

JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF SETTLEMENT & REGIONAL INFRASTRUCTURE
REPUBLIC OF INDONESIA

**THE STUDY
ON
RURAL WATER SUPPLY PROJECT
IN
NUSA TENGGARA BARAT AND NUSA TENGGARA TIMUR**

**FINAL REPORT
VOLUME VI
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OUTLINE OF THE STUDY – Bahasa Indonesia

GARIS BESAR STUDI & SEMINAR UNTUK ALIH TEKNOLOGI

ABBREVIATIONS

ADB	Asian Development Bank
APBD I	Anggaran Pendapatan dan Belanja Daerah Tingkat I (Provincial Budget)
APBD II	Anggaran Pendapatan dan Belanja Daerah Tingkat II (District Budget)
APBN	Anggaran Pendapatan dan Belanja National (National Budget)
ARI	Acute Respiratory Infections
AusAID	Australian Agency for International Development
BAPPEDA	Badan Perencanaan Pembangunan Daerah Tingkat-I and Tingkat-II (Development Planning Board for Provincial and District Level)
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Board)
BDD	Bidan di Desa (Village midwife)
BHN	Basic Human Needs
BMG	Biro Meteorologi dan Geofisika (Meteorology and Geophysic Agency)
BPAM	Badan Pengelola Air Minum (Management Board for new Drinking Water Projects before being established as a PDAM)
BPD	Village Representative Council
BPL	Below Poverty Line
BPS	Biro Pusat Statistik (Central Bureau of Statistics)
BPT	Break Pressure Tank
Broncaptering	Any small structure built to 'capture' a water source
Buis beton	Traditional concrete rings used to line hand-dug wells
Bupati	Kepala Kabupaten (Head of a District; sometimes called "Regent")
Camat	Kepala Kecamatan (Head of a Sub-District)
CARE	Co-operative for Assistance and Relief Everywhere (International NGO)
CCF	Christian Children's Fund
CIDA	Canadian International Development Agency
Cipta Karya	Direktorat Jenderal Cipta Karya (Directorate General of Human Settlements DGHS)now restructured and integrated into Ministry of Settlement and Regional Infrastructure
CMR	Child Mortality Rate
DATI I	Daerah Tingkat I (Provincial Government Level)
DATI II	Daerah Tingkat II (District Government Level)
Desa	Rural village, lowest level of local Government
DG	Directorate General
Dinas	Provincial or District level governmental department
DIP	Daftar Isian Proyek (List of Development Projects)
DPU	Generic term for all departments of Public Works now included in Kimpraswil.
Dukun	Traditional birth attendant
DUPDA	Daftar Usulan Proyek Daerah (List of Proposed Yearly Development Projects at Tk.II.)
Dusun	Sub-Village/Hamlet in rural area
EC	Electric Conductivity
EIIKK	Eastern Islands IKK Water Supply and Sanitation Project (Aus AID program)

ESWS	NTB Environmental Sanitation and Water Supply Project (Aus AID program)
FGD	Focus Group Discussions
FIRR	Financial Internal Rate of Return
FLOWS	Flores Water Supply and Sanitation Reconstruction and Rural Development Project (AusAID program)
FRP	Fiber Reinforced Plastics
GIP	Galvanized Iron Pipe
GL	Ground Level
GOI	Government of Indonesia
GOJ	Government of Japan
GRDP	Gross Regional Domestic Product
GSP	Galvanized Steel Pipe
GTZ	German Technical Cooperation Agency
Hamlet	A small rural community not recognized as a Dusun
HC	House Connection (To a piped water supply system, usually metered)
HDPE	High Density Polyethylene Pipe
IBRD	International Bank for Reconstruction and Development (World Bank)
IEC	Information, Education and Communication
IGA	Income Generation Activities
IKK	Ibu Kota Kecamatan (Core Area of a Sub-District)
IMR	Infant Mortality Rate
Ir.	Insinyur (The Professional title 'Engineer')
JBIC	Japan Bank For International Cooperation
JICA	Japan International Cooperation Agency
K. Desa	Kepala Desa (Head of a Village - Lowest official level of local Government)
Kabupaten/Kab	District/Regency (Local Government level II or Tk.II)
Kampung	General term for any sub-village or hamlet, but more commonly used in urban and rural areas
Kecamatan	Sub-District
Kelompok	An unofficial committee or group of people
Kelurahan	Urban village, the lowest administrative unit in status equal to a Desa
Kepala Desa	Head of a Village (Lowest official level of local Government)
Kepala Dusun	Head of a Hamlet
Kepala Suka	Traditional Religions Leader (In Sumba)
Keputusan	Decree
KFW	German Development Bank
KHPPIA	Kelangsungan Hidup Perkembangan Perlindungan Ibu dan Anak (Development and Protection for Mother and Child)
Kimpraswil	Permukiman dan Prasarana Wilayah (Ministry of Settlement and Regional Infrastructure)
KK or K/K	Kepala Keluarga (Head of a family)
KLP	Koperasi Listrik Pedesaan
Kotamadya	City - equivalent administrative status to a Kabupaten
LBW	Low Birth Weight
LKMD	Lembaga Ketahanan Masyarakat Desa (Village self reliance organization, village development council)

LRWSS	Lombok Rural Water Supply and Sanitation Project (AusAID program)
Lb.	Labuhan (Common place name) Coastal plain behind the seashore
M.A.	Mata Air (Spring)
MOH	Ministry of Health
MOHA	Ministry of Home Affairs (Dalam Negeri)
MOU	Memorandum of Understanding
MSRI	Ministry of Settlement and Regional Infrastructure
Musbangdes	Musyawahar Pembangunan Desa (Village development planning discussion)
NGO	Non-governmental Organization
NTB	Nusa Tenggara Barat (West Nusa Tenggara)
NTT	Nusa Tenggara Timur (East Nusa Tenggara)
O&M	Operasi dan Pemeliharaan (Operation and Maintenance)
O/H	Overhead (High tension electric power line)
OECF	The former Overseas Economic Cooperation Fund of Japan (now JBIC)
P2AT	Proyek Pengembangan Air Tanah (Groundwater Development Project)
P3P	Proyek Peningkatan Prasarana Pemukiman (formerly P3AB) (Development and Management of Water Supply Construction Projects)
PAM	Perusahaan Air Minum (Water Enterprises) Generic term used for PDAM and BPAMs
PDAM	Perusahaan Daerah Air Minum (Regional Drinking Water Enterprise)
PEMDA	Pemerintah Daerah. Local government at any level, usually MOHA
PERPAMSI	Persatuan Perusahaan Air Minum Seluruh Indonesia (Indonesian Water Supply Association)
Peraturan	Regulation
PH	Public Hydrant
PKK	Pembinaan Kesejahteraan Keluarga (Local Women's Welfare Organization)
PLN	Perusahaan Listrik Negara (National Electricity Enterprise)
PMD	Department of Community Empowerment
POKMAIR	Kelompok Pemakai Air (WUG)
Polindes	Poliklinik Desa (Village health sub-clinic)
Propinsi	Province (First level of local government Tk.I.)
Puskesmas	Pusat Kesehatan Masyarakat (Village Health Center)
PVC	Unplasticized Polyvinyl Chloride (Pipe)
PVP	Photovoltaic System
Rakorbang	Rapat Koordinasi Pembangunan (Project/Budget selection discussion at Tk.II) (Coordination Meeting for Development Budget Planning)
RC	RC (Reinforced Concrete)
RDWS	GOI Rural Water Supply Development Program
RESV	Reservoir
RK	Rukun Kampung (Hamlet in a rural area)
RRA	Rapid Rural Appraisal
RT/RW	Rukun Tetangga (Neighborhood)/Rukun Warga (Hamlet in an urban area)
RWSS	Rural Water Supply and Sanitation Project (ADB program)
Sawah	An area of irrigated land used for growing paddy
SC	Specific Capacity
Sekretaris	Secretary, as in Sekretaris Desa

SISKES	GOI Health Services Improvement Program
SSF	Slow Sand Filter (Water Treatment Plant))
SWL	Static Water Level
T	Temperature
TB	Tuberculosis
TBA	Traditional Birth Attendant
TNI	Tentara Nasional Indonesia. The Indonesian armed force
TP-PKK	Women's Movement Organization
Tk.I	Tingkat I. The first level of local government. I.e. Province
Tk.II	Tingkat II. The second level of local government. I.e. District
U5MR	Under 5 Mortality Rate
UDKP	Usulan Kecamatan (List of Development Planning Proposals)
UFW	Unaccounted-for-Water
UNDP	United Nations Development Program
UNICEF	United Nation Children's Fund
UU	Undang Undang (Law)
VAP	Village Action Plan
VES	Vertical Electric Sounding
WSS	Water Supply and Sanitation
WSSLIC	Water Supply and Sanitation Project for Low Income Communities (World Bank program)
WTP	Water Treatment Plant
WUA	Water Users' Association
WUG	Water Users' Group

UNITS

Length

mm = millimeter
cm = centimeter
m = meter
km = kilometer

Electric Measurement

V = Volt
A = Ampere
Hz = Hertz
W = Watt
kW = Kilowatt
MW = Megawatt

Area

cm² = square centimeter
m² = square meter
km² = square kilometer
Ha/ha = hectare

Others

% = percent
HP = horsepower
°C = Celsius degree

Volume

cm³ = cubic centimeter
m³ = cubic meter
L = liter
MCM = million cubic meter

Derived Measures

L/c/day = liter per capita per day
kWh = kilowatt-hour
MWh = megawatt-hour
kVA = kilovolt ampere
mg/L = milligram per liter
 μ g/L = microgram per liter
meq/L = milliequivalent per liter
mS/m = millisiemens per meter

Weight

mg = milligram
g = gram
kg = kilogram

Time as denominator

/sec. = per second
/min. = per minute
/hr. = per hour
/day = per day
/month = per month
/yr. = per year

Abbreviation

m.bgl = meter below ground level
m.agl = meter above ground level
m.asl = meter above mean sea level
m.bsl = meter below mean sea level

Appendix 13
SOCIAL DATA

Appendix 13

SOCIAL DATA

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Appendix 13 SOCIAL DATA

Table A13-1 General

		NTB	NTT	Indonesia
Population	1999	3,874,463	3,706,047	230,025,313
Households	1999	863,484	733,047	51,513,364
Area by km²	1999	20,153	47,349	1,922,570
Population in Urban Area	1999	780,711(20.15%)	487,716(13.16%)	39.35%
Population in Rural Area	1999	3,093,752(79.85%)	3,218,331(86.84%)	60.65%
Age Group 1999	0-14	35.24%	37.51%	30.77%
	15-64	60.80%	57.70%	64.61%
	65+	3.96%	4.78%	4.61%
Population Density (/km²)	1999	195	78	107

Population in urban & rural areas

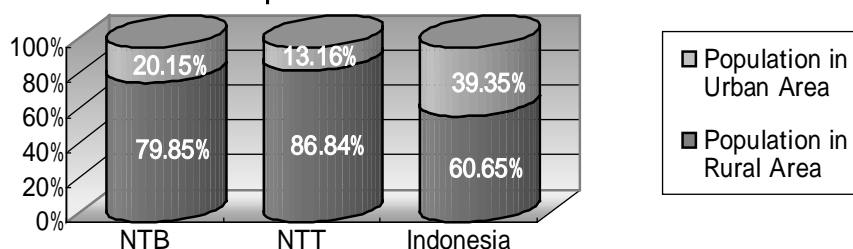
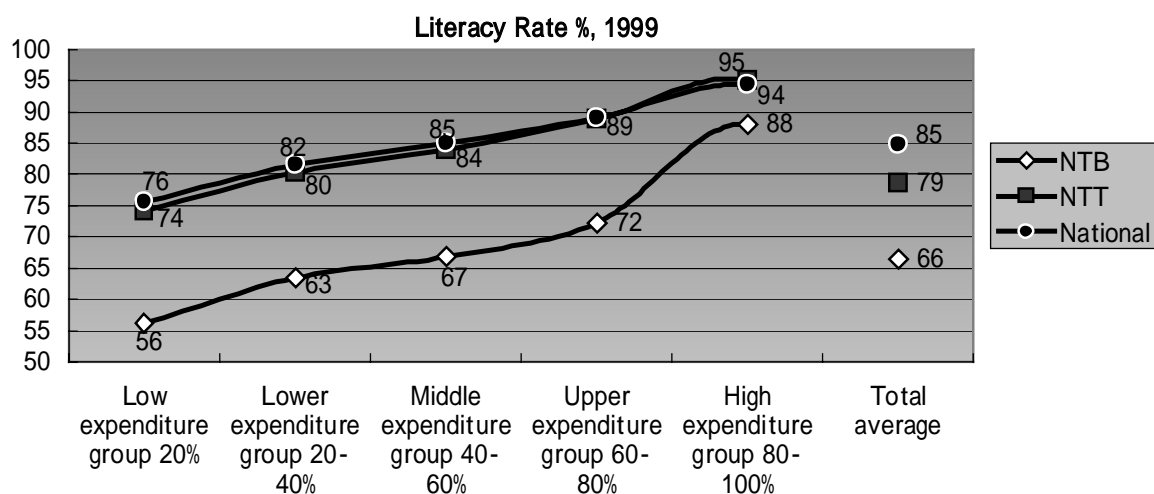


