	-	-	-	-	-	400	800	1400	2000	2600	15)	
Central Java #1-3			-	-	-	-	-	-	-	-	-	600	1200	1800		
T O T A L			-	-	-	800	800	800	1600	2600	3600	4200	6000	7200		
Geo Thermal:																
Kamojang #1,3			30	30	30	30	30	140	140	140	140	140	140	140	16)	
Salak #1-4			-	-	-	-	-	-	-	-	-	110	220	220		
Drajat #1-2			-	-	-	-	-	-	-	-	-	110	110	110		
Cieng #1-4			-	-	-	-	-	-	-	-	-	110	220	220		
Cisolok #1-2			-	-	-	-	-	-	-	-	-	-	-	110		
Banten			-	-	-	-	-	-	-	-	-	-	-	110		
T O T A L			30	30	30	30	30	140	140	140	140	470	690	910		
Gas Turbine			605	645	645	645	645	645	645	645	570	520	300	100		
T o t a l	(MW)		2458	2716	2716	4216	4422	4977	6060	7010	7935	9665	11055	12450		

October 1983

Notes: [1] With respect to sent out energy
[2] Including 584 GWh import from Krakatau Steel in 1982/83, for the following years assume to be zero.
[3] Including Jatiluhur HPP (150 MW)
[4] Completion dates up to 1988/89, i.e.:
[5] Capacity addition within fourth quarter is assumed to be included in the following year.

1) Aug '82
2) # 1-2 Oct.'85
3) #1-4 Oct.'85
4) 180 MW Temporarily Rephased
5) May '83
6) May '83
7) Dec.'87
8) Dec.'88
9) Dec.'86
10) I#1-4 Apr'88 II 91/92
11) Aug.'82
12) Nov.'83
13) #3 Feb.'87 #4 Aug.'87
14) #1 Oct.'84 #2 Jun.'85 #3 Mei.'88 #4 Feb.'89
15) #1 Jan.'89 #2 Jan.'90 #3 91/92 #4 92/93
16) #2 Jan.'87 #3 May '87
*) Economics under further review

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 1

	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04
SALES (GWh)	46	64	73	102	134	176	219	267	316	379	445	523	614
GROWTH RATE (%)	22	39	15	39	32	31	25	22	18	20	17	17	17
LOSSES (%)	30	19	25	23	21	20	20	20	20	19	19	19	19
PROD (GWh)	66	78	97	132	170	220	274	333	395	468	550	646	759
PEAK (MW)	15	17	21	28	35	45	55	66	78	91	107	125	147
LOAD FACTOR (%)	49	52	52	54	55	56	57	58	58	58	59	59	59
INSTALLED CAP (MW)													
DIESEL	24	30	39	44	54	110	110	119	120	120	123	123	122
STOF	0	0	0	0	0	0	0	0	0	0	50	100	100
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	0	0	0	0	0	0	0	0	0	0	0	50	50
MHYDRO	0	1	1	1	1	1	1	1	1	1	1	1	1
G.T	0	0	0	0	0	0	0	0	0	0	0	0	0
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	24	30	40	45	55	110	110	120	120	121	173	273	273

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Banda Aceh #1-2	STOF	2x25	91/92
Lhok Saumawe #1-2	STOF	2x25	92/93
Peusangan	HYDRO	50	92/93

PEAK LOAD PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 2

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	410	467	574	680	808	981	1181	1408	1665	1993	2319	2699	3140
GROWTH RATE (%)	25	14	23	19	19	21	20	19	18	20	16	16	16
LOSSES (%)	30	30	22	22	21	20	20	20	20	19	19	19	19
PROD (GWh)	581	664	745	872	1023	1226	1477	1760	2082	2460	2863	3332	3876
PEAK (MW)	109	124	147	171	200	235	277	327	380	443	515	599	696
LOAD FACTOR (%)	61	61	58	58	59	60	61	62	62	63	63	64	64
INSTALLED CAP (MW)													
DIESEL	59	64	64	69	86	107	114	113	110	108	104	102	99
STOF	0	0	65	130	130	130	260	260	260	260	260	260	260
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	0	0	0	50	50	50	50	50	230	380	530	620	620
MHYDRO	0	0	0	0	6	6	6	6	6	6	6	6	6
G.T	105	105	105	111	111	111	111	111	111	111	111	60	20
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	163	169	234	359	383	404	540	540	717	865	1011	1049	1006

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Medan	GT	20	84/85
Belawan #1	STOF	65	83/84
Belawan #2	STOF	65	84/85
Belawan #3-4	STOF	2x65	87/88
Renun	HYDRO	90	92/93
Asahan I #1	HYDRO	90	89/90
Asahan I #2	HYDRO	90	89/90
Asahan II *)	HYDRO	50	84/85
Asahan III #1-2	HYDRO	2x75	90/91
Asahan III #3-4	HYDRO	2x75	91/92

Note *) Purchase power from Inalum

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 3

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	141	159	368	557	806	995	1138	1360	1586	1841	2126	2390	2683
GROWTH RATE (%)	30	13	131	51	45	24	14	20	17	16	15	12	12
LOSSES (%)	27	28	19	16	14	13	13	13	13	13	13	13	13
PROD (GWh)	193	221	455	663	937	1144	1308	1564	1823	2116	2444	2747	3084
PEAK (MW)	41	47	83	119	161	198	227	273	319	372	430	482	542
LOAD FACTOR (%)	54	53	63	64	66	66	66	65	65	65	65	65	65
INSTALLED CAP (MW)													
DIESEL	47	64	65	63	71	120	117	116	147	159	155	160	164
STOF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	100	100	100	200	200	200	200
HYDRO	11	11	79	79	79	79	79	79	79	179	390	390	390
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	20	40	40	40	40	40	40	40	40	40	40	40
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	58	94	184	182	189	239	336	335	366	578	784	790	794

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Padang #1	GT	20	83/84
Ombilin #1-2	STCO	2x50	87/88
Ombilin #3-4	STCO	2x50	90/91
Maninjau	HYDRO	4x17	83/84
Singkarak #1-2	HYDRO	2x50	90/91
Singkarak #3-4	HYDRO	2x50	91/92
Kota panjang	HYDRO	3x37	91/92

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION 4

		81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES	(GWh)	264	300	468	602	777	946	1113	1284	1473	1698	1927	2171	2444
GROWTH RATE	(%)	18	14	56	29	29	22	18	15	15	15	14	13	13
LOSSES	(%)	25	25	23	22	21	20	20	20	20	19	19	19	19
PROD	(GWh)	353	398	608	772	983	1182	1391	1605	1841	2096	2379	2680	3017
PEAK	(MW)	69	78	113	142	180	215	252	291	334	380	432	487	548
LOAD FACTOR	(%)	58	58	61	62	63	63	63	63	63	63	63	63	63
INSTALLED CAP (MW)														
DIESEL		45	67	126	159	162	247	251	245	245	249	245	257	251
STOF		25	25	25	25	25	25	25	25	25	25	25	25	25
STCOAL		0	0	0	0	0	130	130	130	180	230	345	345	345
HYDRO		0	0	0	0	0	0	0	16	16	40	40	77	77
MHYDRO		1	1	1	1	1	1	1	1	1	1	1	1	1
G.T		43	43	63	49	49	49	49	49	49	49	49	34	34
GEOTHERM		0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		114	137	215	234	237	452	456	466	516	594	706	740	734

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Palembang	GT	20	83/84
Tarahan #1	STCO	50	89/90
Tarahan #2	STCO	50	90/91
Jambi #1-2	STCO	2x25	91/92
Bukit Asam #1-2	STCO	2x65	86/87
Bukit Asam #3	STCO	65	91/92
Batutegi	HYDRO	2x12	90/91
Tes I	HYDRO	4x 4	88/89
Tes II	HYDRO	2x 8.5	92/93
Sumber Jaya	HYDRO	2x10	92/93

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 5

	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04
SALES (GWh)	72	79	99	124	160	216	271	329	389	459	527	602	692
GROWTH RATE (%)	21	9	26	26	29	36	24	21	18	18	15	14	13
LOSSES (%)	24	25	27	22	21	20	20	20	20	19	19	19	19
PROD (GWh)	95	104	128	159	203	272	338	411	486	567	651	744	844
PEAK (MW)	19	21	26	31	39	52	64	78	90	104	120	137	155
LOAD FACTOR (%)	57	57	57	58	59	60	60	61	62	62	62	62	62
INSTALLED CAP (MW)													
DIESEL	21	23	23	33	47	101	106	105	105	108	108	113	112
STOF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	20	70	70	70
HYDRO	0	0	0	0	0	0	0	0	0	30	30	30	30
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	0	0	0	0	0	0	0	0	0	0	0	0
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	21	23	23	33	47	101	106	105	105	158	208	213	212

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Pontianak	STCO	2x25	91/92
~~Pontianak~~	STCO	2x10	90/91
P Kembayung	HYDRO	3x10	90/91

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION 6

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	195	229	291	351	417	483	585	696	822	980	1143	1336	1551
GROWTH RATE (%)	46	18	27	21	19	16	21	19	18	19	17	17	16
LOSSES (%)	23	21	23	22	22	21	20	20	20	19	19	19	19
PROD (GWh)	253	292	378	450	535	611	731	870	1027	1210	1411	1649	1914
PEAK (MW)	53	62	78	92	108	122	144	171	201	236	274	319	369
LOAD FACTOR (%)	54	54	55	56	57	57	58	58	58	59	59	59	59
INSTALLED CAP (MW)													
DIESEL	66	71	91	87	96	165	182	196	211	226	233	235	236
STOF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	110	260	260	260
HYDRO	30	30	30	30	30	30	30	30	30	72	72	72	72
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	0	0	20	20	20	20	20	20	20	20	20	20
GEOTHERN	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	96	101	121	137	146	215	232	246	261	428	585	587	588

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Banjarmasin	GT	20	84/85
Balikpapan	STCO	2x50	91/92
Banjarmasin	STCO	2x30	90/91
Loakulu #1	STCO	50	90/91
Loakulu #2	STCO	50	91/92
Riam Kiwa #1-2	HYDRO	2x21	90/91

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION 7

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	105	116	143	169	203	252	297	350	401	469	531	606	686
GROWTH RATE (%)	24	11	22	19	20	24	18	18	14	17	13	14	13
LOSSES (%)	29	28	25	25	23	21	20	20	20	19	19	19	19
PROD (GWh)	147	162	190	225	264	319	371	438	501	579	655	749	847
PEAK (MW)	35	38	43	49	56	66	77	89	101	115	130	146	165
LOAD FACTOR (%)	48	48	51	53	54	55	55	56	57	58	58	58	59
INSTALLED CAP (MW)													
DIESEL	40	52	53	55	63	100	110	113	125	131	129	149	147
STDF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	14	14	14	14	14	31	31	31	31	47	47	47	47
MHYDRO	0	1	1	1	1	1	1	1	1	1	1	1	1
G.T	0	0	0	0	0	0	0	0	0	0	0	0	0
GEOTHERM	0	0	0	0	0	0	0	0	0	30	30	30	30
TOTAL	55	68	68	70	79	133	142	145	158	208	207	226	225

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Lahendong	GEO	30	90/91
Tanggari #1-2	HYDRO	2x8.5	86/87
Tanggari #3-4	HYDRO	2x7.6	90/91

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION .8

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	179	193	288	374	494	647	841	1044	1175	1313	1449	1606	1774
GROWTH RATE (%)	20	8	49	30	32	31	30	24	13	12	10	11	10
LOSSES (%)	25	27	21	21	20	20	20	20	19	19	19	19	19
PROD (GWh)	237	265	365	473	617	808	1051	1306	1451	1621	1789	1982	2190
PEAK (MW)	50	61	79	99	126	161	205	249	277	307	339	376	416
LOAD FACTOR (%)	54	50	53	54	56	57	58	60	60	60	60	60	60
INSTALLED CAP (MW)													
DIESEL	32	36	42	65	89	120	136	143	151	157	160	169	174
STOF	25	25	25	25	25	25	25	25	25	25	25	25	25
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	2	2	2	2	2	3	120	120	191	191	254	254	254
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	14	14	54	54	54	54	54	54	54	54	54	54	40
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	73	77	123	146	170	201	343	350	421	427	493	502	493

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Ujung Pandang #1-2	GT	2x20	83/84
Bakaru #1-2	HYDRO	2x63	87/88
Bakaru #3	HYDRO	63	89/90
Bakaru #4	HYDRO	63	91/92

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 9

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	31	34	46	64	82	105	129	154	182	217	255	296	342
GROWTH RATE (%)	23	13	34	39	27	29	23	19	18	19	17	16	15
LOSSES (%)	27	27	25	21	21	20	20	20	20	19	19	19	19
PROD (GWh)	42	47	62	82	103	131	161	193	228	268	314	366	422
PEAK (MW)	9	11	13	17	21	26	32	38	44	52	61	70	81
LOAD FACTOR (%)	52	51	55	56	57	58	58	58	59	59	59	59	60
INSTALLED CAP (MW)													
DIESEL	11	14	28	40	42	62	63	78	77	86	103	109	111
STOF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	0	0	0	0	0	0	0	0	0	0	0	0
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	11	14	28	40	42	62	63	78	77	86	103	109	111

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 10

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	44	48	62	73	86	110	138	163	187	213	239	269	301
GROWTH RATE (%)	11	9	28	18	18	28	25	18	15	14	12	12	12
LOSSES (%)	20	21	17	17	17	17	17	17	17	17	17	17	17
PROD (GWh)	55	61	74	88	104	133	166	196	225	256	288	324	363
PEAK (MW)	11	12	15	17	20	26	32	38	43	49	55	62	69
LOAD FACTOR (%)	56	56	58	59	58	59	59	59	59	60	60	60	60
INSTALLED CAP (MW)													
DIESEL	16	17	20	20	26	55	56	54	55	59	61	66	70
STDF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	0	0	0	0	0	0	0	0	13	13	13	26	26
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	0	0	0	0	0	0	0	0	0	0	0	0
GEOTHERM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	16	17	20	20	26	55	56	54	68	72	74	92	96

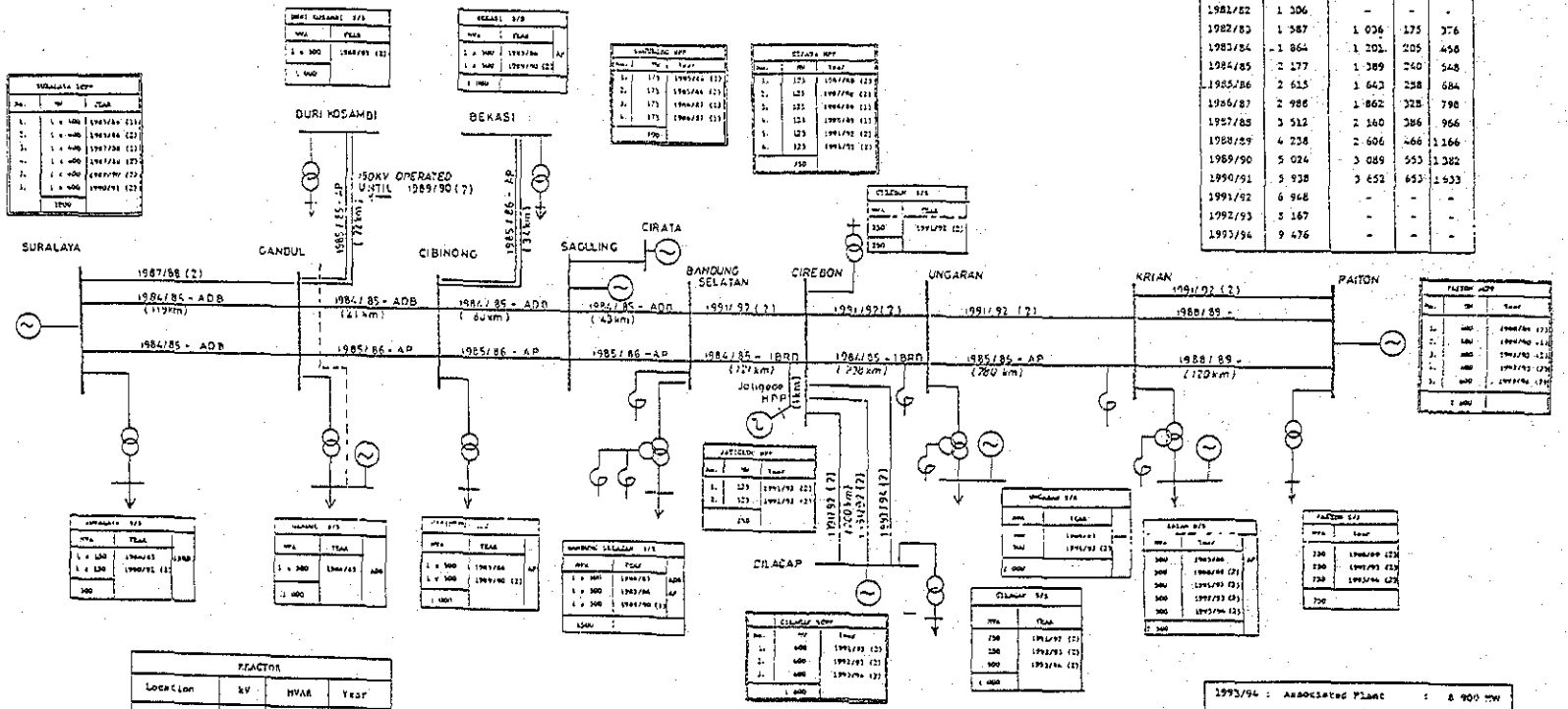
NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Sentani I #1-2	HYDRO	2x 6.5	89/90
Sentani II #1-2	HYDRO	2x 6.5	92/93

PEAK LOAD, PRODUCTION AND INSTALLED CAPACITY

PLN REGION : 11

	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94
SALES (GWh)	151	166	243	305	382	468	566	674	789	906	1026	1149	1288
GROWTH RATE (%)	13	10	46	25	25	23	21	19	17	15	13	12	12
LOSSES (%)	18	20	17	17	17	17	17	17	17	17	17	17	17
PROD (GWh)	184	209	293	367	460	563	681	812	950	1092	1237	1385	1552
PEAK (MW)	42	48	63	77	94	114	135	160	185	211	239	269	301
LOAD FACTOR (%)	50	50	53	54	56	57	58	58	59	59	59	59	59
INSTALLED CAP (MW)													
DIESEL	54	74	92	120	131	180	178	177	177	196	201	214	222
STOF	0	0	0	0	0	0	0	0	0	0	0	0	0
STCOAL	0	0	0	0	0	0	0	0	0	0	0	0	0
HYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
MHYDRO	0	0	0	0	0	0	0	0	0	0	0	0	0
G.T	0	0	0	20	20	20	20	20	20	20	20	20	20
GEOTHERM	0	0	0	0	0	0	0	0	0	55	55	55	55
TOTAL	54	74	92	140	152	200	198	197	197	271	277	289	297

NAME OF PROJECT	TYPE	CAP (MW)	YEAR
Bali	GT	20	84/85
Bratan	GEO	55	90/91



JAVA PEAK LOAD (MW)

Year	Total	WJ	CJ	EJ
1982/83	1 306	-	-	-
1983/84	1 587	1 036	175	376
1984/85	1 864	1 201	205	458
1985/86	2 177	1 389	240	548
1986/87	2 615	1 643	288	684
1987/88	2 986	1 862	328	798
1988/89	3 512	2 160	386	966
1989/90	4 238	2 606	466	1 166
1990/91	5 024	3 089	553	1 382
1991/92	5 938	3 652	653	1 633
1992/93	6 968	-	-	-
1993/94	8 167	-	-	-
1993/94	9 476	-	-	-

REACTOR

Location	kV	MVAR	Year
Bandung Sel.	500	1 x 100	1984/85
Bandung Sel.	66	2 x 100	1986/85
Ungaran	500	1 x 100	1986/85
Ungaran	66	1 x 100	1986/85
Krian	500	1 x 100	1985/86
Krian	66	2 x 100	1985/86

1993/94 :	Associated Plant	:	8 900 MW
	Associated Substation	:	11 300 MVA
	Java Inst. Capacity	:	13 020 MW
	Java Peak Load	:	9 476 MW
	Indonesia Inst. Cap.	:	19 381 MW
	Indonesia Peak Load	:	13 563 MW

CATATAN

COMPLETION YEAR 1986/87 (?)
(?) : 2nd SEMESTER
( ) : 1st SEMESTER

NO	KETERANGAN	TANGGAL	OLEH
1	PLN Investment Program 1987/88 – 1992/94 IBRD Apraisal for Power XIII	January 88 Review	DPS

	TANGGAL	OLEH
DIRENCANAKAN	25 Januari 1983	I.Y.
DIGAMBAR	26 Januari 1983	CHAIRUL.MD.
DIPERIKSA		KDPS
DISETUJUI		DMSTS

SKALA: NOT TO SCALE
UKURAN GAMBAR: A3

PERUSAHAAN UMUM LISTRIK NEGARA

JAVA EHV TRANSMISSION SYSTEM DEVELOPMENT
SURALAYA SCPP, SAGULING HPP, CIRATA HPP, JATIGEDE HPP, CILACAP SCPP, PAITON SCPP, ASSOCIATED

SUBDIISIS

NOMOR GAMBAR: 1

REVISI NO	TGL
1	75/88

3-13

参考資料 4.