Table A 13-2 Education

		NTB	NTT	National
Literacy Rate % (1999)	Low expenditure group 20%	56.1	74.2	75.6
	Lower expenditure group 20-40%	63.4	80.3	81.5
	Middle expenditure group 40-60%	66.8	84.0	84.9
	Upper expenditure group 60-80%	72.2	88.8	89.0
	High expenditure group 80-100%	88.0	95.0	94.3
	Total average	66.4	78.6	84.8
Drop out rate of population aged 5-20 years	1992	12.0	13.2	8.0
	1996	9.78	10.92	6.09

Source : ADB, ADB Poverty Assessment : Indonesia, September 2000

Source : Health Indicator / BPS



Demography

Table A13-3 Demography

Age group		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
NTB	Male	200,582	234,844	254,585	199,108	133,359	140,153	122,915	125,760	102,509	90,465	77,894	55,645	126,393
	Female	199,287	234,610	241,635	212,771	201,756	161,482	147,286	133,858	105,573	91,092	97,215	52,494	132,040
	Total	399,869	469,454	496,220	411,879	335,115	301,635	270,201	259,618	208,082	181,557	175,109	108,139	258,433
NTT	Male	237,120	247,925	241,123	186,818	133,558	132,030	117,096	123,343	102,004	83,534	69,790	61,673	141,783
	Female	227,056	240,648	234,047	182,503	160,600	153,029	141,998	135,107	97,244	74,736	83,145	58,479	140,275
	Total	464,176	488,573	475,170	369,321	294,158	285,059	259,094	258,450	199,248	158,270	152,935	120,152	282,058

Source: NTT and NTB in Figure 1999

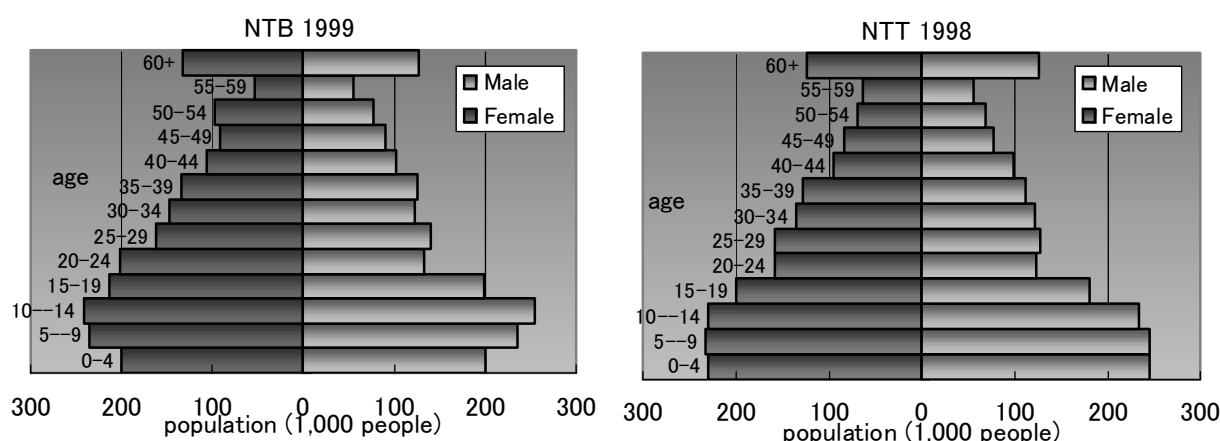


Table A13-4 Population Projection, year 1995 – 2005 (in thousands)

Province	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
NTB	3,655.3	3,720.0	3,786.0	3,853.1	3,921.3	3,990.8	4,061.5	4,133.6	4,206.9	4,281.5	4,357.4
NTT	3,588.2	3,653.5	3,719.0	3,784.5	3,850.1	3,915.7	3,981.5	4,047.1	4,112.7	4,178.2	4,243.5

Source: Population Projection Indonesia 1995-2005, BPS.

Table A13-5 Population and Annual Population Growth Rate by Districts 1971-2000

No.	Districts	Population					Pop. Growth Rate			
		1971	31 Oct. 1980	31 Oct. 1990	1995	30 Jun. 2000	1971-1980	1980-1990	1990-1995	1990-2000
1	Lombok Barat	513,606	655,257	859,273	956,741	978,178	2.74	2.25	2.17	1.35
2	Lombok Tengah	479,668	577,007	678,809	715,509	745,433	2.07	1.64	1.06	0.79
3	Lombok Timur	599,001	725,439	865,317	918,865	971,215	2.15	1.78	1.21	1.20
4	Sumbawa	245,184	304,394	373,441	401,896	441,390	2.43	2.07	1.48	1.74
5	Bima	305,111	366,740	448,104	480,710	505,032	2.07	2.02	1.41	1.24
6	Dompu	74,683	95,827	144,705	171,992	180,546	2.81	4.21	3.52	2.31
7	Sikka	190,443	219,656	246,867	261,362	262,743	1.60	1.17	1.15	0.65
8	Flores Timur	229,789	257,687	265,759	268,830	287,246	1.27	0.31	0.23	0.81
9	Ende	179,331	201,609	218,841	228,704	231,254	1.30	0.82	0.89	0.57
10	Sumba Barat	187,676	232,101	291,921	328,464	353,743	2.36	2.32	2.39	2.01
11	Sumba Timur	103,519	123,078	152,946	171,443	184,650	1.92	2.20	2.31	1.97
12	Kupang	314,836	403,167	522,944	595,152	654,239	2.75	2.64	2.62	2.34

Source: Population Census 1971, 1980, 1990, Intercensal Population Survey 1995, Population Indonesia 2000

Infrastructure

Table A13-6 Water Supply

		NTB		NTT		National	
Percentage of Households – Source of Drinking Water 1999	Pipe & Mineral Water	14.10		19.53		19.47	
	Pump, Protected Well & Spring	65.59		42.70		54.83	
	Unprotected Well & Spring	19.20		29.6		18.99	
	Rivers, Rained Water & Others	1.10		8.13		6.70	
Source: 1999 National Socio- Economic Surveys							
		Urban	Rural	Urban	Rural	Urban	Rural
Percentage of House holds – Source of Drinking Water 1999	Pipe	30.18	9.92	64.98	10.16	36.44	7.02
	Pump	9.66	7.31	0.37	0.79	21.08	8.35
	Bottled water	1.16	0.16	1.02	0.28	1.84	0.26
	Protected Well	47.32	48.66	19.54	13.76	28.87	37.40
	Unprotected Well	5.61	17.77	3.68	12.20	6.97	19.04
	Protected Spring	4.70	10.53	8.46	30.95	2.01	10.95
	Unprotected Spring	1.37	4.29	1.84	22.15	0.39	7.49
	Rivers	-	1.33	0.06	7.15	0.57	5.36
	Rain Water	-	-	-	2.01	1.41	3.67
	Others	-	0.33	0.05	0.54	0.42	0.46
Source: 1999 National Socio- Economic Survey							
		NTB		NTT		National	
Distance Between Source of Drinking Water to Septic Tank or Other Toilet Discharge % (1999)	Less than and equal to 10 meter	33.12		15.53		39.38	
	More than and Equal to 11 meter	27.54		53.25		38.89	
	Not state	39.34		31.21		21.73	
Source: 1999 National Socio-Economic Surveys							

Regional Economy

Table A13-7 Average GDRP per capita & income per capita NTB, NTT & National

Year	NTB		NTT		National	
	GRDP per capita (Rp.)	Income per capita (Rp.)	GRDP per capita (Rp.)	Income per capita (Rp.)	GRDP per capita (Rp.)	Income per capita (Rp.)
1993	724,530	688,826	610,020	579,871	1,757,970	1,490,297
1994	828,255	786,717	702,145	667,347	2,004,551	1,720,928
1995	955,313	910,043	807,272	767,220	2,345,879	2,017,733
1996	1,080,450	1,031,095	920,459	874,599	2,706,278	2,353,650
1997	1,208,115	1,153,146	1,107,737	1,055,295	3,123,763	2,720,658
1998	1,976,504	1,901,065	1,268,302	1,207,397	4,647,500	4,219,600
1999	2,100,518	2,016,385	1,466,161	1,397,805	5,377,400	4,780,353

Source: Gross Regional Domestic Product of Nusa Tenggara Barat 2000
Regional income Nusa Tenggara Timur 1993-1998, 1995-1999 BPS
National Income of Indonesia 1997-2000 BPS

Table A13-8 Sector share and transition of GRDP by province (NTB, NTT) and National

Sectors	NTB				NTT				National			
	1996	1997	1998	1999	1996	1997	1998	1999	1996	1997	1998	1999
1 Agriculture	36.66	35.95	41.77	39.35	38.91	42.87	41.90	44.05	16.67	16.09	17.57	19.48
2 Mining & quarrying	3.13	3.11	2.64	3.78	1.64	1.37	1.49	1.53	8.65	8.85	13.48	10.06
3 Manufacturing industries	4.88	4.96	5.57	5.44	2.30	2.03	1.94	1.88	25.62	26.79	24.06	25.44
4 Electric, gas, water supply	0.41	0.42	0.29	0.31	0.72	0.75	0.72	0.73	1.29	1.25	1.14	1.19
5 Construction	8.67	8.92	8.12	8.38	8.60	7.22	7.81	7.77	7.89	7.44	6.24	6.56
6 Trade, restaurant & hotel	16.87	17.58	18.08	17.27	13.95	14.47	17.11	17.58	16.36	15.84	16.96	16.40
7 Transport & communication	10.06	10.01	9.72	9.89	9.78	9.4	8.20	7.73	6.56	6.14	5.25	5.90
8 Finance, rent of building serv	3.19	3.23	2.21	1.91	4.60	4.51	3.90	3.48	8.26	8.66	7.07	6.32
9 Services	16.14	15.83	11.61	13.66	19.51	17.74	16.92	15.25	8.69	8.92	8.30	8.64
GRDP	100	100	100	100	100	100	100	100	100	100	100	100

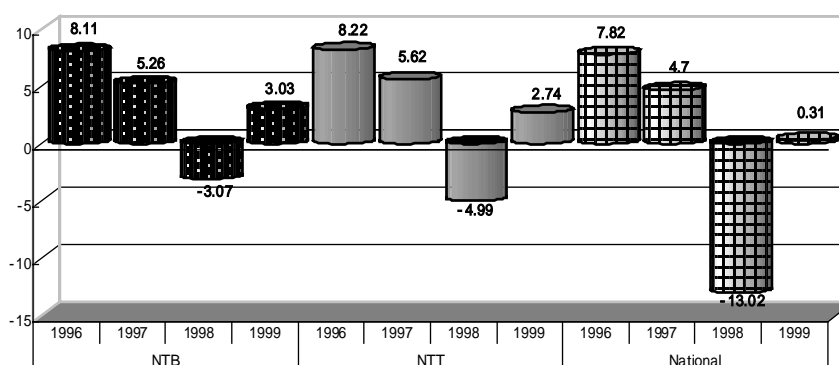
Source: Gross Regional Domestic Product of Nusa Tenggara Barat 2000
Pendapatan Regional Nusa Tenggara Timur 1993-1998 BPS

Table A13-9 GRDP Growth Rate 1996-1999 in NTB, NTT and National

Sector	NTB					NTT					National				
	1996	1997	1998	1999	Ave	1996	1997	1998	1999	Ave.	1996	1997	1998	1999	Ave
1 Agriculture	6.08	1.79	-0.36	2.47	2.50	7.30	8.23	-3.84	1.92	3.40	3.14	1.00	-0.68	2.08	1.39
2 Mining & quarrying	10.20	6.40	-12.52	44.06	12.04	9.52	-3.89	-19.46	3.39	-2.61	6.30	2.12	-2.76	-1.71	0.99
3 Manuf. indust.	11.55	6.75	-3.87	3.80	4.56	4.24	0.78	2.18	0.41	1.90	11.59	5.25	-11.44	2.59	2.00
4 Electric, gas, water supply	12.38	11.53	0.85	7.05	7.95	9.19	13.10	18.38	16.48	14.29	13.63	12.37	2.62	8.21	9.21
5 Construction	11.36	8.24	-14.57	2.89	1.98	9.93	-3.45	-20.47	3.48	-2.63	12.76	7.36	-36.46	-1.63	-4.49
6 Trade, rest. & hotel	10.78	8.63	-6.63	1.38	3.54	15.84	8.44	-0.68	5.04	7.13	8.16	5.83	-18.04	-0.43	-1.12
7 Tran & comun.	12.81	9.08	3.14	4.61	7.41	7.53	4.90	0.84	3.00	4.07	8.68	7.01	-15.13	-0.72	-0.04
8 Finance, rent of building	12.72	6.12	-17.14	-13.51	-2.95	13.36	7.05	-4.96	2.83	4.57	6.04	5.93	-26.63	-8.07	-5.68
9 Services	3.44	4.52	1.38	0.25	2.40	4.22	3.97	4.13	3.19	3.88	3.40	3.62	-3.8	1.76	1.23
GRDP	8.11	5.26	-3.07	3.03	3.33	8.22	5.62	-4.99	2.74	4.39	7.82	4.70	-13.02	0.31	-0.05