Electric Basic Tariff

of 1983

TABLE OF TARIFF SCHEDULE 1983

(effective : FEBRUARY 1983)

US.$ 1 = Rp 970.00

No.	Code of Tariff	Contracted Power	Demand Charge Rp/kVA	Energy Charge Rp/kWh	Projected Average Revenue Rp./kWh
1.	S_1	to 200 VA	*)		
2.	S_2	250 VA to 200 kVA	1,600	35	48.22
3.	R_1	250 VA to 500 VA	1,600	56	68.21
4.	R_2	501 VA to 2200 VA	1,600	67	79.12
5.	R_3	2201 VA to 6600 VA	2,800	97	121.78
6.	R_4	6601 VA to over	2,800	117.50	137.50
7.	U_1	250 VA to 2200 VA	2,800	99.50	121.04
8.	U_2	2200 VA to 200 kVA	2,800	108.50	137.37
9.	U_3/MV	201 kVA & over	1,750	P = 111 OP = 70	89.28
10.	U_4	-	-	221	221.00
11.	I_1	3,8 kVA to 99 kVA	1,750	P = 81.50 OP = 51	76.65
12.	I_2	100 kVA to 200 kVA	1,750	P = 77 OP = 48	67.15
13.	I_3/MV	201 kVA & Over	1,600	P = 68.50 OP = 43	56.40
14.	I_4/HV	5000 kVA & Over	1,500	P = 58 OP = 37	44.12
15.	G_1	250 VA to 200 kVA	2,800	71	89.06
16.	G_2/MV	201 kVA & Over	1,500	P = 72 OP = 47	64.02
17.	J	-	-	56.50	56.50
Average					74.72

*) Tariff S_1

100 VA = Rp.2.010,-/month

150 VA = Rp.3.015,-/month

200 VA = Rp.4.020,-/month

Note : P = Peak Hours (18.00 - 22.00)

OP = Off Peak Hours (22.00 - 18.00)

Jakarta, January 13, 1983

THE EXPLANATION OF THE TARIFF CATEGORY
ON BASIC TARIFFS OF ELECTRICITY 1983

No.	Code Tariff	Contracted Power	The Explanation Of The Tariff Category
1.	S_1	to 200 VA	Tariff S_1 for small Consumer (Low Voltage)
2.	S_2	250 VA to 200 kVA	Tariff S_2 for social Institutions (low voltage)
3.	R_1	250 VA to 500 VA	Tariff R_1 for simple Residential service (low voltage)
4.	R_2	501 VA to 2200 VA	Tariff R_2 for small Residential service (low voltage)
5.	R_3	2201 VA to 6600 VA	Tariff R_3 for medium Residential service (low voltage)
6.	R_4	6601 VA & Over	Tariff R_4 for big Residential service (low voltage)
7.	U_1	250 VA to 2200 VA	Tariff U_1 for small Commercial service (low voltage)
8.	U_2	2201 VA to 200 kVA	Tariff U_2 for medium Commercial service (low voltage)
9.	U_3/MV	201 kVA to Over	Tariff U_3/MV for big Commercial service (medium voltage)
10.	U_4	-	Tariff U_4 for Temporary service (low voltage)
11.	I_1	3,8 kVA to 99 kVA	Tariff I_1 for Industrial & Hotel service (low voltage)
12.	I_2	100 kVA to 200 kVA	Tariff I_2 for Industrial & Hotel service (low voltage)
13.	I_3/MV	201 kVA & Over	Tariff I_3/MV for Industrial & Hotel service (medium voltage)
14.	I_4/HV	5000 kVA & Over	Tariff I_4/HV for Indsutrial service (high voltage)
15.	G_1	250 VA to 200 kVA	Tariff G_1 for office service (low voltage)
16.	G_2/MV	201 kVA & Over	Tariff G_2/MV for office service (medium voltage)
17.	J	-	Tariff J for Street Lighting service (low voltage)

Jakarta, January 13, 1983

EXAMPLES OF BILL CALCULATIONS

(Base on the Basic Tariff 1983)

Rate : 1 US$ = Rp. 970.00

1. A Simple Residential consumer of R_1 tariff has a contracted power 450 VA and the energy consumption are 75 kWh per month.

   Bill calculations :

Demand charge	: $\frac{450}{1000}$ kVA x Rp.1.600,-/kVA	= Rp. 720,--
Energy charge	: 75 kWh x Rp.56,--/kWh	= Rp. 4.200,--
T o t a l	:	= Rp. 4.920,--

   The total monthly Electric Bill is 4.920,- Rupiah.

2. A Big Residential consumer of R_4 tariff has a contracted power 13.200 VA, and the energy consumption are 2.000 kWh per month.

   Bill calculations :

Demand charge	: $\frac{13.200}{1000}$ kVA x Rp.2.800,-/kVA	= Rp. 36.960,--
Energy charge	: 2000 kWh x Rp.117,50/kWh	= Rp. 235.000,--
Total	:	= Rp. 271.960,--

   The total monthly Electric Bill is 271.960 Rupiah.

3. A Shopping Centre of U_3/MV tariff (Big Commercial) has a contracted power 520 kVA and the energy consumption : of peak = 60,600 kWh, peak = 20,000 kWh

   Bill calculations :

Demand charge	:	520 x Rp.1.750,--	= Rp. 910.000,--
Energy charge off peak	:	60,600 x Rp.70,--	= Rp. 4.242.000,--
p e a k	:	20,000 x Rp.111,--	= Rp. 2.220.000,--
Total	:		= Rp. 7.372.000,--

   The total monthly Electric Bill is 7.372.000 Rupiah.

4. A Textile Factory of I_3/MV tariff (Big Industrial) has a contracted power 2500 kVA, and the energy consumptions : off peak = 625.000 kWh peak = 125.000 kWh.

Bill calculations :

Demand charge	: 2500 x Rp.1.600,--	=	Rp. 4.000.000,--
Energy charge off peak	: 625.000 x Rp.43,--	=	Rp. 26.875.000,--
p e a k	: 125.000 x Rp.68,50	=	Rp. 8.562.500,--
Total	:	=	Rp. 39.437.500,--

The total monthly Electric Bill is 39.437.500 Rupiah.

Note : The above Bill calculation has not yet been added with :

a. The local Government tax (Retributions for Street Lighting), the tax is difference for one to another Province, for example in West Java it is Rp.1.00 per kWh, in Padang (Sumatera) it is Rp.2.00 per kWh.
While in Jakarta the tax is depend upon the tariff category, for example for R_1 tariff the tax is Rp.1,25 per kWh, R_4 tariff the tax is Rp.2.00 per kWh, U_3 tariff the tax is Rp.2.00 per kWh and I_2 tariff the tax is Rp.1,50 per kWh etc.

b. The stamp Rp.10.00 per Bill, for the Bill with the total amount less than Rp.5000,- no stamp is needed.

Economic Indices

in

East Java

Item	Region / Municipality Kabupaten/Kotamadya	75	76	77	78	79	80	81	82	83	84	85	86	87	
1. GDP	Kab.Gresik				74.17	88.64	119.85								
	Kab.Sidoarjo				96.04	114.25	173.45								
	Kab.Mojokerto				70.23	88.82	111.67								
	Kab.Jombang				98.87	117.55	155.13								
	Kab.Bojonegoro				76.26	91.09	118.35								
	Kab.Tuban				76.96	91.52	116.61								
	Kab.Lamongan				104.99	125.60	160.60								
	Kab.Madiun				60.56	72.26	96.80								
	Kab.Ngawi				56.69	67.46	85.27								
	Kab.Magetan				68.05	81.89	107.66								
	Kab.Pemorogo				91.15	107.72	141.11								
	Kab.Pacitan				53.73	64.47	81.37								
	Kab.Kediri				140.88	166.83	218.03								
	Kab.Nganjuk				81.48	96.20	122.51								
	Kab.Blitar				140.64	165.36	190.68								
	Kab.Trenggalek				68.14	80.99	106.60								
	Kab.Tulungagung				109.16	129.55	174.62								
	Kab.Malang				221.30	263.49	347.09								
	Kab.Pasuruan				112.75	134.13	182.70								
	Kab.Probolinggo				72.56	85.76	109.90								
	Kab.Lumajang				101.03	119.42	154.84								
	Kab.Bondowoso				62.34	73.75	94.25								
	Kab.Situbondo				73.70	88.00	117.60								
	Kab.Jember				178.89	213.41	280.05								
	Kab.Banyuwangi				141.54	168.40	217.62								
	Kab.Pamekasan				49.58	59.05	74.11								
	Kab.Sampang				59.28	70.26	91.21								
	Kab.Sumenep				82.61	99.40	129.05								
	Kab.Bangkalan				63.30	76.55	99.94								
	Kodya Surabaya				342.64	614.45	772.89								
	Kodya Probolinggo				12.39	15.24	21.46								
	Kodya Madiun				21.30	24.48	34.77								
	Kodya Kediri				29.92	35.81	50.00								
	Kodya Blitar				13.41	16.13	22.07								
	Kodya Malang				74.44	88.88	126.32								
	Kodya Pasuruan				14.85	17.63	25.02								
	Kodya Mojokerto				11.48	13.67	19.79								

(billion rupiah) (unit) Ton

B-1

Note 1. to be prepared for GDP, Mining product, manufacturing product, agricultural product in ~~Billion Rupiah~~, Population in 10^3 persons, Area in Km^2

2. to be prepared by Cabang

Item	Cabang	71					79	80	81	82	83	84	85	86	87	88	89	90
2. POPULATION	North Surabaya South Surabaya	3,244					4,381	4,661	4,780	4,890	5,024	5,150	5,283	5,417	5,560	5,703	5,855	6,006
	Mojokerto	1,439					1,636	1,716	1,731	1,747	1,763	1,779	1,795	1,811	1,827	1,844	1,860	1,877
	Madiun	3,137					3,376	3,431	3,486	3,541	3,596	3,651	3,706	3,761	3,816	3,871	3,926	3,981
	Kediri	4,314					4,672	4,354	4,902	4,946	4,990	5,035	5,080	5,126	5,172	5,219	5,266	5,313
	Malang	2,199					2,372	2,553	2,576	2,599	2,622	2,646	2,670	2,694	2,718	2,743	2,767	2,792
	Pasuruan	1,786					1,866	2,097	2,905	2,931	2,957	2,984	3,011	3,038	3,065	3,093	3,121	3,149
	Bojonegoro	1,611					1,767	1,871	1,888	1,905	1,922	1,939	1,956	1,974	1,992	2,010	2,028	2,046
	Situbondo	470					497	525	529	534	539	544	549	554	559	564	569	574
	Jember	3,047					3,229	3,368	3,389	3,420	3,451	3,482	3,513	3,543	3,577	3,609	3,641	3,674
	Banyuwangi	1,304					1,358	1,421	1,433	1,446	1,459	1,472	1,485	1,498	1,512	1,526	1,539	1,553
	Pamekasan	2,385					2,551	2,687	2,709	2,734	2,758	2,783	2,808	2,833	2,859	2,885	2,911	2,937

(billion rupiah) (unit) ton

Note 1. to be prepared for GDP, Mining product, manufacturing product, agricultural product in ~~billion Rupiah~~, Population in 10^3 persons, Area in Km^2

2. to be prepared by Cabang

5-2

Item	Cabang	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
3. a. MANUFACTURING PROD.	In East Java																		
	Basic Metal	54	55	56	62	161	179	221	224	232	234								
	Chemical	9	9	12	12	33	35	36	41	41	44								
	Multi Various	3,381	-	-	-	-	4,928	5,111	5,507	5,727	6,017								
	Small Industry	205,072		-	-	-	277,386	344,300	367,781	378,797	408,481								

(billion rupiah) (unit) ton

Note 1. to be prepared for GDP, Mining product, manufacturing product, agricultural product in ~~billion rupiah~~.
Population in 10^3 persons, Area in Km^2

Economic Indices in East Java

Item	Cabang	73	74	75	76	77	78	79	80	81	82
3b. Agricultural Prod.	In East Java										
	Rice	5.685.211	6.286.254	6.132.122	6.628.027	8.673.903	7.231.394	5.315.224	7.021.193	7.672.984	7.633.418
	Maize	1.021.198	893.768	895.764	965.309	967.382	1.296.145	1.183.806	1.339.271	1.517.386	1.107.635
	Soya bean	216.799	230.044	225.279	202.963	226.166	232.932	275.883	284.922	308.717	246.713
	Peanut	83.171	-	-	-	-	95.242	98.290	103.229	105.875	106.312
	Cassava	3.997.302	-	-	-	-	3.489.440	3.854.948	3.822.426	3.774.380	3.423.923
	Batata	321.134	-	-	-	-	259.169	280.666	274.633	288.138	222.987
	Fruits & vegetables	-	-	-	-	-	3.027.000	3.298.055	3.477.329	3.629.778	2.299.783
	Rubber	19.333	19.610	19.609	17.283	18.534	18.627	20.089	21.068	22.907	19.967
	Coffee	22.571	19.454	21.842	21.428	24.099	25.505	21.013	29.998	25.151	29.510
	Cocoa	757	2.118	2.529	2.939	2.960	4.001	5.842	7.349	7.562	5.973
	Tea	3.173	3.261	3.421	3.445	4.207	4.336	3.893	4.254	3.487	3.329
	Cloves	200	114	207	501	774	780	623	1.149	2.584	2.229
	Sugar cane	537.955	522.755	509.955	619.419	678.114	718.637	431.382	754.442	736.654	1.039.654
	Tobaco	39.421	42.391	35.630	39.157	42.127	33.260	56.569	57.118	52.318	66.472
	Cotton	555	4.547	3.662	2.825	1.931	292	1.314	3.722	1.597	2.229
3c. Fish product. (in Ton)	In East Java										
	Sea fish	99.897	86.664	82.496	85.000	92.952	113.260	165.748	139.623	141.665	155.240
	Fresh water fish	32.457	38.856	45.534	35.700	37.429	32.947	45.951	49.905	52.319	73.760
3d. Cattle and poultry population (10^3)	In East Java										
	Beef	2.444	-	-	-	-	2.591	2.594	2.607	2.634	2.655
	Buffalo	207	-	-	-	-	232	229	232	231	251
	Horse	66	-	-	-	-	60	59	60	59	58
	Swine	45	-	-	-	-	51	64	73	80	85

(billion rupiah) (unit) (Ton)

Note 1. to be prepared for GDP, Mining product, manufacturing product, agricultural product in ~~Billion Rupiah~~, Population in 10^3 persons, Area in Km^2

2. to be prepared by Cabang

Item	Cabang	73	74	75	76	77	78	79	80	81	82
	Sheep & goat	2.106	-				2.715	2.501	2.582	2.516	2.637
	Poultry	17.775	-				23.783	24.357	27.899	28.877	29.812
	Duck	2.130	-				2.669	2.630	2.679	2.689	2.709
	Rabbit	39	-				74	75	77	84	157
4. Area	North Surabaya +South Surabaya		-	-	-	-	-	-	3.036		
	Mojokerto	-	-	-	-	-	-	-	2.003		
	Madiun	-	-	-	-	-	-	-	6.508		
	Kediri	-	-	-	-	-	-	-	6.120		
	Malang	-	-	-	-	-	-	-	4.347		
	Pasuruan	-	-	-	-	-	-	-	3.783		
	Bojonegoro	-	-	-	-	-	-	-	4.197		
	Situbondo	-	-	-	-	-	-	-	1.458		
	Jember	-	-	-	-	-	-	-	6.309		
	Banyuwangi	-	-	-	-	-	-	-	5.383		
	Pamekasan	-	-	-	-	-	-	-	5.593		

(billion rupiah) (unit) (Ton)

Note 1. to be prepared for GDP, Mining product, manufacturing product, agricultural product in ~~Billion Rupiah~~, Population in 10^3 persons, Area in Km^2

2. to be prepared by Cabang

5-5

Climatic Condition

in

East Java

Climatic condition in East Java

Item		Unit	Figure
Rainfall	Annual	mm	2500
	Max./month	"	600mm/month
	Min./month	"	0mm/month
	Rainy Season	from through	NOPEMBER TO APRIL
Temperature	Max.	°C	40
	Min.	"	10
Relative humidity	Max.	%	100 %
	Min.	"	25 %
IKL		days/year	60
Earthquake		g	Building : 0,2 Foundation : 0,3 Equipments : 0,5

参考資料 7.

Electric Power Demand

in

East Java

Annual energy sold in East Java

(Unit 10^6KWH)

Cabang	Consumer Group	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Mort Surabaya	Residential	50.275	34.19	38.523	49.919	50.506	56.206	97.973	98.602	107.962	132.156	153.405	181.151	205.951	232.931	262.036	275.468	300.005	315.115
	Comercial	22.316	22.5	23.306	25.61	24.5	25	27.54	27.518	39.155	45.742	45.395	54.752	43.262	55.545	65.958	64.933	69.647	75.117
	Public	8.175	9.11	11.783	8.89	9.1	9.453	11.009	12.024	32.185	39.101	49.471	59.299	72.389	89.451	109.065	132.265	145.171	156.89
	Industrial	179.912	194.171	135.187	189.181	199.716	219.171	225.44	235.351	210.145	243.757	317.276	672.462	828.277	881.332	869.533	950.51	962.11	997.18
South Surabaya	Residential	55.551	64.17	75.15	85.153	90.16	106.31	109.060	112.067	159.564	167.294	185.25	224.657	266.573	316.127	374.915	444.602	465.117	470.113
	Comercial	9.154	9.99	10.044	9.74	8.136	12.159	16.9	16.922	29.372	31.643	21.586	53.236	72.697	98.542	129.961	174.962	179.881	183.106
	Public	6.99	7.2	7.9	7.751	10.656	11.1	15	15.172	32.139	32.763	34.351	38.657	38.725	46.372	51.253	56.218	59.981	74.181
	Industrial	129.117	135.381	135.451	159.561	149.111	145.315	150.77	167.55	196.164	296.369	443.537	509.62	615.379	823.503	813.504	1102.130	1.309.001	1.505.005
Malang	Residential	51.45	52.57	54.338	56.751	59.053	44.749	54.067	57.922	67.741	79.335	91.839	118.714	138.304	159.152	181.501	204.253	241.171	272.395
	Comercial	4.99	5.07	5.173	5.465	6.416	8.073	9.111	9.111	9.286	9.862	9.201	11.738	12.169	12.450	12.655	12.707	14.101	16.151
	Public	7.001	7.131	8.435	9.542	9.325	10.444	10.272	9.77	15.143	17.138	13.192	31.369	25.525	30.002	35.035	40.743	43.151	45.171
	Industrial	2.511	2.576	2.726	2.767	2.955	2.035	3.279	17.973	17.497	29.779	55.338	60.79	73.624	82.570	88.760	92.592	97.061	99.177
Pasuruan	Residential	15.817	15.996	16.511	16.173	18.035	20.248	25.358	25.632	36.855	37.493	44.625	62.699	75.785	91.786	109.257	127.576	129.718	132.316
	Comercial	2.111	2.215	2.221	2.41	2.615	2.932	3.573	3.539	3.934	4.277	3.729	4.979	5.381	5.607	5.734	5.839	5.919	6.718
	Public	1.489	1.479	1.574	1.579	1.572	1.995	2.255	3.96	4.095	5.857	8.212	11.030	17.615	25.201	31.493	41.256	43.916	44.718
	Industrial	3.001	3.106	3.109	2.735	2.580	2.062	2.641	38.674	45.333	56.768	48.035	60.73	93.54	92.161	101.229	110.256	110.756	115.918
Kediri	Residential	14.551	14.09	15.163	16.092	17.335	20.005	25.853	27.751	35.051	42.965	50.648	81.963	75.775	92.636	170.936	204.218	216.217	271.175
	Comercial	2.035	2.075	2.111	2.341	2.500	2.091	3.645	6.041	6.622	7.765	7.929	11.634	14.116	17.174	19.053	20.645	23.415	26.175
	Public	5.111	5.319	5.422	5.291	5.452	5.728	4.161	4.683	5.291	7.291	7.272	11.075	14.664	17.967	21.057	23.750	25.151	29.181
	Industrial	2.101	2.116	2.49	2.6	2.609	2.830	2.202	6.811	4.216	5.014	6.427	27.444	29.362	31.279	33.596	36.860	39.131	45.173
Mojokerto	Residential	8.901	8.991	9.199	9.504	9.103	10.151	13.242	14.064	17.742	21.859	26.101	59.329	52.609	65.742	80.594	97.140	99.176	107.616
	Comercial	0.799	0.801	0.813	0.913	1.100	1.393	1.610	2.817	3.116	3.327	3.356	3.973	4.341	4.513	4.770	5.103	5.001	5.057
	Public	1.001	1.156	1.256	1.426	1.669	1.842	2.08	2.516	3.248	3.802	3.905	5.256	7.334	8.068	9.353	10.492	10.731	11.001
	Industrial	1.035	1.048	1.050	1.045	0.804	0.821	0.983	2.584	2.804	16.243	23.297	42.881	53.665	54.508	73.72	101.427	107.761	111.816

Note 1. to be prepared by Cabang and by Consumer group

Annual energy sold in East Java

(Unit 10^6KWH)