Source: Gross Regional Domestic Product of Nusa Tenggara Barat 2000
Pendapatan Regional Nusa Tenggara Timur, 1995-1999 BPS

Graph A13-9 Figure GRDP Growth Rate 1996-1999, in NTB, NTT and National



Source: Gross Regional Domestic Product of Nusa Tenggara Barat 2000
Pendapatan Regional Nusa Tenggara Timur 1995-1999 BPS

Household Economy

Table A13-10 Number of Population and percentages of Below Poverty Line in rural and urban area in NTT, NTB and National, 1999

	Urban		Rural		Total	
	Pop'n of BPL	% of BPL	Pop'n of BPL	% of BPL	Pop'n of BPL	% of BPL
NTB	249,300	31.93	1,027,600	33.21	1,276,800	32.96
NTT	146,300	29.20	1,632,700	49.39	1,779,000	46.73
National	15,642,500	19.41	32,332,200	26.03	47,974,700	23.43

Source: BPS, Penyempurnaan Metodologi Penghitungan Penduduk Miskin dan Profil Kemiskinan 1999, August 2000 (A Poverty Profile for Indonesia, 2000)

Table A13-11 Number of population and percentages of BPL in NTT, NTB and National, 1996 and 1999

	Population of BPL		% of BPL	
	1996	1999	1996	1999
NTB	1,169,300	1,276,800	31.97	32.96
NTT	1,395,100	1,779,000	38.89	46.73
National	34,164,200	47,974,700	17.55	23.43

Source: BPS: Penyempurnaan Metodologi Penghitungan Penduduk Miskin dan Profil Kemiskinan 1999, August 2000 (A Poverty Profile for Indonesia, 2000)

Table A13-12 Occupation of 10 years of ages and above in Urban and Rural Area by province, 1999. (%)

Employment Status	NTB		NTT		Indonesia	
	Urban	Rural	Urban	Rural	Urban	Rural
Self employed	26.42	18.80	18.41	12.76	23.88	22.00
Self employed assisted by temporary employee / unpaid worker	16.81	25.71	12.77	30.72	11.01	25.39
Employer	1.57	0.36	2.37	0.64	2.17	1.18
Paid worker	41.49	27.42	51.71	8.45	54.26	25.10
Unpaid worker	13.71	27.70	14.75	47.43	8.68	26.33
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: BPS, Welfare statistics, National Socio-Economic Survey, 1999

Table A13-13 Occupation of 10 years of age and above who worked during the previous week in Urban and Rural Area by province, 1999 (in %)

	Sector of occupations	NTB		NTT		Indonesia	
		Urban	Rural	Urban	Rural	Urban	Rural
Occupation of 10 years and above ages, who worked during the previous week.	Agriculture	17.57	59.44	17.65	84.43	10.01	64.20
	Mining & quarrying	0.87	0.60	0.36	0.29	0.79	0.83
	Industry	6.25	11.06	4.28	4.18	17.33	8.20
	Electricity, gas and water	0.07	0.26	0.37	0.02	0.47	0.11
	Construction	6.29	3.64	5.43	2.13	5.19	3.24
	Trade	36.90	12.73	28.61	3.18	31.46	12.72
	Transportation & Communication	6.17	3.98	4.67	1.17	7.34	3.21
	Financial	0.89	0.48	1.27	0.09	2.07	0.21
	Service	24.92	7.81	37.36	4.49	25.17	7.13
	Others	0.08	0.01	-	0.01	0.17	0.15

Source: BPS, Welfare statistics, National Socio-Economic Survey, 1999

Public Health and Hygiene

**Table A13-14 Diseases related to Water and Hygiene Environment, Malnutrition rate in Districts
1999**

Districts	Total Pop'n 1999	Types of Diseases 1999											Malnutrition Child'n <5		
		Diarrhea		Malaria		Skin-Infection		Ascariasis		Acute Respiratory Infection		Dysentery		Eye Infection	
LomBar	703,416	44,258	6%	26,988	4%	56,636	8%	n.a.	95,011	14%	21,426	3%	21,159	3%	31%
LomTen	748,518	18,899	3%	n.a.		26,234	4%	n.a.	60,835	8%	n.a.		9,386	1%	31%
LomTim	964,228	37,239	4%	n.a.		62,288	6%	n.a.	142,961	15%	21,885	2%	19,679	2%	31%
Sumbawa	424,988	7,859	2%	8,412	2%	16,687	4%	n.a.	26,188	6%	n.a.		4,919	1%	32%
Bima	509,048	19,722	4%	18,178	4%	20,879	4%	n.a.	63,206	12%	7,420	1%	n.a.		31%
Dompu	193,334	14,879	8%	33,414	17%	24,279	13%	n.a.	10,563	5%	n.a.		6,995	4%	30%
Sikka	256,176	8,424	3%	66,270	26%	16,351	6%	284	0%	107,991	42%	n.a.	n.a.		41%
FloTim	283,770	6,260	2%	49,251	17%	12,957	5%	54,549	19%	56,751	20%	n.a.	n.a.		40%
Ende	231,348	3,942	2%	27,711	12%	6,995	3%	n.a.	50,079	22%	n.a.		n.a.		38%
SumBar	342,138	4,856	1%	64,895	19%	14,709	4%	3,178	1%	7,435	2%	n.a.	n.a.		40%
SumTim	179,014	7,276	4%	85,411	48%	98	0%	85	0%	11,736	7%	n.a.	n.a.		38%
Kupang	389,100	n.a.	0%	38,594	10%	14,472	4%	654	0%	7,061	2%	n.a.	n.a.		52%

NTB: Health Report 1998-99, Provincial Health Department NTB

NTT: Health Report 1998-99, Provincial Health Department NTT

NTT: Health Report 1997, Sources Kanwil Kesehatan Provinsi NTT 1998,

NTB: Dinas Kesehatan Provinsi, Pemantauan Status Giz., Monitoring Nutrition Status, 1999.

Notes: The above data is the major illness related to water of the patient who received medical consultation. The name of a disease reported by each districts and provinces is different, and "n.a." does not mean that there is no illness.

Table A13-15 Infant Mortality Rate by 1,000 per live birth

	Infant Mortality Rate											
	1990	1992	1994	1995	1996	1997	1998			1999		
							Boy	Girl	Total	Boy	Girl	Total
NTB	123.08	113.59	105.28	101.36	97.58	94	93	77	85	89	73	81
NTT	65.60	60.51	55.77	53.54	51.40	49	66	52	59	63	50	56

Source: Estimation of Indonesian parameters Demography, BPS (Based on the 1990 Population Census).

BPS, Estimation of Demography Parameters Based on the 1995 Intercensal Survey

Table A13-16 Child Mortality Rate by 1,000 per live birth

	Child Mortality Rate				
	1990	1992	1994	1995	1996
Nusa Tenggara Barat	181.51	165.91	152.63	146.27	140.34
Nusa Tenggara Timur	89.75	81.85	74.37	70.95	67.61

Source: Estimation of Indonesian parameters Demography, BPS (Based on the 1990 Population Census).

BPS, Estimation of Demography Parameters Based on the 1995 Intercensal Survey

Table A13-17 Estimation of Demographic Parameter

		NTB	NTT	Indonesia
Crude Birth Rate (/ 1,000) Source: BPS Estimation of Demographic Parameters	1998	27.59	26.21	22.79
	1999	27.28	25.69	22.41
Crude Death Rate (/ 1,000) Source: BPS Estimation of Demographic Parameters	1998	9.99	7.61	7.69
	1999	9.68	7.29	7.51
Life Expectancy at Birth (1999) Source : BPS Estimation of Demographic Parameters	Male	55.96	61.25	63.55
	Female	59.45	65.03	67.41
	Total	57.76	63.20	65.54
Total Fertility Rate	1990	4.21	3.98	3.08
	1995	3.39	3.28	2.75
	1999	3.05	3.06	2.59
Percentage of Under-Three years by Nutritional Status(1998) Source : 1998 Health Statistics	Low	22.66	21.71	14.46
	Moderate	24.81	30.33	20.92
	Good	52.52	47.97	64.63
Birth Attendant 1999 Rural Areas (Urban) Source : 1999 National Socio – Economic Survey	Doctor	3.07 (9.69)	3.03(15.11)	4.41 (16.31)
	Midwife	27.52(44.81)	20.74(56.31)	41.35(64.44)
	Other Paramedic	0.95 (1.12)	2.42(3.32)	1.33(1.09)
	Healer	67.66(43.77)	52.18(21.53)	50.30(17.49)
	Family	0.64(0.61)	19.00(2.56)	2.03(0.34)
	Others	0.16	2.64(1.18)	0.58(0.33)

Table A13-18 Housing and Settlement

		NTB		NTT		National	
		Urban	Rural	Urban	Rural	Urban	Rural
Primary construction material of the Roof of living quarter, 1999, % of household Source: Welfare Statistics 1999, National socio-economic survey, BPS	Concrete	1.75	0.95	1.83	0.24	2.32	0.96
	Wood	0.54	0.07	-	0.64	1.65	2.27
	Tile	78.87	74.91	1.47	0.85	69.60	62.76
	Zinc	13.19	5.58	93.58	51.12	20.30	23.62
	Asbestos	1.63	0.33	-	0.16	4.40	0.47
	Sugar palm fiber	0.19	0.03	0.05	0.77	0.13	0.35
	Leaves	3.55	17.25	2.69	41.23	1.50	9.29
	Others	0.29	0.88	0.38	4.99	0.09	0.29
Primary construction material of the floor of living quarter 1999, % of household Source: Welfare Statistics 1999, National socio-economic survey, BPS	Marble / Ceramics	9.53	2.02	6.65	0.85	22.80	5.29
	Tile	4.86	1.21	7.07	0.81	26.11	11.14
	Cement / Brock	68.43	56.25	70.62	25.54	38.21	35.77
	Wood	7.40	15.03	1.06	7.05	7.05	19.61
	Bamboo	0.72	3.77	1.81	9.91	0.36	3.10
	Earth	9.05	21.70	12.73	54.98	5.39	24.61
	Others	-	-	0.05	0.86	0.09	0.47
Primary construction material of the wall of living quarter 1999, % of household Source: Welfare Statistics 1999, National socio-economic survey, BPS	Brick	75.55	52.22	49.49	18.49	75.90	42.75
	Wood	8.67	15.10	17.03	9.90	16.36	33.77
	Bamboo	15.10	32.30	21.37	41.23	6.37	20.85
	Others	0.68	0.38	12.11	30.38	1.37	2.63
Source of lighting in living quarter 1999, % of household, Source: Welfare Statistics 1999, National socio-economic survey, BPS	PLN electricity	94.27	72.13	93.18	20.32	96.98	71.80
	Non-PLN electricity	1.60	6.19	0.17	2.27	0.79	2.83
	Aladdin pumped lamp	1.43	1.12	1.49	2.56	0.61	4.32
	Oil lamp	2.70	20.42	4.99	74.44	1.53	20.02
	Others	-	0.13	0.18	0.40	0.08	1.03

Land Use and Vegetation

Table A13-19 Area of dry land by utilization by district, 1999 (in hectare)

	House Com-pounds and Surround-ing	Dry / Garden	Shifting/ Field Cultiva-tion	Grass Land Meadows	Swamp	Dyke	Water Pounds	Tempo- rary Fallow Land	Private Wood Land	State Forest	Estates	Others	Total
NTB	3 %	10%	3%	2%	0%	0%	0%	5%	14%	51%	2%	12%	100%
NTT	3 %	8%	7%	21%	17%	0%	0%	0%	6%	7%	17%	14%	100%
Lombok Barat	5224 3%	48186 29%	17958 11%	490 0%	-	353 0%	105 0%	-	908 1%	53357 33%	12316 8%	24814 15%	163711
Lombok Tengah	6993 10%	12420 18%	12 0%	85 0%	-	281 0%	1773 3%	-	2583 4%	21158 31%	5461 8%	17518 26%	68284
Lombok Timur	6981 6%	22222 19%	9022 8%	95 0%	-	865 1%	72 0%	-	2503 2%	65158 57%	677 1%	7624 7%	115219
Sum- bawa	4931 1%	46068 6%	8713 1%	11037 1%	860 0%	1821 0%	14 0%	61670 8%	186369 23%	395661 49%	7549 1%	80563 10%	805256
Bima	3862 1%	30711 7%	10877 3%	14516 3%	427 0%	1982 0%	64 0%	22366 5%	36109 8%	284703 66%	3030 1%	22706 5%	431354
Dompu	2094 1%	14633 7%	1936 1%	9606 4%	2 0%	825 0%	21 0%	2680 1%	18243 8%	98286 45%	7774 4%	60495 28%	216595
Sikka	4271 2%	22364 13%	27161 16%	55261 32%	11051 6%	72 0%	12 0%	0%	13289 8%	12190 7%	7307 4%	17966 11%	170944
Flores Timur	6623 2%	39728 13%	23347 8%	40649 13%	70647 23%	191 0%	18 0%	1 0%	36281 12%	33542 11%	41031 13%	13616 4%	305674
Ende	7658 4%	20781 11%	18392 9%	18134 9%	24157 12%	410 0%	1 0%	15 0%	19165 10%	16722 8%	40364 20%	31493 16%	197292
Sumba Barat	19991 5%	50493 13%	42692 11%	73975 19%	42979 11%	55 0%	0 0%	59 0%	20299 5%	28705 8%	51177 13%	51792 14%	382217
Sumba Timur	14910 2%	22395 3%	3742 1%	215797 32%	122309 18%	188 0%	25 0%	45 0%	17353 3%	24390 4%	150826 22%	105156 16%	677136
Kupang	25587 4%	47770 7%	42846 6%	110290 16%	133458 19%	3955 1%	201 0%	880 0%	27657 4%	54004 8%	122295 18%	118571 17%	687514

Source: Agriculture Extension Service of NTT 1999
BPS Statistics of NTB Province 1999

Table A13-20 Area size of harvested and production by province, NTB and NTT, 1999

Group		NTB			NTT		
		Area (ha)	% Within the group	Production (ton)	Area (ha)	% Within the group	Production (ton)
Paddy	Wet land paddy	292,206	90%	1,325,629	106,604	62%	341,331
	Dry Land Paddy	31,006	10%	70,448	65,796	38%	131,669
	Paddy (wet & dry)	323,212	100%	1,396,077	172,400	100%	473,000
Grain	Maize	35,739	19%	71,005	237,383	68%	493,535
	Cassava	9,112	5%	101,633	81,296	23%	822,326
	Sweet Potatoes	1,335	1%	14,525	9,420	3%	74,360
	Peanuts	21,880	12%	23,690	12,220	4%	11,848
	Soya Beans	113,935	61%	117,471	7,903	2%	5,751
	Beans	4,303	2%	20,602	234	0%	396
	Total	186,304	100%	348,926	348,456	100%	1,408,216
Vegetable	Tomato	2,398	4%	2,055	541	23%	2,231
	Spinach	295	1%	435	517	22%	937
	Swamp Cabbage	1,716	4%	3,758	115	5%	517
	Chili	36,163	87%	14,895	813	35%	119.8
	Cucumber	959	2%	1,812	333	14%	1,571
	Total	41,531	98%	22,955	2319	100%	5,376
Fruits	Avocado	12,082	0%	503	735	4%	2,336
	Mango	991,306	21%	20,587	10,866	58%	26,357
	Papaya	308,999	6%	29,160	1,765	9%	7,193
	Guava	558,139	12%	11,489	534	3%	1,597
	Bananas	493,109	10%	13,114	3,945	21%	18,878
	Pineapple	2,458,288	51%	3,508	814	4%	3,443
	Total	4,821,923	100%	78361	18,659	100%	59,804
Estate	Coconut	65,292	38%	46,392	173,187.16	36%	51,281.97
	Coffee	9,562	6%	2,885	59,705.63	13%	12,616.55
	Clove	1,595	1%	379	10,147.58	2%	615.94
	Kapok	5,726	3%	1,148	28,329.76	6%	2,770.34
	Areca Palm	1,197	1%	1,121	37,963.99	8%	4,381.48
	Tamarind	4,104	2%	4,921			730.63
	Pepper	14	0%	3.4			
	Cacao	3,759	2%	526	30,159.89	6%	3,119.18
	Sugar Cane	657	0%	545			
	Vanilla	661	0%	59	1,579.92	0%	331.09
	Cashew	48,298	28%	5,424	129,735.23	27%	13,356.68
	Tobacco	3,039	2%	1,736	3,485.40	1%	189.5
	Virginia Tobacco	15,868	9%	24,734			
	Cotton	1,969	1%	161	54	0%	6.82
	Castor Oil plant	9,530	6%	1,444	325	0%	39.22
Total	171,271	100%	91,478	474,673.56	100%	89,439.40	

Source: Agricultural service for food crops of NTB & NTT

Table A13-21 Number of livestock slaughtered by province

		NTB			NTT		
		No.	%	Slaughtered	No.	%	Slaughtered
Livestock	Cows	374,970	42%	42,748	726,439	18%	27,558
	Buffalos	163,872	19%	7,988	164,726	4%	1,274
	Horses	72,094	8%	2,725	151,508	4%	
	Goats	234,063	27%	8,524	654,742	16%	49,470
	Sheep	16,543	2%	474	151,296	4%	149
	Pig	21,507	2%	3,050	2,233,692	55%	42,930
	Total	883,049	100%		4,082,403	100%	

Source: Livestock service of NTB & NTT

Table A13-22 Basic Data - NTB

	Village	Sub-district	District	Area (100ha)	Hamlet	Household (1999)	Population (1999)	Religion	Year	
1	Kuranji	Labuapi	LomBat	6.00	8	1,431	4,838	Moslem	4,466	1999
2	Bajur			3.20	5	1,298	6,033			1999
3	Sembung	Narmada	LomBat	1.64	3	669	2,612	Moslem	2,608	1999
4	Duman			14.00		2,728	9,901			1998
5	Peresak			6.70	10	2,461	9,296	Moslem	8,675	1998
6	Jelantik	Jonggat	LomTen	7.76		1,929	7,906			1999
7	Labulia			10.61		1,985	8,860			1999
8	Setanggor	Praya Barat	LomTim	11.76	7	1,346	4,946	Moslem	4,938	1999
9	Rembitan	Pujut		14.75	10	1,261	5,291	Moslem	5,291	1999
10	Bagik Papan	Pringgabaya		9.00		2,119	8,912	Moslem	8,912	1999
11	Selaparang	Swela*	Sumbawa	8.00		832	3,278	Moslem	3,278	1999
12	Batunamapar	Kruwu*		9.24	5	1,149	4,075			1999
13	Labuan Mapin	Alas Barat*		23.69	5	1,191	4,729	Moslem	4,729	1998
14	Labuan Lalar	Taliwang	Bima	30.79	3	655	3,101	Moslem	3,101	1999
15	Poto	MoyoHilir		13.67	4	516	2,136	Moslem	2,136	1999
16	Piong	Sanggar		366.00	2	267	1,343	Moslem	1,328	1999
17	Labuan Kenangga		Dompu	47.00	2	332	1,250	Moslem	1,203	1999
18	Kawuwu	Wawo		13.24	2	230	830	Moslem	830	1999
19	Ranggo	Hu' u		54.25	6	1,122	4,817	Moslem	4,817	1999
20	Jambu	Pajo*	Manggalewa*	35.50	5	564	2,724	Moslem	2,724	1999
21	Hodo									
22	Kawanko			23.83	3	451	1,788	Moslem	1,760	1999

Table A13-23 Basic Data - NTT

	Village	Sub-District	District	Area (100ha)	Hamlet	Household	Pop.	Religion	Year	
4	Mekendatung	Kewapante	Sikka	5.27	3	324	1,626	Catholic	1,626	1997
5	Kokowahor			3.93	3	446	2,233	Catholic	1,233	1997
6	Sinar Hading	Tanjung Bunga	FloTim	19.22	2	178	923	Catholic	918	1996
7	Ille Padung			29.80	4	248	1,060	Catholic	1,060	1996
8	Watuneso	Wolowaru	Ende	3.71	13	417	1,927	Catholic	1,885	1999
9	Borokanda	Ende Selatan		14.88	4	444	1,758	Moslem	1,394	1999
10	Bheramari	Nangapanda		14.40	4	302	1,670	Catholic	1,312	1999
11	Nggorea	Ende Selatan	Sikka	12.14	3	260	1,308	Moslem	1,308	1999
12	Ndetundora I			5.90	3	136	825	Catholic	818	1999
13	Hepang	Lela	SumBar	4.47	4	484	2,426			1998
14	Bloro	Nita		15.33	4	607	3,600	Catholic	3,594	1998
15	Watuliwung	Kewapante		6.78	3	685	3,245	Catholic	3,226	1997
16	Patialadete	Walakaka	SumTim	35.41	4	400	2,143	Protestant	503	1997
17	Welebo			8.99	4	310	1,766	Protestant	703	1997
18	Weerame	Wejewa	Kupang	10.26		346	2,137	Protestant	1,911	1996
19	Kondamara	Lewa		31.20	4	404	2,456	Protestant	2,091	1999
20	Pulupanjang	Pandawai		89.30		331	1,451	Protestant	608	1999
21	Oebao	Pantai Baru	Kupang	23.89	5	220	849	Protestant	849	1999
22	Sonimanu			5.76	5	125	475	Protestant	475	1999
23	Nusakdale			7.69	5	220	803	Protestant	798	1999
24	Tarus	KupanTengah	Kupang Barat	10.19		1,263	5,939	Protestant	4796	1999
25	Bolok			12.76	5	320	1,522	Protestant	1,584	1999

Source: Kecamatan in Figure

Appendix 14

SUMMARY OF VILLAGE PROFILES

Appendix 14

SUMMARY OF VILLAGE PROFILES

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Table A14-1 Summary of Village Profile of NTB (Socio-Economic Characteristics) (1/2)

NTB			SOCIO-ECONOMIC CHARACTERISTICS														Water use in house	
No.	Village	District	Population	No. of Housholds	Ave. persons per Household	No. of Dusun	Main Religion	%	Main Ethnic Background	%	Income per household (Rp./Month)	Main Diseases	Place to defecate	%	Waste water disposal	%	Boil water before %	Wash hands after defecate %
1	Kuranji	Lombok Barat	5,100	1,426	4	11	Muslim Hindu	95 5	Sasaknese Hindunese	95 5	150,000	Skin Diarrhea	River Others	65 35	Neglected Effective Others	80 17 3	40	25
2	Bajur	Lombok Barat	6,134	1,413	5	4	Muslim Hindu Others	97 3 1	Sasaknese Hindunese Others	97 3 1	150,000	Skin Diarrhea	River Latrine	90 10	Neglected Trench Others	70 15 15	40	15
3	Sembung	Lombok Barat	2,804	792	4	6	Muslim Hindu	99 1	Sasaknese Balinese	99 1	125,000	ARI Diarrhea	River Latrine/ Others	81 19	Neglected Trench	55 35	52	65
4	Duman	Lombok Barat	4,580	1,125	4	7	Muslim Hindu	80 20	Sasaknese Balinese	80 20	150,000	ARI, Skin Diarrhea	River Latrine	57 33	Neglected Effective/others	78 22	78	22
5	Peresak	Lombok Barat	92,83	3,042	3	10	Muslim Hindu	86 14	Sasaknese Balinese	86 14	150,000	ARI, Skin Diarrhea	River Latrine/etc	53 47	Trench Effective/Others	95 5	11	23
6	Jelantik	Lombok Tengah	8,170	2,115	4	8	Muslim Hindu	99 1	Sasaknese Balinese	99 1	150,000	ARI, Skin Eye, Diarrhea	Latrine River/etc	46 54	Muddy Trench/Negle. Effective	42 38 20	19	21
7	Labulia	Lombok Tengah	9,542	2,457	4	9	Muslim	100	Sasaknese	100	100,000	Gastr,ARI, Eye Skin, Diarrhea	River/Garden Latrine/etc	93 7	Negle/Trench Muddy	60 40	6	1
8	Setanggor	Lombok Tengah	4,700	1,443	4	11	Muslim Hindu	99 1	Sasaknese Hindunese	99 1	100,000	Diarrhea, Eye, Skin Worms, Gastr, ARI	River/Garden Latrine/etc	79 21	Trench Neglected/etc	80 20	11	4
9	Rembitan	Lombok Tengah	6,223	2,264	5	11	Muslim	100	Sasaknese	100	100,000	Skin, Eye, ARI Diarrhea, Worms	River/Garden Latrine/etc	87 13	Neglected Effective	98 2	3	31
10	Bagik Papan	Lombok Timur	8,964	2,396	4	9	Muslim	100	Sasaknese	100	395,000	ARI, Skin, Diarrhea	River/Garden Latrine	76 24	Negle/Trench Effective	84 16	23	37
11	Selaparang	Lombok Timur	3,566	1,061	4	4	Muslim	100	Sasaknese	100	225,000	Skin, Gastris, Eye Diarrhea	River/Garden Latrine	64 36	Trench/Negle. Effective	65 35	25	13
12	Batunampar	Lombok Timur	4,115	1,235	3	5	Muslim	100	Sasaknese	100	250,000	ARI, Eye, Skin Worms, Diarrhea	Riv./Beach Latrine	75 25	Negle/Trench Effective	84 16	21	1
13	Labuhan Mapin	Sumbawa	4,819	1,223	4	5	Muslim	100	Sulawesi/etc Sasaknese	77 23	125,000	Diarrhea, Skin Malaria, Worms	Beach/Riv/etc Latrine/etc	81 19	Neglected Trench/Effective	42 58	60	37
14	Labuhan Lalar	Sumbawa	2,899	629	5	3	Muslim	100	Sumbawa Sulawesi/etc	60 40	225,000	Malaria, Diarrhea Worms, Skin, Eye	Beach/Riv/etc Latrine/etc	70 30	Muddy/Neglec. Effective	63 37	56	45
15	Poto	Sumbawa	2,332	516	5	5	Muslim	100	Sumbawa Bima/Sas./etc	99 1	100,000	Skin, Worms, eye ARI, Diarrhea	River/Garden Latrine/etc	79 21	Muddy/Neglec. Effective	83 17	15	3