Cabang	Consumer Group	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Madiun	Residential	12.991	13.716	13.992	11.999	15.431	18.015	24.222	25.119	20.925	37.816	35.458	61.755	79.466	95.550	112.070	130.749	131.815	135.716
	Comercial	0.851	0.871	0.984	1.126	1.101	1.564	1.829	3.445	4.174	4.691	4.711	5.704	6.446	6.972	7.322	7.528	8.615	9.915
	Public	1.995	2.101	2.208	2.294	2.012	3.123	3.461	3.931	8.367	7.017	10.555	13.420	15.839	17.940	19.708	21.206	23.415	25.112
	Industrial	1.016	1.121	1.142	1.119	1.148	1.292	1.349	6.037	1.853	2.522	2.895	6.42	18.269	34.079	39.817	49.406	55.116	59.701
Jember	Residential	9.315	9.612	9.722	10.316	11.402	13.327	17.114	18.244	22.554	26.925	31.454	33.702	36.193	39.779	44.905	51.872	56.715	59.415
	Comercial	1.456	1.635	1.792	2.07	2.447	2.923	3.307	3.410	3.674	4.008	4.244	5.290	8.723	10.485	11.907	15.282	15.117	16.116
	Public	2.250	2.599	2.639	2.339	2.482	2.507	2.657	3.436	4.930	5.891	6.523	11.463	17.425	24.394	32.511	41.925	46.189	49.739
	Industrial	0.589	0.601	0.666	0.708	0.668	0.636	0.673	2.164	1.615	1.523	1.580	48.636	57.732	66.328	77.353	91.402	94.179	97.778
Banyuwangi	Residential	4.615	4.779	4.998	5.234	5.521	6.927	8.717	8.550	10.625	11.644	14.986	25.867	35.099	47.507	59.689	73.891	79.751	83.816
	Comercial	0.597	0.601	0.626	0.697	0.642	0.984	1.551	1.351	1.644	1.587	1.854	4.149	5.876	7.747	10.077	12.695	14.101	15.476
	Public	0.369	0.375	0.434	0.545	0.576	0.709	0.92	1.472	1.649	1.846	1.982	2.590	3.110	3.471	3.649	4.012	7.181	9.776
	Industrial	0.491	0.497	0.503	0.485	0.543	0.343	0.388	0.607	0.527	0.399	0.555	23.219	25.714	28.179	31.609	37.453	45.017	48.117
Situbondo	Residential	2.245	2.425	2.420	2.504	2.334	3.902	5.372	5.508	6.659	7.641	8.744	13.838	14.819	18.209	21.382	25.361	27.916	29.416
	Comercial	0.307	0.315	0.337	0.391	0.461	0.627	0.745	0.715	0.808	0.917	1.043	1.34	1.629	1.918	2.215	2.516	2.715	2.998
	Public	0.425	0.429	0.459	0.488	0.432	0.547	0.625	0.887	0.985	1.124	1.042	1.79	2.255	2.759	3.287	3.857	3.890	4.576
	Industrial	0.029	0.031	0.033	0.029	0.022	0.022	0.023	0.23	0.22	0.22	0.158	0.2	0.24	0.25	0.34	0.34	0.36	0.57
Pamekasan	Residential	5.987	5.990	5.994	5.733	7.165	8.784	11.393	11.723	13.705	16.591	20.090	37.49	56.495	77.409	100.382	125.575	126.716	128.816
	Comercial	0.423	0.427	0.432	0.531	0.541	0.779	0.840	1.604	1.511	1.627	1.632	2.712	3.126	3.942	5.847	6.691	5.761	7.116
	Public	0.991	0.998	1.002	2.157	1.2	1.245	1.324	1.977	2.104	2.179	2.287	4.246	5.924	7.479	13.203	13.293	14.611	15.215
	Industrial	0.389	0.391	0.396	0.582	0.534	0.639	0.778	0.779	0.856	1.167	1.738	27.362	30.352	33.341	36.370	39.497	39.512	40.001

Note 1. to be prepared by Cabang and by Consumer group

2. Consumer group . . . residential, commercial, industrial

Amount energy generated

(Unit 10^6KWH)

Island	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	
East Java	551.2	603.3	683.5	716.6	791.1	1008.6	1301.1	1552.3	1931	2370	2920	3603	4323	5338	6600	7735	9081	10859	
Pamekasan	7.5	7.9	8.6	10.3	11.4	13.6	16.8	19	24	27	34	37	162 *	188	211	234	242	249	* After 85/86 to be supplied from Java island
Total	558.7	611.2	692.1	726.9	803.1	1022.2	1318.7	1571.1	1945	2397	2954	3640	4485	5526	6811	7969	9323	10908	

Note 1. to be prepared by Island and East Java

Peak Demand

(Unit MW)

Island	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
SURABAYA NORTH	66.0	71.0	79	85	97	125	163	185	211	241	278	351	432	560	710	830	971	1136
SURABAYA SOUTH																		
MALANG								26.6	34.3	43.3	56.1	63.5	68.9	76.8	84.6	92.9	109.1	128.1
PASURUAN								19.5	21.1	30.0	45.6	61.9	71.5	82.8	102.2	111.0	126.8	144.6
KEDIRI								12.3	15.8	24.1	36.0	41.3	55.3	62.9	75.8	76.0	91.8	106.7
MADIUN								12.7	13.6	15.6	19.2	22.9	24.9	29.4	30.8	41.9	50.8	62.0
MOJOKERTO	28	30	33	38	39	58	68	6.6	9.2	13.5	18.5	23.4	25.6	29.4	39.4	54.4	62.1	72.1
JEMBER								7.4	9.2	14.0	18.1	22.3	24.9	25.0	27.7	52.4	61.1	72.3
BANYUWANGI								3.0	4.0	5.1	6.3	6.8	7.2	7.9	9.1	9.4	11.3	14.2
SITUBONDO								2.1	3.1	2.3	2.3	2.3	2.4	4.9	5.3	12.3	14.7	16.4
PAMEKASAN								6.0	6.0	7.1	8.3	28.7	32.6	38.5	43.3	46.1	52.5	61.0
BOJONEGORO								3.7	3.7	4.5	5.2	6.6	7.3	8.6	9.9	10.1	12.5	15.3
TOTAL	94	101	112	123	136	183	231	284.9	331.6	400.5	494.1	610.7	752.6	926.2	1138.1	13365	15637	18287

Note 1. to be prepared by Island and East Java

Electrification ratio in East Java

(Unit %)

Cabang	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
North Surabaya	7.1	9.6	10.9	12.3	14.5	17.6	19	20	24.6	24.6	27.6	30.1	32.6	35.1	37.6	40.1	42.2	45.1
South Surabaya	9.2	10.4	11.9	12.8	15.3	17.4	18.7	21	26	27	31	34	38.38	43.3	48.3	55.11	57.3	61.4
Malang	4.1	4.9	5.1	5.6	5.9	7.4	9.1	10.8	12.8	14.3	17.5	20	22.5	25	27.5	30	37.2	39.7
Pasuruan	2.9	3	3.7	3.9	4.4	4.7	5.1	5.6	7.1	7.9	9.6	12.10	14.6	17.1	19.6	22.16	23.1	25.2
Kediri	1.1	1.3	1.4	1.6	1.9	2.1	2.4	2.7	3.5	4.1	4.8	7.4	9.9	12.5	15.1	17.7	19.8	21.4
Mojokerto	1.6	1.9	2.1	2.4	2.7	2.9	3.5	3.8	4.9	5.8	6.9	9.4	11.9	14.4	16.9	19.5	22.3	24.7
Madiun	2.3	2.9	3.1	3.2	3.3	3.5	3.7	3.9	4.8	6.1	7.2	9.69	12.19	14.69	17.19	19.69	22.3	25.1
Jember	1.2	1.3	1.5	1.7	1.9	2	2.1	2.3	2.9	3.3	3.9	6.4	8.9	11.4	13.9	16.4	19.4	21.9
Banyuwangi	2.5	2.6	2.7	2.9	3	3.1	3.2	3.5	4.1	4.1	5.7	8.25	10.8	13.35	15.9	14.45	17.1	19.9
Situbondo	4	5.1	5.2	5.4	5.8	6	6.1	6.6	7.5	7.9	9.4	11.9	14.4	16.9	19.4	21.9	24.3	27.5
Pamekasan	0.3	0.5	0.7	0.9	1.1	1.5	1.9	2.2	2.4	2.8	3.3	5.3	8.3	10.8	13.3	15.8	17.1	21.6

Note 1. to be prepared by Cabang

Big Consumers in East Java

As of _____

Cabang	Consumer	Capacity (Kva)	Product
North Surabaya	Petrokimia	12500	Petro Chemical
	Semen Gresik	30000	Cement
	PT. Barata Steel	5000	Steel
	Pelabuhan & Konasal	8000	
South Surabaya	PAM	4730	Water
	PN Soda	5710	Soda
	Jatim Utama Steel	12000	Steel
	Ispat Indo	32000	
	Sasa Inti	1100	
	Alumindo	2200	
	Meca Box	1500	
	Surya Kertas	6600	
Pasuruan	PN. Leces	3000	
	Easterntex	1700	
	Sasa Inti	2800	
Madiun	PN. Inka	5600	
	AURI.Metting	1000	
Mojokerto	PT. Ciwi-Kimia	4500	

Cabang	Consumer	Capacity (Kva)	Product

Note I. to be prepared by Cabang and by consumer

Waiting Consumers in East Java

As of 1982

Cabang	Consumer	Capacity (MVA)	Product
1. North Surabaya	PT. PAL	6 + 8	Dok Ship
	Carbide P. Gresik	12.5	Battery
	Petrokimia Gresik	15.5 + 30	Chemical
	Mecabox	+ 5	
	Port A.N.	4 +	Ship Service
	Small Industri.Sby	30 +	Small Industri
	Parking Centre.Tanj.	3	Parking Service
	Kunci Mediaeaan.Grsk.	10,5	
	Lantamal	2	
	Steel Plant.Grsk	60	
2. South Surabaya	Surya Kertas	3.5	Paper
	Soda Waru	7	Soda
	Rungkut Steel Fac.	60	Steel
	Jaya Part Steel	10 + 30	
	Delta Plaza	4 + 12	Shopping Centre
	Garden Hotel	1	Hotel
	Candi Sugar Fac.	1	Sugar
	Miwon	7.23	
	Sahid BS	1.3	
	PT. Charoen. P	1	
	Home Industris	30	
3. Bojonegoro	Carbide P. Babat	15	Battery
	Carbide P. Lamongan	15	Battery
	Paper P. Tuban	15	Paper
4. Malang	Carbide S. Mega	15	Battery
	Small Industri	10	Small Industri
	Kebon Agung Fac.		Sugar

Cabang	Consumer	Capacity (MVA)	Product
5. Mojokerto	Ciwikimia	10	Polish
	Ajinomoto	5	Vetsin
	Pakerin	5	
6. Pasuruan	PAM. Umbulan	4.5	Water Service
	Pompa PA. Porong	6	Water Service
	Textile Epatex	4	Textile
	Textile Unitex	3	Textile
	Textile Kahuitex	6 + 8	Textile
	Cana Inti	10.5	Vetsin
	Pabrik Jamoo	3	Match
7. Pamekasan	Madura Cement. Fac.	60	Cement
8. Banyuwangi	Bonuki Rakyat Paper	6	Paper
9. Kediri	Mertoseno Paper. F.	5	Paper
	Gudang Garam	24	Cigarette
10. Madiun	PAM. P2 AT	3 + 3	Water Service

Note 1. to be prepared by Cabang and by consumer

PRIVATE OWNED POWER PLANTS IN EAST JAVA. 1980

NO.	C A B A N G	TOTAL INDUSTRY	TOTAL ENGINE	Power Capacity (KVA)		
1.	North Surabaya	25	13	35.786,5		
2.	South Surabaya	33	89	28.821,5		
3.	M a l a n g	3	8	3.030		
4.	P a s u r u a n	7	13	5.392		
5.	K e d i r i	2	13	2.995		
6.	M a d i u n	6	23	1.979		
7.	Mojokarto	4	5	935		
8.	J e m b e r	1	1	80		
9.	Banyuwangi	-	-	-		
10.	Bondowoso	-	-	-		
11.	Situbondo	-	-	-		
T O T A L		75	173	78.409		