Note :

- ARI : Acut Respiratory Infection
- Diarr : Diarrhea
- Sumba: Sumbawanese
- Gast : Gastoenteritis
- Sas : Sasaknese

Table A14-1 Summary of Village Profile of NTB (Socio-Economic Characteristics) (2/2)

NTB			SOCIO-ECONOMIC CHARACTERISTICS														Water use in house	
No.	Village	District	Population	No. of Housholds	Ave. persons per Household	No. of Dusun	Main Religion	%	Main Ethnic Background	%	Income per household (Rp./Month)	Main Diseases	Place to defecate	%	Waste water disposal	%	Boil water before %	Wash hands after defecate %
16	Piong	Bima	1,703	373	5	3	Muslim Catholic	99 1	Bimanese Ambon	99 1	62,500	Diarrhea, ARI Malaria, worms	River/Garden Latrine	97 3	Neglected	100	15	5
17	Labuhan Kenanga	Bima	1,469	386	4	4	Muslim Hindu/etc	97 3	Bimanese Sumba/Sas/Etc	77 23	83,300	Malaria,ARI Diarrhea, Eye, Gast	Beach/Riv/etc Latrine	95 5	Neglected	100	1	18
18	Kawuwu	Bima	845	250	3	2	Muslim	100	Bimanese	100	62,500	Malaria,ARI, Skin Diarrhea, worms	River/Garden Latrine	98 2	Neglected	100	25	18
19	Ranggo	Dompu	5,560	1,065	5	6	Muslim	100	Mbojo Sasaknese	99 1	150,000	ARI, Diarr, Worms Malaria, Eye, Skin	River/Garden Latrine/etc	79 21	Neglec./Muddy Effective	98 2	13	0
20	Jambu	Dompu	2,330	732	3	6	Muslim Protestan	99 1	Dompu/Mbojo Sasaknese	96 4	150,000	Diarrhea, Malaria ARI, Skin, Eye	River/Beach Latrine	84 16	Neglec./Muddy Effective	90 10	10	20
22	Kwangko	Dompu	2,115	563	4	3	Muslim Kristen	98 2	Bima/Sumbawa Bugis	55 45	100,000	Skin, Malaria, ARI Diarrhea, Worms	Beach/Garden Latrine	84 16	Neglec./Muddy Effective	15 85	16	16

Note :

- ARI : Acut Respiratory Infection
- Diarr : Diarrhea
- Sumba: Sumbawanese
- Gast : Gastoenteritis
- Sas : Sasaknese

Table A14-2 Summary of Village Profile of NTB (Drinking Water Use and WUG)(1/2)

NTB			DRINKING WATER USE														WATER USERS GROUP (WUG)										
No.	Village	District	HC		PAH		Public Tap		Dug well		Spring		River		Average distance to water M	Quality of drinking water				Water collection		Willings					
			Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %		Good %	Fair %	Dirty %	Salty %	Ave. No.of times	Ave. collected /liters	to pay		to formulate		to participate	
																						Yes %	No %	Yes %	No %	Yes %	No %
1	Kuranji	Lombok Barat	-	-	-	-	-	-	90	90	10	10	-	-	75	100	-	-	-	4	80	100	-	100	-	100	-
2	Bajur	Lombok Barat	-	-	-	-	7	7	93	93	-	-	-	-	20	100	-	-	-	3	60	90	10	90	-	100	-
3	Sembung	Lombok Barat	3	3	-	-	3	3	49	47	46	47	-	-	48	100	-	-	-	3	100	92	8	92	-	100	-
4	Duman	Lombok Barat	8	7	-	-	40	31	33	20	18	29	-	15	150	90	-	10	-	4	88	97	3	100	-	97	-
5	Peresak	Lombok Barat	4	4	-	-	25	25	19	19	32	56	-	-	187	93	-	7	-	3	60	100	-	97	-	97	-
6	Jelantik	Lombok Tengah	-	-	-	-	100	100	-	-	11	-	-	-	209	88	-	12	-	4	88	100	-	100	-	100	-
7	Labulia	Lombok Tengah	-	-	-	-	-	-	100	100	-	-	-	-	170	100	-	-	-	3	60	78	22	100	-	100	-
8	Setanggor	Lombok Tengah	-	-	-	-	-	-	100	100	-	-	-	-	52	100	-	-	-	3	60	83	13	100	-	100	-
9	Rembitan	Lombok Tengah	-	-	-	-	-	-	100	100	-	-	-	-	186	97	-	-	3	3	60	86	14	100	-	100	-
10	Bagik Papan	Lombok Timur	-	-	22	23	-	-	64	63	6	6	8	8	79	100	-	-	-	2	40	85	15	97	3	97	3
11	Selaparang	Lombok Timur	16	16	-	-	-	-	84	84	-	-	-	-	68	100	-	-	-	3	60	100	-	100	-	100	-
12	Batunampar	Lombok Timur	-	-	-	-	-	-	100	100	-	-	-	-	648	85	-	-	15	2	40	85	15	100	-	97	3
13	Labuhan M	Sumbawa	52	51	-	-	23	23	26	23	-	-	-	3	11	100	-	-	-	3	-	97	3	63	37	63.3	36.7
14	Labuhan L	Sumbawa	-	-	-	-	-	-	48	48	-	-	-	-	560	46	-	-	44	2	40	96	4	100	-	100	-
15	Poto	Sumbawa	-	-	-	-	-	-	65	65	-	-	5	35	92	40	-	60	-	3	120	100	-	100	-	100	-
16	Piong	Bima	-	-	-	-	-	-	95	95	5	5	-	-	26	67	-	33	-	8	160	100	-	100	-	100	-

Note :

14 Labuhan Lalar = Buying Water (BW) = 52% PAH : Penampungan Air Hujan (Rain Water Tank)
 HC : House Connection M : Meter

Table A14-2 Summary of Village Profile of NTB (Drinking Water Use and WUG)(2/2)

NTB			DRINKING WATER USE																		WATER USERS GROUP (WUG)						
No.	Village	District	HC		PAH		Public Tap		Dug well		Spring		River		Average distance to water M	Quality of drinking water				Water collection		Willings					
			Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %	Rainy season %	Dry season %		Good %	Fair %	Dirty %	Salty %	Ave. No. of times	Ave. collected /liters	to pay		to formulate		to participate	
																						Yes %	No %	Yes %	No %	Yes %	No %
17	Labuhan Kenanga	Bima	3	3	-	-	22	14	59	59	-	3	-	-	16	100	-	-	-	8	166	100	-	100	-	100	-
18	Kawuwu	Bima	5	5	-	-	45	45	-	-	50	50	-	-	92	100	-	-	-	6	122	100	-	100	-	100	-
19	Ranggo	Dompu	-	-	-	-	-	-	81	81	22	22	16	16	40	97	-	3	-	3	60	53	47	91	9	97	3
20	Jambu	Dompu	-	-	-	-	-	-	62	62	38	38	-	-	95	100	-	-	-	3	60	88	12	96	4	92	8
22	Kwangko	Dompu	3	3	-	-	81	81	-	-	8	5	-	-	256	100	-	-	-	3	60	70	30	50	50	45	55

Note:

HC : House Connection

PAH : Penampungan Air Hujan (Rain Water Tank)

M : Meter

Table A14-3 Summary of Village Profile of NTT (Socio-Economic Characteristics) (1/2)

NTT			SOCIO-ECONOMIC CHARACTERISTICS															
No.	Village	District	Population	No. of House holds	Ave. persons per House hold	No. of Dusun	Main Religion	%	Main Ethnic Background	%	Income per household (Rp./Month)	Main Diseases	Place to defecate	%	Waste water disposal	%	Water use in house	
																	Boil water before drinking %	Wash hands after defecate %
4	Mekendatur	Sikka	1,712	368	5	3	Catholic	100	Sikka	100	90,000	ARI, Skin, Malaria Diarrhea, Eye, Worms	River/Garden Latrine	90	Muddy/Neglec. Trench	98	1	0
5	Kokowahor	Sikka	1,330	336	4	3	Catholic	100	Sikka	100	150,000	ARI, Malaria, Skin Diarrhea, Eye	River/Garden. Latrine	90	Muddy/Neglec. Trench	98	31	0
6	Sinar Hadin	Flotim	1,162	251	5	4	Catholic	100	Lamaholot	100	80,000	ARI, Malaria, Skin Diarrhea, Eye, Worms	Latrine Pub. wc	95	Neglected	100	27	0
7	Ile Padang	Flotim	986	226	4	3	Catholic	100	Lamaholot	100	200,000	Malaria, Skin, Eye Diarrhea	Indv. wc Pub. wc	90	Trench Neglected	75	36	14
8	Watuneso	Ende	1,508	510	3	5	Catholic Muslim/etc	99	Lio	100	350,000	ARI, Diarrhea, Skin Malaria, Worms	River/Garden Latrine	60	Neglec./Muddy/etc Effective	40	27	9
9	Borokanda	Ende	1,587	518	3	4	Cath/Prot Muslim	28	Ende	100	400,000	Malaria, Cacingan Diarrhea, Kulit, ARI	Latrine Beach/Garden	60	Trench Neglected	60	29	20
10	Bheramari	Ende	1,925	439	4	6	Cath/Prot Muslim	78	Ende	100	100,000	ARI, Skin, Malaria Diarrhea	River/Garden/et Latrine	40	Neglected Muddy	50	18	14
11	Nggorea	Ende	1,863	418	4	3	Muslim Catholic	99	Ende	100	200,000	ARI, Darrhea, Skin Malaria, Worms	Beach Latrine	55	Neglected Muddy	90	21	21
12	Ndetundora	Ende	718	140	5	2	Catholic Muslim	99	Ende	100	70,800	Malaria, ARI, Skin Diarrhea, Worms	River/Garden Latrine	50	Neglec./Trench Muddy	50	29	17
13	Hepang	Sikka	2,539	562	5	4	Catholic Protestant	99	Sikka	100	25,000	ARI, Malaria, Worms Eye, Skin, Diarrhea	Beach/Garden Latrine	80	Muddy/Neglec./etc Muddy	95	30	3
14	Bloro	Sikka	3,320	320	10	4	Catholic	100	Sikka	100	175,000	ARI, Malaria, Worms Eye	River Latrine	16	Neglec./Mud/etc Effective	90	29	0
15	Watuliwung	Sikka	1,761	387	5	3	Cath/Prot Muslim	99	Sikka Tim/Jawa	99	125,000	ARI, Eye inf, Skin Worms, Malaria	Garden Latrine	50	Neglec./Trench Effective	95	32	0
16	Patialadete	Sumbar	1,227	248	5	3	Kristen Marapu	37	Wanukaka	100	100,000	ARI, Malaria, Worms Eye, Skin, Diarrhea	Garden Latrine	84	Neglected Trench	88	18	11
17	Welebo	Sumbar	1,213	374	4	4	Protestant Marapu	25	Lamboya	100	125,000	ARI, Diarrhea, Skin Malaria, Worms	Garden Latrine	40	Trech/Neglec. Muddy	70	19	4
18	Weerame	Sumbar	2,294	413	6	4	Kristen Marapu	30	Wewewa Flores/Alor	99	300,000	ARI, Malaria, Worms Eye, Skin, Diarrhea	Latrine	100	Trench/Neglec. Muddy	70	34	2
19	Kondamara	Sumtim	2,553	563	5	4	Prot/Cath Marapu	72	Cambera Sabu/Timor	99	500,000	Malaria, ARI, Skin Gastroe, Diarr, Worms	River/Garden Latrine	75	Neglected	100	26	6

Note :

- ARI : Acut Respiratory Infection
- Gast : Gasttoenteritis
- Cath : Catholic
- Prot : Protestan
- Bud : Budha
- Flo : Floresnese
- Kiss : Kisarnese
- Tim : Timornese
- Flotim : Flores Timur
- Sumbar : Sumba Barat
- Sumtim : Sumba Timur

Table A14-3 Summary of Village Profile of NTT (Socio-Economic Characteristics) (2/2)

NTT			SOCIO-ECONOMIC CHARACTERISTICS															
No.	Village	District	Population	No. of House holds	Ave. persons per House hold	No. of Dusun	Main Religion	%	Main Ethnic Background	%	Income per household (Rp./Month)	Main Diseases	Place to defecate	%	Waste water disposal	%	Water use in house	
																	Boil water before drinking %	Wash hands after defecate %
20	Pulupanjang	Sumtim	1,555	358	4	3	Marapu Catholic	72	Cambera	100	350,000	ARI, Malaria, Gastris, Skin, Worm	Latrine River	80	Trench Neglected	60	24	4
21	Oebao	Kupang	834	225	4	5	Protestant	100	Rote Tim/Ambon	99	500,000	ARI, Malaria, Diarrh, Gastris, Skin, Eye	Garden Latrine	90	Neglected	100	17	2
22	Sonimanu	Kupang	470	125	3	5	Protestant	100	Flo/Kiss/Tim Rote	3	100,000	ARI, Malaria, Gastris, Diarrhea, Skin	Garden Latrine	35	Neglected Trech	90	8	8
23	Nusakdale	Kupang	841	227	4	5	Protestant Muslim	99	Flo/Tim/etc Rote	2	100,000	Malaria, Gastris, ARI, Worm, Skin, Diarrh	Garden Latrine	70	Neglected	100	23	3
24	Tarus	Kupang	8,907	1,231	7	5	Protestant Muslim Hindu/Bud	68	Rote/Sabu Mix ethnic	73	200,000	ARI, Skin, Malaria, Diarrhea, Eye	Latrine	100	Neglected Muddy	90	21	6
25	Bolok	Kupang	1,727	371	5	5	Protestant Muslim	99	Helong/ Rote Tim/Alor	80	200,000	ARI, Gastris, Skin, Diarrhea	Latrine	100	Neglected	100	24	18

Note :

- ARI : Acut Respiratory Infection
- Prot : Protestan
- Kiss : Kisarnese
- Sumbar : Sumba Barat
- Gast : Gastroenteritis
- Bud : Budha
- Tim : Timornese
- Sumtim : Sumba Timur
- Cath : Catholic
- Flo : Floresnese
- Flotim : Flores Timur

Table A14-4 Summary of Village Profile of NTT (Drinking Water and WUG) (1/2)

NTT			DRINKING WATER USE																	WATER USERS GROUP (WUG)							
No	Village	District	HC		PAH		Public Tap		Dug well		Spring		Riverer		Average distance to water sources M	Quality of drinking water				Water collection		Willingnes					
			Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season		Good	Fair	Dirty	Salty	Ave. No.of collection day times	Ave. collected water per household /liters	to pay		to formulate		to participate	
			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
4	Mekendatun	Sikka	-	-	40	40	18	6	-	12	-	4	-	-	10	90	-	10	-	2	30	95	5	100	-	90	10
5	Kokowahor	Sikka	-	-	40	40	-	-	-	14	-	7	-	-	4,680	90	-	10	-	2	85	95	5	100	-	90	10
6	Sinar Hading	Flotim	-	-	-	-	-	-	50	50	50	50	-	-	100	-	55	45	-	4	120	45	55	40	60	35	65
7	Ile Padang	Flotim	-	-	-	-	-	-	-	-	100	100	-	-	1,075	100	-	-	-	4	100	95	5	65	35	75	25
8	Watuneso	Ende	11	5	-	-	5	5	8	5	22	19	19	22	661	48	44	8	-	2	95	50	50	100	-	100	-
9	Borokanda	Ende	-	-	-	-	77	77	27	27	-	-	-	-	10	80	-	-	20	3	140	85	15	95	5	95	5
10	Bheramari	Ende	-	-	-	-	35	35	27	27	22	22	19	19	339	60	40	-	-	2	100	60	40	100	-	100	-
11	Nggorea	Ende	-	-	-	-	41	41	11	11	3	-	-	-	52	100	-	-	-	3	110	0	100	50	50	50	50
12	Ndetundora	Ende	-	-	39	39	-	-	-	-	62	62	-	-	672	100	-	-	-	2	110	91	9	86	14	86	14
13	Hepang	Sikka	3	3	17	17	3	3	11	11	-	8	3	8	419	40	30	15	15	2	90	85	15	100	-	100	-
14	Bloro	Sikka	3	3	38	8	49	51	-	-	-	-	-	24	2,062	55	45	-	-	3	110	95	5	100	-	100	-
15	Watuliwung	Sikka	5	5	-	-	8	5	16	19	-	3	-	-	3,025	44	30	-	26	2	110	75	25	100	-	100	-
16	Patialadete	Sumbar	-	-	3	3	-	-	-	-	51	51	3	8	374	80	20	-	-	2	40	100	-	100	-	100	-
17	Welebo	Sumbar	-	-	-	-	-	-	27	30	8	8	19	16	600	90	10	-	-	3	65	90	10	95	5	100	-
18	Weerame	Sumbar	-	-	-	-	26	22	-	-	74	67	-	11	594	44	56	-	-	2	85	90	10	100	-	100	-
19	Kondamara	Sumtim	-	-	11	8	-	-	72	76	14	13	3	3	250	95	5	-	-	4	110	25	75	100	-	100	-

Note.

HC : House Connection

PAH : Penampungan Air Hujan (Rain Water Tank)

M : Meter

Table A14-4 Summary of Village Profile of NTT (Drinking Water and WUG) (2/2)

NTT			DRINKING WATER USE																	WATER USERS GROUP (WUG)							
No	Village	District	HC		PAH		Public Tap		Dug well		Spring		Riverer		Average distance to water sources M	Quality of drinking water				Water collection		Willingnes					
			Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season	Rainy season	Dry season		Good	Fair	Dirty	Salty	Ave. No.of collection day times	Ave. collected water per household /liters	to pay		to formulate		to participate	
			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
20	Pulupanjang	Kupang	-	-	-	-	-	-	17	5	35	8	8	46	1,082	5	80	15	-	2	45	0	100	100	-	100	-
21	Oebao	Kupang	-	-	-	-	-	-	81	81	19	19	-	-	198	100	-	-	-	9	250	100	-	100	-	100	-
22	Sonimanu	Kupang	-	-	-	-	-	-	19	19	81	81	-	-	221	90	10	-	-	3	40	100	-	100	-	100	-
23	Nusakdale	Kupang	-	-	-	-	-	-	7	7	67	67	26	26	700	70	10	-	20	4	160	80	20	100	-	95	5
24	Tarus	Kupang	-	-	-	-	6	5	76	68	-	-	18	26	50	75	25	-	-	3	200	100	-	100	-	100	-
25	Bolok	Kupang	-	-	32	11	-	-	43	46	16	14	-	3	700	15	7	44	33	4	115	80	20	88	12	92	8

Note.

HC : House Connection

PAH : Penampungan Air Hujan (Rain Water Tank)

M : Meter

Appendix 15

***RAPID RURAL APPRAISAL /SUMMARY SHEETS OF
RAPID RURAL APPRAISAL (RRA) SURVEY***

Appendix 15

RAPID RURAL APPRAISAL/ SUMMARY SHEETS
OF RAPID RURAL APPRAISAL (RRA) SURVEY

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Table A15-1 List of RRA Findings – NTB (1/3)

	Bagik Papan (East Lombok)	Kawuwu (Bima)	Poto (Sumbawa)
Date of RRA	Tuesday 13 March 2001.	Thursday, 22 March, 2001.	Saturday, 24 March 2001
No. Participants	65	55	46
Participants in RRA	-Community members, -Women's group (PKK), -Field Officer from Family Planning Dept. (PLKB), -Village development council (LKMD), -Religious Leaders, -Cultural Leaders, -Village Midwife, -Community Counseling Officer and Sanitarian from Community Health Center, -Chairman of Team, -Head of the Village and four village staff, -Nine Head of hamlets, -Village volunteers, -Irrigation water users group (P3A) from District Level.	-Community members, -Religious leaders, -Traditional Birth Attendant (TBA), -Heads of hamlets, LKMD, -Teachers and PKK members, -Sub-district personal related to water and sanitation, -Health Department staff related to water /hygiene and sanitation, -PDAM staff.	-Young women's group, -Women's group (PKK), -Teachers, -Head of the village and four staff, -Sanitarian from sub-district, -Heads of the hamlets and 13 heads of neighborhoods, -Culture leaders, -Religious leaders, -Community members, -Head of social culture division from BAPPEDA II, -Kimpraswil staff, -PDAM staff, -Health staff.
General information			
Population	8,940	843	2,332
Households	2,432	216	569
Houses	2,157	216	565
Distance to District office	District level: 25 minutes by car. Sub-district level: 10 minutes by car.	District level: 40 km 90 minutes. Sub-district level: 30 km 50 minutes by car.	District level: 14 km/40 minutes Sub-district level: 5 km/15 minutes by car
Hamlets (Dusun)	9 Hamlets; Tongtongsuit, Bampak, Bagik Papan, Banjar Daye, Banjar Lang, Tapen Daye, Tapen Lang, Tegaron, and Temanjor.	2 hamlets : Lante and Kalemba.	5 hamlets: Poto, Berkat, Tengke A, Tengke B, Samri
Ethnicity and Language	Sasak.	Sumbawa and Bima.	Sumbawa and Balinese
Community Organization	-Village development council (LKMD) : incl. one woman, -Village community committee (LMD): no women, -Youth group (Karang Taruna), -Religious group, -Women's group (PKK), -Family welfare workers.	-LKMD, -Women's group (PKK), -Youth group, -Religious group, -Integrated health service posts (Posyandu), -Women's praying group.	-Village development council (LKMD), -Women's group (PKK), - Unit dasawisma consisting of women from 10 families, -Youth group (Karang Taruna), -Praying group, -Integrated health post (Posyandu).
NGO/Donor/ Gov. Activity	AusAID and CARE, no NGOs in the village at present.	Plan International (sponsorship) at present, income generating activities through PMD (BAPPEDA).	ESWS-AusAID (1995-96), UNICEF, No NGO in the village at present.
Occupation	Most villagers are farmers who are growing rice, corn (harvest two times a year) and tobacco.	Most of villagers are agricultural farmers for rice, corn, green and soy beans (harvest two times a year).	Most are agricultural farmers (harvest once a year). Others are for fishery, home industry, and cattle.
Water			
Utilization of Water	Most of the community is using dug well water for drinking, cooking and praying; and water from the river for toilet, washing, bathing, cooking and drinking. In the dry season the community uses the river.	The water is utilized for cooking, drinking and praying. The community prefer to use the river for bathing, washing, cooking, drinking, defecating, and washing animals.	Most of the community use water from the river and the dug wells. The communities prefer to use river for defecating, washing, bathing, washing the foods before cooking, and washing animals.
Water Collection	- Women, young girls and boys are responsible for the collection of water: 3-5 times a day about 50-60 liters in total, by bucket. - The distance is about 500m-1km in the dry season.	- Women and young girls are responsible for collecting water about 5 times a day that is about 50 liters total, using clay pot. - The distance from the most remote hamlet about 2 km.	- Women, young girls (6-15 years olds) are responsible for collecting water; men who live in upper hills help to collect water. 5 times a day and about 50 liters total. -The distance from the most remote hamlet 0.5-2 km.