Numbers of Consumers in East Java

Cabang	Consumer Group	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
1. North Surabaya	Residential	57,169	60,101	65,115	67,139	69,393	72,139	73,188	74,941	90,635	100,425	115,613	130,966	146,979	164,105	182,298	201,613	210,71	212,825
	Public	359	362	369	371	386	392	399	461	640	699	735	913	1054	1212	1,326	1,578	1,565	1,601
	Commercial	5,685	5,699	5,718	5,839	5,891	6,011	6,170	6,260	7,497	7,703	8,093	5,235	5,879	6,564	7,292	8,065	8,110	8,115
	Industrial	619	621	622	625	627	630	634	635	551	594	710	789	893	861	919	984	990	997
2. South Surabaya	Residential	75,999	76,199	77,113	80,115	80,117	82,111	83,167	96,148	102,651	121,033	137,603	160,92	189,662	223,411	263,162	309,982	310,115	311,715
	Public	498	501	503	511	514	519	521	526	616	642	598	614	740	670	710	744	760	771
	Commercial	2,801	2,940	2,391	2,990	2,999	3,020	3,189	3,404	3,779	4,285	5,398	6,138	7,193	8,427	9,871	11,552	11,671	11,937
	Industrial	342	345	350	366	371	385	397	400	457	585	718	807	950	1055	1131	1322	1331	1351
3. Malang	Residential	32,512	35,190	51,385	36,751	39,063	41,799	51,067	58,792	72,446	84,015	104,444	124,556	144,393	164,356	186,690	209,462	210,112	211,256
	Public	485	490	497	499	501	505	508	510	545	577	626	649	677	695	710	720	723	750
	Commercial	1,719	1,821	1,932	2,479	2,292	2,633	[illegible]	2,906	3,086	3,328	3,593	3,654	3,712	3,725	3,792	3,849	3,971	3,969
	Industrial	187	190	191	195	205	219	237	267	300	337	455	452	551	314	673	745	748	751
4. Pasuruan	Residential	16,466	16,499	16,511	16,173	18,035	20,883	25,258	26,267	31,532	38,554	47,230	61,394	76,064	90,801	107,410	124,259	126,111	127,126
	Public	537	339	348	344	346	349	351	353	393	776	493	11,030	17,516	23,201	31,403	41,756	41,795	42,159
	Commercial	951	953	957	1,051	1,150	1,310	1,612	1,612	1,715	1,803	1,867	2,084	2,250	2,300	2,550	2,548	2,458	2,516
	Industrial	120	121	123	124	125	129	165	160	164	167	206	211	219	226	234	242	243	245
5. Kediri	Residential	15,010	15,050	15,153	16,092	17,633	20,405	25,958	29,463	37,373	45,647	54,420	84,648	115,216	148,005	181,900	216,930	218,91	219,37
	Public	573	575	577	579	580	581	585	587	694	749	867	1,135	1,497	1,776	2,000	2,169	2,275	2,298
	Commercial	1,535	1,599	1,607	1,755	1,937	2,209	2,935	2,325	3,397	3,862	4,045	5,756	7,028	8,238	9,095	9,761	9,864	9,975
	Industrial	131	134	137	139	141	144	146	158	156	167	207	219	230	249	269	292	299	305
6. Mojokerto	Residential	7,001	7,099	7,159	7,604	9,103	10,121	13,242	14,552	19,050	21,938	27,652	38,678	50,058	61,878	74,212	87,506	89,118	91,378
	Public	265	267	269	271	281	286	236	287	297	326	364	464	550	556	593	612	614	617
	Commercial	653	659	660	0,913	1,100	1,364	1,610	2,371	1,475	1,500	1,520	1,740	1,551	1,918	1,929	2,012	2,159	2,215
	Industrial	53	57	60	60	61	63	64	70	67	73	82	91	96	104	114	124	126	128

Note 1. to be prepared by Cabang and by Consumer group

2. Consumer group . . . residential, commercial, industrial

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Numbers of Consumers in East Java

Cabang	Consumer Group	'73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
7. Madiun	Residential	13,372	13,862	13,592	14,384	[illegible]	18,313	24,232	30,235	37,313	47,721	56,104	76,584	96,997	117,774	138,989	160,566	161,711	163,812
	Public	455	459	441	445	[illegible]	451	453	454	537	610	653	824	962	1,077	1,171	1,246	1,301	1,411
	Commercial	969	0,977	0,984	1,126	1,101	[illegible]	1,829	1,446	1,606	1,757	[illegible]	2,160	2,377	2,505	2,564	2,509	2,611	2,911
	Industrial	72	72	73	74	74	[illegible]	73	54	54	73	147	180	195	229	265	332	307	410
8. Jember	Residential			10,777	11,137	12,468	14,959	18,917	19,127	21,935	24,557	30,059	50,193	71,007	92,525	114,738	137,605		
	Public								561	433	470	526	843	1,173	1,592	1,832	2,161		
	Commercial			794	821	1,071	[illegible]	1,483	1,485	1,597	1,593	1,807	2,383	3,316	4,305	4,379	5,350		
	Industrial			47	48	[illegible]	[illegible]	50	55	73	71	96		120	136	154	176		
9. Banyuwangi	Residential			6,503	6,451	[illegible]	[illegible]	[illegible]	11,146	12,985	15,406	19,032	29,005	37,417	47,285	57,526	63,189		
	Public								148	167	182	229	232	299	331	345	375		
	Commercial			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	724	748	834	1,972	2,072	2,385	3,735	4,774	5,564		
	Industrial			15	5	15	[illegible]	13	14	15	15	33		50	51	71	85		
10. Situbondo	Residential			[illegible]	[illegible]	[illegible]	[illegible]	7,670	7,732	8,754	9,509	11,430	15,859	14,819	18,209	21,882	25,561		
	Public								57	70	104	126	162	200	239	280	322		
	Commercial			225	241	[illegible]	[illegible]	[illegible]	542	557	602	702	847	994	1,132	1,261	1,331		
	Industrial	4	4	4	4	4	[illegible]	[illegible]	4	4	4	8	8	8	8	8	8		
11. Pamekasan	Residential			7,475	7,812	[illegible]	[illegible]	[illegible]	13,129	14,479	17,484	20,36	36,934	53,951	71,525	92,825	108,823		
	Public								255	267	260	346	351	727	901	1,560	1,192		
	Commercial			412	507	[illegible]	[illegible]	705	703	741	792	805	1,205	1,699	1,431	1,797	2,176		
	Industrial			19	20	20	21	22	24	30	36	49		59	68	77	89		

Note 1. to be prepared by Cabang and by Consumer group

2. Consumer group . . . residential, commercial, industrial

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Power Plant

in

East Java

Power Plant in East Java

As of

Type	Power Plant	Total capacity (MW)	No. of unit
EXISTING			
HYDRO	Mendalan	23	4
HYDRO	Siman	10,8	3
HYDRO	Selorejo	4,48	1
OIL THERMAL	Perak I + II	50	2
OIL THERMAL	Perak III + IV	100	2
GAS TURBINE	Perak	27,5	1
HYDRO	Sutami	105	3
HYDRO	Wlingi	54	2
HYDRO	Lodoyo	4,5	1
HYDRO	Giringan	3,2	3
HYDRO	Golang	2,7	3
HYDRO	Ngebel	2,2	1
OIL THERMAL	Gresik I + II	200	2
GAS TURBINE	Gresik I + II	40	2
DIESEL	Situbondo		
DIESEL	Pamekasan	1,73	5
DIESEL	Sumenep	0,99	3
DIESEL	Sampang	0,49	3
DIESEL	Bangkalan	1,056	3
DIESEL	Premduan	0,15	2
DIESEL	Ketapang	0,11	2
DIESEL	Blega	0,13	2
DIESEL	Kamal	0,25	2
DIESEL	Pasangsongan	0,11	2
DIESEL	Pakong	0,1	2
DIESEL	Ambunten	0,08	2

Type	Power plant	Total capacity (MW)	No. of unit
DIESEL	Sepulu	0,04	1
ON GOING			
GAS THERMAL	Gresik III&IV	40	2
OIL THERMAL	Gresik III&IV	400	2
HYDRO	Senggurah	29	1
HYDRO	Widas	0,63	1
FUTURE			
COAL THERMAL	Paiton I&II	1600	4
COAL THERMAL	Paiton III&IV	2400	4
HYDRO	Kesamben	33	1
HYDRO	Tulung agung	30	1

Note 1. Type . . . Hydro, Oil thermal, Gas thermal, Coal thermal, Geothermal, Diesel, Gas turbine, Nuclear
2. to be prepared for existing, on-going, formulated and future plan respectively
3. to be prepared by type and by power plant

8-1

参考資料 9.

Transmission Line

in

East Java

Transmission line in East Java.

As of

Transmission Line / Rated Voltage (KV)		cct length (km)		
EXISTING :				
- Giringan-Golang	25	2 cct	2,6	
- Dungus-Dolopo	25	2 cct	11,3	
- Dolopo-Ponorogo	25	1 cct	16,1	
- Dolopo-Ngebel	25	1 cct	10,7	
- Golang-Dungus	25	1 cct	6	
- Dungus-Madiun	25	1 cct	0,4	
	25	1 cct	0,4	
	25	1 cct	12,6	
	25	1 cct	8,4	
- Golang-Dungus	25	2nd cct	6	
- Dungus-Mranggen	25	1 cct	10,3	
- Madiun-Mranggen	25	1 cct	0,4	
- Manisrejo-Madiun	20	2 cct	3,5	
- Probolinggo-Leces	30	2 cct	9,83	
- Probolinggo-Pleret	30	2 cct	38,16	
- Leces-Lumajang	30	1 cct	33,25	
- Mendalan-Jombang	30	2 cct	39,39	
- Mendalan-Kediri	30	2 cct	33,8	
- Kediri-Tulungagung	30	2 cct	27,75	
- Tulungagung-Trenggalek	30	1 cct	32,66	
- Tulungagung-Blitar	30	2 cct	28,78	
- Wlingi-Blitar	30	1 cct	21,9	
- Manisrejo-Kertosono	70	1 cct	71,6	
- Kertosono-Ploso	70	2 cct	24,8	
- Mojokerto-Sawahan	70	2 cct	37,1	
- Tandes-Sawahan	70	2 cct	3,5	
- Tandes-Segoromadu	70	2 cct	10,5	
- Segoromadu-Petrokimia	70	2 cct	5,7	

Transmission Line / Rated voltage (KV)		cct length (km)		
- Segoromadu-Semen Gresik	70	2 cct	2,1	
- Segoromadu-Barata	70	2 cct	1	
- Sawahan-Krembangan	70	2 cct	3,4	
			0,7	(Under Ground Cable)
- Krembangan-Perak	70	2 cct	2,5	
- Perak-Sawahan	70	1 cct	5,3	
- Sawahan-Waru	70	2 cct	10,6	
- Sukolilo-Waru	70	2 cct	11	
- Sukolilo-Ngagel	70	2 cct	4,5	
- Ngagel-Ujung	70	2 cct	13,29	
- Ujung-Perak	70	2 cct	2,6	
- Ujung-Perak	70	1 cct	2,6	(Under Ground Cable)
- Waru-Bangil	70	2 cct	31,85	
- Bangil-Grandeam	70	2 cct	9,7	
- Bangil-Probolinggo	70	2 cct	52,7	
- Perak P/S Cable	70	1 cct	0,4	
- Mojokerto-Kertosono	70	1 cct	45,4	
- Kertosono-Manisrejo	70	1 cct	71,6	
- Blimbing-Mendalan	70	2 cct	38,2	
- Mendalan-Mojokerto	70	2 cct	49,8	
- Waru-Tepat Indo	70	2 cct	0,9	
- Tepat Indo-Buduran	70	2 cct	9,165	
- Buduran-Porong	70	2 cct	12,75	
- Porong-Bangil	70	2 cct	11,7	
- Bangil-Pumorejo	70	2 cct	14,8	
- Sukorejo-Kawang	70	2 cct	17,7	
- Lawang-Blimbing	70	2 cct	10,8	
- Blimbing-Polehan	70	2 cct	12,1	

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Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared for overhead line and underground cable respectively
3. to be prepared by transmission line and by rated voltage.