Table A15-1 List of RRA Findings – NTB (2/3)

	Bagik Papan	Kawuwu	Poto
Water Supply Situation	- 189 dug wells (about 2-15m deep), - 28 household connections managed by community at Topen Hamlet, - 5 rain water collection tanks.	- 5 dug wells (water only available during the wet season), - Most of the villagers use water from the river during the dry season, - 6 springs (one near by river), - Springs (about 2-3 km).	- Water sources in the community consist of 87 dug wells (depth about 6-16 m), only 8 dug wells are used in the dry season. - 6 hand pumps belonging to individuals (cannot be used during the dry season due to shortage of water and change the taste of water).
Water Quality	Never checked by any institution before.	Never checked by any institution before.	- Checked by ESWS few years ago. - The water quality is very poor; salty, color, dirty, not fresh, and dry during dry season.
Other Water Resources	- Spring: 8 km from the village (30 liters /sec.). - Lake: distance from the village is 3-5 km.	- Spring: 2-3 km from the village.	- 2 springs: at the hill (communities are expected to have piping system from the spring).
Willingness to Pay	The community said as long as water is available, they are willing to pay Rp.1,000 per month for public taps. To avoid problems, user regulation should be developed within the community. Families who use more water should pay more.	Most of the community willing to pay for O&M about Rp. 1,000- 2,000 per month and they are willing to pay more as long as the water services available.	Most of the community willing to pay for O&M about Rp.2,000-3,000 per month.
Water Users Association	Does not exist. They are interested in establishing a Water Users Association for the purpose of clean water. They have irrigation water users group called P3A. The users pay Rp.15,000/ha per month. But the regulations were not suitable to the community, so the users stopped paying the fees.	-Does not exist. -The community is interested in establishing the WUA, as long as the members are the users themselves. WUA should be trained in management. The technical cadres need to be trained and provided with tools for O&M. The community involvement is important from the beginning.	-WUA was established in 1996 by ESWS project (52 groups), but after the project period the WUA ceased to work (no water fees was collected). It is due to no technical assistance and no motivation within the members after implementation of the facilities.
Findings for WUA Plan	The regulation was made with all community people with CARE support, but WUA is not functioning any more and no maintenance activities undertaken.	The community prefers to have WUA representative of the users and they are willing to pay as long as the water is available and running smoothly.	-Because of no technical assistance from above level and no follow-up after the project implementation, the ESWS project has failed. -The community realized that without enough health education and motivation for WUA to carry out O&M, the facilities would not be utilized. Experience was that the sanitation facilities were not used.
Programs related to Water & Sanitation	- Health department through community health center (PUSKESMAS) built latrines and rainwater collection tanks in 1999 (5 PAH).	CARE and AusAID for latrine (uncompleted).	-Health Department for sanitation and water users association (POKMAIR). -About 569 latrines have been built by ESWS project funded by Australia and UNICEF, but unfortunately the construction of latrines not completed.
Community Priority for Water System	1. House Connection 2. Public Taps 3. Dug well rehabilitation 4. Quality improvement of the existing water	1. House connection. 2. Public tap based on 5-10 houses.	1. House connection. 2. Public tap. 3. Improve the dug wells.
Health sector			
Incidence of Disease	Incidence of disease in the community includes: fever, diarrhea, skin diseases (scabies), eye infections, Malaria and typhoid are the most common diseases.	Incidence of disease in the community: diarrhea, malaria, cholera, eye infection skin diseases, coughing, tuberculosis (TB) and anemia. The high incidence of tuberculosis but they do not know the reason why they have the problem (the man look very pail, look tired and according to them if they coughing have blood).	Incidences of common diseases in the community are diarrhea, malaria, cholera, eye infections, worm, skin diseases and coughing.

Table A15-1 List of RRA Findings – NTB (3/3)

	Bagik Papan	Kawuwu	Poto
Sanitation / Latrine	- Within the village there are 673 pit latrines, 117 built by Health Department. - Only 2% of the population uses the latrine.	- 23 pit latrines built, but do not used. - Only 1 % of the population uses the toilet (teacher and midwife).	- 97% of the population do not use latrine because of lack of water.
Utilization of Sanitation	- 98% of the community prefers to use the river or the garden for toilet.	- 99% of the community prefers to use the river rather than the toilet for defecating.	- 97% of the community prefers to defecate in the river and the garden rather than in the toilet.
Health Services	- 1 community health center (Puskesmas) 6.5 km from furthest Hamlet, - 9 integrated health service posts (Posyandu), - 27 village health volunteers, but only 15 are active due to a lack of supervision, - 1 village mobile clinic (Polindes) with one midwife but very often not available in the village, - 9 Traditional Birth Attendants (TBA): 5 trained, - Counseling and health education: no service from government and no organization, - Mothers prefer TBA rather than the village mobile clinic. The TBA provides more services at home compared to the village health officer (Village Midwife).	- 1 community health center (Puskesmas) 30 km from villages, - 2 integrated health service posts (Posyandu), - 1 village mobile clinic (Polindes), - 1 sub community health centre (Pustu) located in the central of the community, but the health staff are not very often available in the village, - 1 village midwife, - 2 Traditional Birth Attendance (TBA), not trained - Counseling and health education: no service from government and no organization, - The community prefers TBA for health treatment rather than doctor, Puskesmas or village midwife because it is cheaper and services provided at home.	- 1 community health center (Puskesmas) 2km from the village center - 5 integrated health service posts (Posyandu) - 1 village mobile clinic (Polindes) with one midwife - 5 traditional birth attendance utilizing the traditional medicine, and normally they are providing services at home. Therefore mothers prefer TBA rather than the village clinic. - Counseling and health education: no service from government and no organization. - The community does not understand the relationships between health, hygiene and sanitation.
Knowledge, Attitudes and Practice related to water and sanitation			
Hands Washing	- Before eating: most of the families do not wash their hand. - After toilet: never. - Wash hands with soap: never. - Wash feet before going to bed: occasionally.	- Most of the families do not wash hands before eating and after defecating, - Wash hand with soap: never, - Wash feet before going to bed: no.	- Most of the families do not wash their hands before eating, - Wash hand after defecating: never, - Wash hands with soap: never, - Wash feet before going to bed: occasionally.
Water storage	- Where do they keep water?: in the kitchen and outside the house. - In what do they keep water?: clay pot, 50% closed and 50% open.	- Most of the household keep water inside and outside of the house. - In what do they keep water? : clay pot and jugs, 90% closed.	- The community keep water in the kitchen and outside of the house, - The community keeps water in clay pot, jugs, and cans, which are closed sometimes.
Water use	- Boil water to drink: 35% do and 65% do not boil. - Wash rice and vegetables at the river: most do not understand the relationship between clean water and health.	- 50% communities prefer to drink water without boiling the water. (The communities prefer to drink without boiling because all generations drink the same water and still live). - Wash rice and vegetables at the river: most (do not know the reason and relationships).	- Some of the communities boil water before drinking some do not boil because it is fresher, - The communities wash rice and vegetables, cloths and kitchens tools at the river together with animals. Most of them do not know the reason and relationships.
Bathing	- Bathing is either done by the well or in the river. - In the dry season people generally bathe once every two days.	- Bathing is either done by the well or in the river. - They usually take a bathe once a day. In the dry season people generally bathe once every two days. - The people prefer to bathe and defecate in the river together with their animals.	- Bathing is done in the river, - In the dry season people generally bathe once a day.
Garbage	- House garbage: no garbage place.	- House garbage: mostly no garbage place.	- House garbage: no garbage place,
Meals	- Meals on the table: most do not cover (they do not know the reasons). - Times of meals: 3 times a day.	- Most of the families do not cover the meals on the table. - Times of meals: 2- 3 times a day (no varieties).	- Meals on the table: most do not cover (they do not know the reasons), - Times of meals: 3 times a day
Livestock	- Most of the families keep the animals under their house.	- Most of the families keep the animals under their house.	

Table A15-2 List of RRA Findings – NTT – Kupang and Sumba (1/3)

	Sonimanu (Rote-Kupang)	Bolok (East Kupang)	Kondamara (Sumba)
Date of RRA	Sunday, 1 April 2001.	Wednesday, 4 April 2001.	Wenesday, 11 April 2001
No. Participants	34	31	100
Participants of RRA	-Representatives from five hamlets, -Teachers, -Formal and informal leaders, -Culture leaders, -Secretaries of the village, -Religious leaders, -Family welfare workers, -Community members. -Camat of sub-district Pantai baru and his wife,	-Representatives from five hamlets, -Formal and informal leaders, -Head of the village, -Community leaders, -Community members with village staff, -Family welfare workers, -Women group (PKK).	-Head of the village and four staff, -Head of the all hamlets, -Religious leaders, -Youth group, -Teachers, -Community members including 46 of women from different hamlets, (This consultation meeting was very big compared with other villages).
General information			
Population	472	1,744	1,600
Households	125	380	300
Houses	112	364	257
Distance to District office	District level: 17 Km, 60 minutes	District level: 30 minutes.	District level: 57 km Sub-district : 17 km
Hamlets	5	5	4
Ethnicity and Language	Ethnicity: Diu / Rote. Language: Rote.	Ethnicity: Helong, Rote, Sabu, and Timor. Language: Helong and Indonesian.	Ethnicity: Sumba Timur, Sumba Barat, Sabu, Flores Language: Kambara and Indonesian
Community Organization	-Village development council (LKMD)	-Village development council (LKMD).	-Village development council (LKMD), -Irrigation water users group 1
NGO/Donor Activity	-No NGOs in the village at present.	- No NGOs in the village at present.	- No NGOs in the village at present.
Occupation	-Farmers grow Palm Trees (Lontar), corn, cassava, and bananas. They make brown palm sugar from Palm Trees (Harvest: Sep. and Oct.). -Fishermen sell fish to the neighborhood hamlets and villages. -Cattle farmers raise pigs, goats and cows.	- Farmers, cattle farmers, traders, & labourers at the harbour. - Farmers grow corn, cassava, bananas, and rice. - Cattle farmers raise pigs, cows, and goats.	- Farmers (rice, corn, beans and spinach). - Cattle farmers raise pigs, horse, cows and goats. - The harvest time is once a year.
Water			
Utilization of Water	-Most of the community is using water from the springs for drinking, cooking and washing vegetables. -They bathe and wash their clothes in the river.	The water from wells is utilized for cooking, drinking, washing the kitchen utensils and defecating. Some of the community use the water from the caves for daily activities.	The water sources in the community are dug wells, spring, lake and river; for cooking, bathing, drinking, washing clothes and for animals drinking. Some of the people use river and lake to wash clothes.
Water Collection	-Women and young girls usually carry water on their head with clay pots or plastic pails. -Women and young girls are 100 % responsible for the collection of water: 2-3 times a day about 80 – 100 liters by using yoke.	- Women and young girls (95%) and 5% men are responsible for the collection of water: 2-3 times a day about 80 – 100 liters by using carrying two pails of water in their hands.	Women and children are responsible for collecting the water everyday 3 times a day about 40-60 liters by using yoke. The distance from the furthest hamlet to the water source is 1- 3 km.

Table A15-2 List of RRA Findings – NTT – Kupang and Sumba (2/3)

	Sonimanu	Bolok	Kondamala
Water Supply Situation	<ul style="list-style-type: none"> - There are 6 dug wells in this village which are located in some of the community's own yards. There is not much water during the dry season. - They collect water from the springs. In the dry season there is not much water. 	<ul style="list-style-type: none"> - There are 7 dug wells located in each hamlet, as plenty of water in both seasons. The depth of the well in 30 meters. - Some springs are located in the five caves. - The springs have water in both seasons. 	27dug wells (19 dry during dry season and 8 with water available)
Water Quality	<ul style="list-style-type: none"> - Never has been checked by any institution before. - The water is salty. - In the dry season the water is almost dry and rather dirty. 	<ul style="list-style-type: none"> - Has been checked about five years ago but the result was never provided to community. - The wells produce clean water and pure, except one located at Hamlet I which has salty water. The water from caves is salty. 	<ul style="list-style-type: none"> - Has never been checked by any institution before. - The quality of water from dug well and lake is very poor.
Other Water Resources	<ul style="list-style-type: none"> - Springs: 100–500 meters from the center of village. - Springs: at Oelea, Oekima, and Fufuno hamlet. 	<ul style="list-style-type: none"> - Spring: 1 km–2 km to the village. 	
Willingness to Pay	The community said that as long as water is available, they are willing to pay Rp.1,000 per month for house connection and public taps as well.	The community is willing to pay more O&M, as long the water facilities are available.	The community are willing to pay a water fee of Rp.2,500 per month for O&M.
Water Users Association	<ul style="list-style-type: none"> - Does not exist. - The community is interested in establishing a water users association for the purpose of clean water, if new pipe system for house connection as well as to public tap is installed. 	<ul style="list-style-type: none"> - Does not exist. - The community is interested in establishing a WUA for the purpose of clean water if JICA is willing to assist with pipe system as well as with public taps. 	<ul style="list-style-type: none"> - 2 WUA for irrigation have been established before but do not function anymore due lack of any technical assistance from responsible person, in this case agriculture department. - The community has no experience yet regarding O&M and they have no tools for O&M.
Findings for WUA Plan	<ul style="list-style-type: none"> - Community willing to established WUA and willing to pay the water fee for O&M. - Willingness to pay Rp 1,000/month. - To avoid the problems, regulations should be developed within the community, and then the family who use more water should pay more. - The community is willing to be trained as to how to manage the water users association. Technical cadres are needed and should be trained for O&M. 	<ul style="list-style-type: none"> - Community willing to established WUA and willing to pay a fee for O&M. - Willingness to pay Rp.5,000 -10,000. - The community is willing to be trained as to how to manage the water users association. Technical cadres are needed and should be trained for O&M. 	<ul style="list-style-type: none"> - To avoid the problem regarding the PVP (Solar Pump) system the community suggested replacing with good quality pipe because it has been broken down. - The community is willing to be trained to become technician in order to able to maintain the water system.
Programs related to Water & Sanitation		<ul style="list-style-type: none"> - Public Works and Health 1998. (Ground water pump and sanitation). - Asia Development Program (1987–1990), water facilities were provided for this village. The pumps were broken and nobody could repair them. 	<ul style="list-style-type: none"> - The PVP system installed by the contractor under cooperation with Forest Department funded by National Budget and implemented by Contractor from Kupang, and six month later the system did not work. There is no community involvement right from beginning.
Community Priority for Water System	<ol style="list-style-type: none"> 1. House Connection. 2. Public Taps. 	<ol style="list-style-type: none"> 1. House connection. 2. Public tap based on 5-10 houses. 3. Quality improvement of the existing water. 	<ol style="list-style-type: none"> 1. House connection. 2. Public tap. 3. Rehabilitate the dug wells and improve the water quality.