Transmission Line in East Java.

As of

Transmission Line / Rated voltage (KV)		cct length (Km)		
- Polehan-Kebonagung	70	2 cct	4,3	
-	70	2 cct	7,1	
- Selorejo Incoming	70	2 cct	-	
- Kebonagung-Karangkates-Turen	70	1 cct	4,3	
	70	1 cct	12,7	
	70	1 cct	6	
- Manisrejo-Dolopo	70	1 cct	12,8	
- Dolopo-Ponorogo	70	1 cct	15,3	
- Manisrejo-Ponorogo	70	1 cct	28,1	
- Ponorogo-Pacitan	70	2 cct	62,2	
- Ponorogo-Trenggalek	70	2 cct	33,8	
- Trenggalek-Tulungagung	70	2 cct	33	
- Tulungagung-Blitar	70	2 cct	31,2	
- Blitar-Wlingi	70	2 cct	11,7	
- Tulungagung-Kediri	70	1 cct	29,2	
- Manisrejo-Maospati	70	2 cct	10,2	
Segoromadu-Lamongan	150	2 cct	28,2	
- Lamongan-Babat	150	2 cct	30,91	
- Babat-Bojonegoro	150	2 cct	35,3	
- Karangkates-Kebonagung	150	1 cct	27,95	
- Karangkates-Bangil	150	1 cct	79,49	
- Bangil-Waru	150	1 cct	31,54	
- Kebonagung-Waru	150	1 cct	89	
- Waru-Perak	150	1 cct	17,8	
	150	2 cct	4	
- Perak-Tandes	150	1 cct	4	
- Tandes-Waru	150	1 cct	15	
- Gresik P/S-Waru	150	2 cct	24,95	

Transmission Line / Rated voltage (KV)		cct length (Km)		
- Gresik P/S-Segoromadu	150	2 cct	39	
- Bojonegoro-Cepu	150	2 cct	36	
- Waru-Mojokerto	150	1 cct	35,6	
- Mojokerto-Kediri	150	1 cct	64,1	
- Kediri-Madiun	150	1 cct	70,83	
- Manisrejo-Palur	150	2 cct	130	
- Wlingi-Karangkates	150	1 cct	23,6	
- Probolinggo-Jember	150	1 cct	92,85	
- Jember-Banyuwangi	150	1 cct	82,4	
- Waru-Sukolilo	150	1 cct	11,05	
- Probolinggo-Leces	150	1 cct	-	
- Lumajang Incoming	150	1 cct	7,6	
- Petrokimia Incoming	150	2 cct	2	
-				
-				
-				
-				
ON GOING :				
- Gresik P/S-Krian	150	2 cct	24	
- Krian Branch	150	4 cct	2	
- Mojokerto-Waru	150	2nd cct	36	
- Gresik P/S-Tajungan	150	2 cct	5	
- Tajungan-Gilitimur	150	2 cct	2,7	
- Gilitimur-Lebang	150	2 cct	7	
- Gilitimur-Karangpandan	150	2 cct	14	
- Tandes Branch	150	2 cct	1	
- Rungkut Branch	150	2 cct	2	

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2.

Transmission Line in East Java

As of

Transmission Line / Rated voltage (KV)		cct. length (Km)		
- Sukolilo-Waru	150	2nd cct	12	
- Sukolilo-Kenjeran	150	2 cct	6	
- Waru-Bangil (Rehabilitation)	70	2 cct	36	
- Sidoarjo Incomer	70	2 cct	11	
- Bangil-Probolinggo	150	2 cct	55	
- Kebonagung-Sengkaling	70(150)	2 cct	16	
- Nganjuk Incomer	70	2 cct	6	
- Bangil Incomer	150	2 cct	1	
- Kebonagung Incomer	150	2 cct	3	
- Porong Incomer	70	2 cct	1	
- Jember-Bondowoso	150	1st cct	41	
- Bondowoso-Situbondo	150	1st cct	40	
- Jember-Banyuwangi	150	2nd cct	83	
- New Kediri-Mojokerto	150	2nd cct	69	
- New Kediri-New Madiun	150	2nd cct	71	
- Leces-Jember	150	2nd cct	84	
- Lumajang Branch	150	2nd cct	7,5	
- Sengguruh-Kebonagung	70	2nd cct	30	
- Sengkaling-Blimbing-Polehan (Rehabilitation)	70	2 cct	36	
FUTURE PLAN.				
- Krian-11 B (Babatan)	150	2 cct	9	
- Waru-Sawahan-Mojokerto (Rehabilitation)	70	2 cct	50	
- Sukolilo-Kenjeran(UGC)	150	2 cct	3	
- Kenjeran-Simpang (UGC)	150	2 cct	7	
- Probolinggo-Kraksaan	150	2 cct	30	
- Babat-Tuban	150	1st cct	40	

Transmission Line / Rated voltage (KV)		cct length (Km)		
- Ngawi Incomer	150	2 cct	10	
- Kraksaan-Paiton	150	2 cct	30	
- Gilitimur-Bangkalan	150	1st cct	160	
- Bangkalan-Sampang	150	1st cct		
- Sampang-Pamekasan	150	1st cct		
- Pamekasan-Sumenep	150	1st cct		
- Sukolilo-Kenjeran	150	2nd cct	6	
- Darmo Grande Branch	150	2 cct	5	
- Perak/Tandes-Kenjeran	150	2 cct	7	
- Branch Big Consumer	70	2 cct	12	
- Simpang/Gemblongan-Tandes	150	2 cct	10	
- S/S No. 16 Branch	150	2 cct	2	
- Gresik(P/S or S/S)-Tandes	150	2 cct	10,5	
- Krian-Waru/Tandes	150	2 cct	12,7	
- Bungkut Branch 2nd phi	150	2 cct	0,05	
- Paiton-Besuki	150	2 cct	20	
- Besuki-Situbondo	150	2 cct	20	
- Karang Ploso Branch	150	2 cct	1	
- Kebonagung-Kepanjen	70	1st cct	15	
- Mojokerto-Kertosono-Madiun	70	2nd cct	117	
- Tulungagung-New Kediri	70	2nd cct	30	
- Ngoro-Ploso	70	2 cct	30	
- New Madiun-Magetan	70	2 cct	35	
- Karangkates-Turen	70	2nd cct	26	
- Turen-Pronojiwo	70	2 cct	40	
- Benculuk Incomer	150	2 cct	10	
- Situbondo-Asembagus	150	1st cct	35	
- Jember-Bondowoso	150	2nd cct	41	

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by Island and East Java, and by rated voltage

Transmission line in East Java

As of

Transmission line / Rated voltage (KV)		cct length (Km)		
- Bondowoso-Situbondo	150	2nd cct	40	
- Kalibaru Incomer	150	2 cct	2	
- Tanggul Incomer	150	2 cct	2	
- Kesamben-Wlingi	70	2 cct	10	

Transmission Line / Rated voltage (KV)		cct length (Km)	

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared

9-4

Substation Transformer

in

East Java

Substation Transformer in East Java

As of

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
EXISTING			
- Sawahan	70/20/6	10/10/6	2
	70/6	6	1
	70/20	20	1
- Pesapen	30/20	6/6/4	1
- Krembangan	70/20	20	2
- Ujung	70/6	6	2
	70/20	20	1
- Tandes	150/20	30	1
- Petrokimia	70/20	20	1
	150/20	30	2
- Lamongan	150/20	20	1
- Babat	150/20	20	1
- Segoromadu	70/20	20	1
	20/6	1	1
	150/70	50	1
- Driyorejo	70/20	20	1
- Waru	150/70	30	4
	150/70	50	2
	70/20	20	2
	70/20	30	1
- Ngagel	70/6	3	2
-	70/20	16	1
- Sukolilo	70/20	10	1
	70/20	20	1
	70/20	30	1
	150/20	30	1
- Puduran	70/20	20	1
- Mojokerto	70/20/6	16	1
	150/70	35	1
- Jombang	30/6	1	1
	30/6	2	1
- Kertosono	70/20	10	1
	70/20	6	1
- Ploso	70/20/6	6	1
- Ngawi	30/6	0,63	1
- Kandangan	30/0,22	0,1	1
-	30/6	0,63	1
- Mojowarno	30/6	0,125	1
- Kediri	30/6	3,05	2
- Tare	30/6	1	2

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
- Kunir	30/6	0,63	1
- Tulungagung	30/6	3	1
	70/20/30	10/10/5	1
- Blitar	30/6	1	1
New Blitar	70/6	6	1
- Trenggalek	30/6	1	1
- New Kediri	70/20	10	1
	150/70	35	1
- Keras	30/0,22	0,1	1
- Srengat	30/6	0.125	1
- Durenan	30/6	6,3	1
- Ngadiluwih	30/6	0,2	1
- Blimbing	70/6	3	1
	70/20/6	10	1
	70/20	20	1
- Malang	70/6	4	1
	70/20	20	1
- Kebonagung	70/6	10	1
	150/70	35	1
- Polehan	70/6	6	2
	70/20	20	1
- Turen	70/6	3,03	1
	70/20/6	10/10/4	1
	70/20	10	1
- Gempalung	70/20	4	1
	70/20	6	1
- Sengguruh	70/6	3	1
- Bangil	70/20/6	10	1
	150/70	35	2
- Porong	70/6	1	1
	70/6	4	1
- Pandaan	70/20	20	1
- Sukorejo	70/6	1,5	1
	70/20	10	1
- Pleret	30/6	1	2
- Ahuan	30/6	3,5	1
	30/20	6/6/4	2
- Probolinggo	70/30	10	1
	70/30/6	10/6/4	1
-	70/20/6	6	1
	150/70	35	1
- Bareman	30/6	0,2	1

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepaled by substation and by rated voltage

10-1

Substation Transformer in East Java

As of

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
Gondangwetan (New Pleret)	70/20	6	1
Jember	150/20	20	1
Banyuwangi	150/20	20	1
Klakah	30/6	0,2	1
Leces	30/6	3	2
Lumajang	30/20/6	3	1
Manisrejo	70/25/20	10	1
	70/20	10	1
	150/70	35	1
Madiun	25/6	2	1
	25/6	1,05	1
	25/6	6	1
Dungus	25/0,23	0,1	1
Ponorogo	25/6	3	1
	70/20	10	1
Caruban	70/6	6	1
Kranggan (Kraspati)	25/20	9	1
	25/6	2	1
	70/6	6	1
Kolopo	25/6	0,8	2
	70/20	10	1
Pacitan	70/6	3	1
ON GOING			
Probolinggo	70/20	10	1
Leces	150/20/6	20	1
Lumajang	150/20	20	1
Pacitan	70/20	3x3	1
Tandes	150/20	20	1
Krembangan	150(70)/20	10	1
New Kediri	150/20	30	1
Nganjuk	70/20	10	1
Porong	70/20	10	1
Bondowoso	150/20	15	1
Situbondo	150/20	15	1
Sengkaling	70/20	20	1
Kebonagung	150/20	30	1

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
- Krian	150/20	20	2
- Gilitimur	150/20	10	1
- Tandes	150/70	50	2
	150/20	50	1
- Krembangan	70/20	30	1
- Kenjeran	150/20	50	1
FUTURE PLAN.			
- Sukolilo	150/20	50	1
- Waru	150/20	50	1
- Duduran	70/20	20	1
- Polehan	70/20	20	1
- Kebonagung	150/70	50	1
- Rungkut	150/20	50	1
- Darmo Grande	150/20	50	1
- 11 B (Babatan)	150/20	50	1
- Ngagel(GIS)	150/20	20	1
- Simpang/Gemblongan (GIS)	150/20	50	1
- Segoromadu	150/70	50	2
	150/20	50	1
- Kedjoeroto	150/70	50	1
- Probolinggo	150/20	20	1
- New Kediri	150/70	50	1

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by substation and by rated voltage

Substation Transformer in East Java

As of

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
Kraksaan	150/20	20	1
Tuban	150/20	20	1
Ngawi	150/20	20	1
Bangkalan	150/20	10	1
Sampang	150/20	10	1
Pamekasan	150/20	10	1
Sumenep	150/20	10	1
Mobile Transformer	150(70)/20	30	1
Kertosono	70/20	10	1
New Madiun	150/20	20	1
Bungkut	150/20	50	1
Tulungagung	70/20	10	1
Ngoro	70/20	10	1
Caruban	70/20	10	1
Kenjeran	150/20	50	2
Porong	70/20	20	1
Besuki	150/20	20	1
Pangil/Pleret	70/20	20	1
Jember	150/20	20	1
Banyuwangi	150/20	20	1
Wlingi	70/20	10	1
S/S No. 12 & Branch	150/20	50	1
S/S No. 13 Branch	150/20	50	1
Gubeng	150/20	50	1
Babatan 11 B	150/20	50	1
Segoromadu	150/20	30	1
Karangploso	150/20	20	2

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
- Mojokerto	150/20	20	1
- Tanggul	150/20	20	1
- Kepanjen	70/20	10	1
- Trenggalek	70/20	10	1
- Ploso	70/20	10	1
- Unit Substation	150(70)/20	10	2
- Benculuk/Genteng	150/20	20	2
- Kalibaru	150/20	20	2
- S/S No. 16	150/20	50	1
- Asembagus	150/20	15	1

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by substation and by rated voltage

Substation Condenser in East Java

As of

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit
Waru	70	10 000	3
Gresik(Kegoromadu)	70	10 000	1

Substation	Rated voltage (KV)	Unit capacity (MVA)	No. of unit

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by substation and by rated voltage

10-4

参考資料 11.

Distribution Line

in

East Java

Distribution line

As of 1983

Island	Rated voltage (KV)	cct length (km)	
East Java	20	3,459.261	
	6	1,542.099	
Madura	6	135.672	

Island	Rated voltage (KV)	cct length (km)	

Note 1. to be prepared for existing, on-going, formulated, and future plan respectively
2. to be prepared for overhead line and underground cable respectively
3. to be prepared by Island and East Java, and by rated voltage

Distribution Transformer

As of 1983

Island	Rated voltage (KV)	Capacity (MVA)	No. of unit
East Java	20	819.6	11,490
	6	268.2	2,461
Madura	6	10.6	173

Island	Rated voltage (KV)	Capacity (MVA)	No. of unit

Note 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by Island and East Java, and by rated voltage

11-2

Distribution Poles

As of 1983

Island	No. of Poles	Island	No. of Poles	Island	No. of Poles	Island	No. of Poles
East Java	111,141						
Madura	3,014						

11-3

No. 1. to be prepared for existing, on-going, formulated and future plan respectively
2. to be prepared by Island and East Java

参考資料 12.

Power loss in East Java

Power Loss

In 1982 / 1983

(Unit MWH)

	Island	Power plant	Transmission & Substation	Distribution	Total
1	April - 1982	-	10,008.401	19,640.913	29,649.314
2	May - 1982	-	12,408.696	18,602.582	31,011.278
3	June - 1982	-	9,625.092	6,878.229	16,503.321
4	July - 1982	-	13,062.446	15,979.066	29,041.512
5	Augst - 1982	-	11,301.236	26,905.429	38,206.665
6	September -1982	-	9,902.152	17,844.579	27,746.731
7	October - 1982	-	12,767.205	28,286.922	41,054.127
8	November - 1982	-	9,092.114	26,001.315	35,093.429
9	December - 1982	-	10,420.643	22,839.681	33,260.324
10	January - 1983	-	12,682.306	26,306.923	38,989.229
11	February - 1983	-	11,060.764	13,185.985	24,246.749
12	March - 1983	-	11,450.670	29,956.394	41,407.064

Note 1. to be prepared by Island and East Java

12-1

参考資料 13.

Fault Record

in

East Java

Fault Records

In 82 / 83

September 82 - August 83.

Island (East Java)	Power Plant		Transmission line		Substation		Distribution line	
	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)
September '82 -	Hydro : - Steam : 1 Gas : 1		150 KV = 3 70 KV = 2 30 KV = - 25 KV = 2		150 KV = 4 70 KV = 2 30/25KV= 2			
October '82 -	Hydro : - Steam : - Gas : 2		150 KV = 2 70 KV = 8 30 KV = 2 25 KV = -		150 KV = 1 70 KV = 2 30 KV = 1 25 KV = 1			
November '82 -	Hydro : 2 Steam : - Gas : 8		150 KV = - 70 KV = 2 30 KV = 2 25 KV = -		150 KV = - 70 KV = 8 30/25KV= 7			
December '82 -	Hydro : 8 Steam : 1 Gas : 4		150 KV = 1 70 KV = 15 30 KV = 3 25 KV = 4		150 KV = 10 70 KV = 10 30/25KV= 2		6 KV = 136 20 KV = 76	6 KV = 618 20 KV = 684
January '83 -	Hydro : 2 Steam : - Gas : 9		150 KV = 1 70 KV = 4 30 KV = 2 25 KV = 3		150 KV = 4 70 KV = 9 30/25KV= 3		6 KV = 87 20 KV = 144	6 KV = 568 20 KV = 470
February '83 -	Hydro : 3 Steam : 1 Gas : 9		150 KV = 2 70 KV = 8 30 KV = - 25 KV = 2		150 KV = 5 70 KV = 5 30/25KV= 2		6 KV = 84 20 KV = 134	6 KV = 568 20 KV = 574
March '83 -	Hydro : 11 Steam : 2 Gas : 1		150 KV = 3 70 KV = 15 30 KV = 1 25 KV = 10		150 KV = - 70 KV = 11 30/25KV= 11		6 KV = 64 20 KV = 129	6 KV = 239 20 KV = 386
April '83 -	Hydro : 3 Steam : 2 Gas : 4		150 KV = - 70 KV = 29 30 KV = 8 25 KV = 21		150 KV = 1 70 KV = 13 30/25KV= 5		6 KV = 66 20 KV = 107	6 KV = 184 20 KV = 389

Note 1. to be prepared by Island and East Java

Fault Records

In 1982 / 1983

September 82 - Auguest 83

Island (East Java)	Power Plant		Transmission line		Substation		Distribution line	
	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)	Frequency (times)	Duration (hour)
May ' 83	Hydro : 6 Steam : - Gas : -		150 KV = 2 70 KV = 8 30 KV = 1 25 KV = 6		150 KV = - 70 KV = 8 30/25KV= 3		6 KV = 52 20 KV = 78	6 KV = 160 20 KV = 353
June ' 83	Hydro : 4 Steam : - Gas : 3		150 KV = - 70 KV = 5 30 KV = 3 25 KV = 7		150 KV = 4 70 KV = 9 30/25KV= 3		6 KV = 60 20 KV = 66	6 KV = 256 20 KV = 167
July ' 83	Hydro : 7 Steam : - Gas : -		150 KV = 6 70 KV = 7 30 KV = - 25 KV = 2		150 KV = 5 70 KV = 5 30/25KV= 2		6KV = 37 20 KV= 89	6 KV = 167 20 KV = 181
Auguest ' 83	Hydro : 2 Steam : - Gas : 1		150 KV = 2 70 KV = 16 30 KV = - 25 KV = 3		150 KV = 2 70 KV = 4 30/25KV= 3		6 KV = 49 20 KV = 98	6 KV = 96 20 KV = 221

Note 1. to be prepared by Island and East Java

参考資料 14.

Supply Voltage for Consumer

in

East Java

Supply voltage for consumers

As of September 1983

Island	Voltage (V)	No. of consumer
East Java	S_1 (110)	263.685
	S_2 (110/220)	7.022
	R_1 (110/220)	298.874
	R_2 (110/220)	73.358
	R_3 (110/220)	8.643
	R_4 (110/220)	1.308
	U_1 (110/220)	23.778
	U_2 (110/220)	6.244
	U_3 (6000/20000)	10
	I_1 (110/220)	2.383
	I_2 (110/220)	298
	I_3 (6000/20000)	212
	I_4 (70000)	6
	G_1 (110/220)	5.295
	G_2 (110/220)	36
	J (110/220)	638
	Total	691.610

Island	Voltage (V)	No. of consumer

Note :

S_1, R_1, R_2, R_3, R_4 = Public

S_2, G_1, G_2 = Recidential

H_1, H_2, I_1, I_2, I_3, I_4 = Industrial

U_1, U_2, U_3 = Comercial

Note 1. to be prepared by Island and East Java