Table A15-2 List of RRA Findings – NTT – Kupang and Sumba (3/3)

	Sinomanu	Bolok	Kondamala
Health sector			
Incidence of Disease	Incidences of diseases in the community are malaria, diarrhea, skin infections, eye diseases and worms.	Incidences of diseases in the community are malaria, acute respiratory infection, and worms.	Diarrhea, cholera, malaria, acute respiratory infection, worms and eye infections.
Sanitation / Latrine	25 households have latrines, but they seldom use them. Use of latrine: 10%.	-The community have latrines and 100% of adult peoples are using the latrines. Most children go to bush and beach. -Some use pit latrines and some use water closet latrines.	-About 10 % families have pit latrines and 90% communities use back yard for defecating. -Use latrine: only about 10 % communities are using latrine and only from time to time.
Health Services	-2 active integrated health service posts (Posyandu). -No village mobile clinic (Polindes). -No Village Midwife. -2 Traditional Birth Attendants (TBA) are trained, and provide more services at home. -Counseling and health education: no service from government and no organization. -Mothers deliver with the help of TBA, except when mothers are in critical condition.	-3 active integrated health service posts (Posyandu). -No village mobile clinic (Polindes). -1 Village Midwife. -11 Traditional Birth Attendance (TBA / Dukun) – 3 trained and 8 are not trained. -Counseling and health education: no service from government and no organization. -Mothers deliver with the help by TBA and Village Midwife – whoever is available.	-2 integrated health service posts are not active. -1 sub community health center (Pusto). -No midwife. -1 Nurse. -12 family welfare workers. -6 Traditional Birth Attendance (TBA). -Counseling and health education: no service from government and no organization. -Mothers deliver with the help by TBA and Village Midwife – whoever is available.
Knowledge, Attitudes and Practice related to water and sanitation			
Hands Washing	-Wash hands before eating: most of the families do not wash their hands. -Wash hands after toilet: Never. -Wash hands with soap: Never. -Wash feet before going to bed: Occasionally.	-Wash hands before eating: most of the families do not wash their hands. -Wash hands after toilet: Never. -Wash hands with soap: Never. -Wash feet before going to bed: Occasionally.	-Wash hands before eating: most of the families do not wash their hands. -Wash hands after toilet: Never. -Wash hands with soap: Never. -Wash feet before going to bed: Occasionally.
Water storage	-Where do they keep water: in the kitchen and in front of the house.	-Where do they keep water: in the kitchen and in the bathroom. -In what do they keep water: Clay pot and jugs.	-Where do they keep water: in the kitchen.
Water use	-Boil water only for drinking coffee or tea. -In what do they keep water?: clay pot and bucket. -Boil water to drink: most.	-Boil water to drink: 80%. -The community bathe in the bathrooms. They wash clothes in the cave and bathrooms.	-They wash clothes in the river and lake. -Boil water to drink: 10% only, mostly drink direct with out boiling.
Bathing	-Bathing is done in the river. -In the dry season people generally bathe twice a day.	-They bathe in the bathroom. -In the dry season people generally bathe twice a day.	-Most of the communities bathe twice a day. -In the dry season people generally bathe once a day. -Most of communities bathe in the river and lake.
Garbage	-House does not have garbage bin.		
Meals	-Times of meals: 3 times a day -Meals on the table: most do not cover the food.	-Meals on the table: most do not cover the food. -Times of meals: 3 times a day.	-Meals on the table: most do not cover the food. -Times of meals: two times a day

Table A15-3 List of RRA Findings – NTT - Flores (1/3)

	Sinar Hading (East Flores)	Ile Padung (East Flores)
Date of RRA	Saturday, 7 April 2001.	Saturday, 7 April 2001.
No. Participants	Attended by 44 participants.	
Participants of RRA	<ul style="list-style-type: none"> -Community members, -Formal and informal leaders, -Religious and Cultural leaders, -Village Midwives, -Head and Staff of PDAM, -Health services and -Women's group (PKK) from sub-district. 	<ul style="list-style-type: none"> -Head of Ile Padung Village and his staff, -Religious leaders, -Community members, -Family welfare workers, -Technical workers for the previous project, -Women's group (PKK), (RRA meeting at Sinar Hading Village).
General information		
Population	1,202	1,224
Households	245	225
Houses	225	215
Distance to District office	District level: 41 km, 95 minutes. Sub-district level: 20 km.	District level: 44 km 90 minutes. Sub-district level: 23 km.
Hamlets	4	3
Ethnicity and Language	Ethnicity: Koten, Liwun, Hurit, Mukin, Ritan, Aran, Maran, Baluk. Language: Lamaholot / Indonesian	Ethnicity: Koten, Liwun, Hurit, Mukim, Maran Baluk. Language: Lamaholot /Indonesian.
Community Organization	<ul style="list-style-type: none"> - Village development council (LKMD), - Village legislative body (BPD), - No NGOs at the village at present. 	<ul style="list-style-type: none"> - Village development council (LKMD), - Village legislative body (BPD), - No NGOs at the village at present.
NGO/Donor Activity (Past)	<ul style="list-style-type: none"> -AusAID assisted with Pipe system to Public Tap and house connection (1998) – failed, -NGO Mitra Sejahtera assisted to develop cooperatives, -Christian Children Funds provided, -Foster parents Plan. 	<ul style="list-style-type: none"> - AusAID assisted with Pipe system to Public Tap and house connection (1996) – failed, - NGO Mitra Sejahtera assisted to develop cooperatives, - Christian Children Funds provided, - Foster parents plan.
Occupation	Most villagers are farmers growing cashew nuts (harvesting months from September to December), rice (once a year), corn, coconuts, bananas, and 'sawit' coconuts. Oversees labor (Malaysia).	Most of villagers are farmers growing cashew nuts (harvesting months from September to December), "Sawit" coconut, coconuts, coffee, kapok trees, cocoa, rice (once a year), corn, cassava, and nuts. Fishermen. Oversees Labor (Malaysia).
Water		
Utilization of Water	Most of the community use dug well water for drinking, cooking and washing the kitchen utensils and defecating. The community boil water to drink.	The water from the springs is utilized for cooking, drinking, washing the kitchen utensils and defecating. The communities boil water to drink.
Water Collection	<ul style="list-style-type: none"> - Women and young girls are responsible for the collection of water: 2-3 times a day about 80-100 liters by using yoke. - Women and young girls usually carry water on their head using a yoke. - The distance is around 500 m to 3 km to the seaside. 	<ul style="list-style-type: none"> - Women and young girls are responsible for the collection of water: 2-3 times a day about 80-100 liters by using yoke. - The distance is around 200m to 1km to the nearest spring.

Table A15-3 List of RRA Findings – NTT - Flores (2/3)

	Sinar Hading	Ile Padung
Water Supply Situation	4 wells located at the seaside at Wolosina hamlet, Dekaharut hamlet, Abahading hamlet and Narubae hamlet. There is not much water during the dry season, so the community has to stand in line for hours and the water is rather dirty. There are no springs or other source of water.	- It has two wells. Water is collected from the 4 spring located at Riang Tobi hamlet and some springs located on the hills. The springs produce clean water and one is located at about 1km from the central village. During the dry season there is still plenty of water for the Ile Padung community.
Water Quality	- Has never been checked by any institution before. - They feel the quality of water is salty.	- Has never been checked by any institution before. - They feel the quality of water is good.
Other Water Resources	- Wells: about 1-3 km from the central village (100 liters /day). - Springs: 4-7 km from the central village.	Springs: 1-2 km from the central village. Some springs are located on the hill. It is difficult for women to carry the water from the hill. They prefer to collect water from the spring at Riang Tobi.
Willingness to Pay	The community said as long as water is available, they are willing to pay Rp.1,000 per month for house connection and public taps as well. To avoid the problems, the regulation should be developed within the community, and then the family who use more water should pay more.	The community is willing to pay the O& M about Rp 1000- 2000 per month and they are willing to pay more, as long the water facilities are available.
Water Users Association	-Does not exist. -The Community is interested in establishing a water users association for the purpose of clean water. -AusAID did not complete their Pipe System. As a result the community feel disappointed.	-Does not exist. -The Community is interested in establishing the WUA for the purpose of the clean water, if the Pipe System for House connections as well as Public Taps is assisted. -AusAID failed to complete their Pipe System for Public Taps in some areas. -The pipes provided by AusAID were not suitable with the condition of the areas, because the "Pralon (PVC)" pipes broke during the dry season due to the animals.
Findings for WUA Plan	- The community is willing to be trained as to how to manage the water users association. - Technical cadres are needed and should be trained for O&M.	-The community is willing to be trained as to how to manage the water users association. -Technical cadres are needed and should be trained for O&M.
Programs related to Water & Sanitation	- AusAID assisted with Pipe system to Public Tap and house connection (1998) – failed.	- AusAID assisted with Pipe system to Public Tap and house connection (1996) – failed.
Community Priority for Water System	1. House Connection. 2. Public Taps. 3. Dug well rehabilitation.	1. House connection 2. Public tap based on 5-10 houses. 3. Quality improvement of the existing water.
Health sector		
Incidence of Disease	Incidence of diseases in the community is malaria, acute respiratory infection, and worms.	Incidence of disease in the community is malaria, acute respiratory infection, and worms.
Sanitation / Latrine	- Use of latrine: 99% and about 1 % defecate at the bush and beach. - 40% of the community use pit latrines and 60% use water closet latrines.	-Use of latrine: 99% and about 1% defecate at the beach and in back yard, Some community members use pit latrines and some use water closet latrines.

Table A15-3 List of RRA Findings – NTT - Flores (3/3)

	Sinar Hading	Ile Padung
Health Services	<ul style="list-style-type: none"> - 3 integrated health service posts (Posyandu), - 1 village mobile clinic (Polindes) with 1 Village Midwife (in Sinar Hading), - 1 Village Midwife, - 5 Traditional Birth Attendants (TBA) : 4 trained and 1 not trained, - TBA and Midwife provide more services at home, - The mothers deliver their babies with the help of TBA and village Midwife – if available, - Counseling and health education: no service from government and any organization. 	<ul style="list-style-type: none"> - 4 integrated health service posts (Posyandu), - 1 village mobile clinic (Polindes) in Riang Tobi (1 km from the central village), - 1 community health center (Puskemas) in Riang Tobi, - 1 Village Midwife, - 5 Traditional Birth Attendants (TBA / Dukun) – trained, - Traditional Birth Attendants and Midwife provide more services at home, - The mothers deliver their babies with the help of TBA and Village Midwife – whoever is available, - Counseling and health education: no service from government and any organization.
Knowledge, Attitude and Practice related to water and sanitation		
Hands washing	<ul style="list-style-type: none"> - Wash hands before eating: half of the families do not wash their hands. - Wash hands after toilet: sometimes. - Wash hands with soap: never. - Wash feet before going to bed: Never or sometimes. 	<ul style="list-style-type: none"> - Wash hands before eating: half of the families do not wash their hands. - Wash hands after toilet: sometimes. - Wash hands with soap: never. - Wash feet before going to bed: occasionally.
Water storage	<ul style="list-style-type: none"> - Where do they keep water?: in the kitchen and in the bathroom. - In what do they keep water?: clay pot, 50% closed and 50% open. 	<ul style="list-style-type: none"> - Where do they keep water?: in the kitchen and in the bathroom. - In what do they keep water?: clay pot, 50% closed and 50% open.
Water use	<ul style="list-style-type: none"> - Boil water to drink: 60%. 	<ul style="list-style-type: none"> - Boil water to drink: 70%. - They wash clothes in the river.
Bathing	<ul style="list-style-type: none"> - Bathing is done in the bathroom. In the dry season people generally bath once or twice a day. 	<ul style="list-style-type: none"> - They bathe in the bathroom in general. In the dry season people bath once or twice a day. - They make partitions in the river to keep the water clean: the first partition is for drinking, the second partition is for bathing and the third is for washing clothes and the forth partition is for those who want to defecate. - Some community members prefer to bath, wash clothes and animals in the river.
Garbage	<ul style="list-style-type: none"> - House does not have garbage bin but the garbage is usually burned. 	<ul style="list-style-type: none"> 50% houses have garbage bin and the garbage is usually burned.
Meals	<ul style="list-style-type: none"> - Meals on the table: most do not cover. - Times of meals: 3 times a day. 	<ul style="list-style-type: none"> - Meals on the table: they do not cover the food. - Times of meals: 3 times a day.
General	<p>Practices related to health and hygiene and water use are good. The health and hygiene habit are influence by people who work in Malaysia.</p>	<p>Practices related to health and hygiene and water use are good. The health habit and hygiene are influence by the peoples who living and work in Malaysia.</p>

Appendix 16
SKETCHES OF VILLAGES

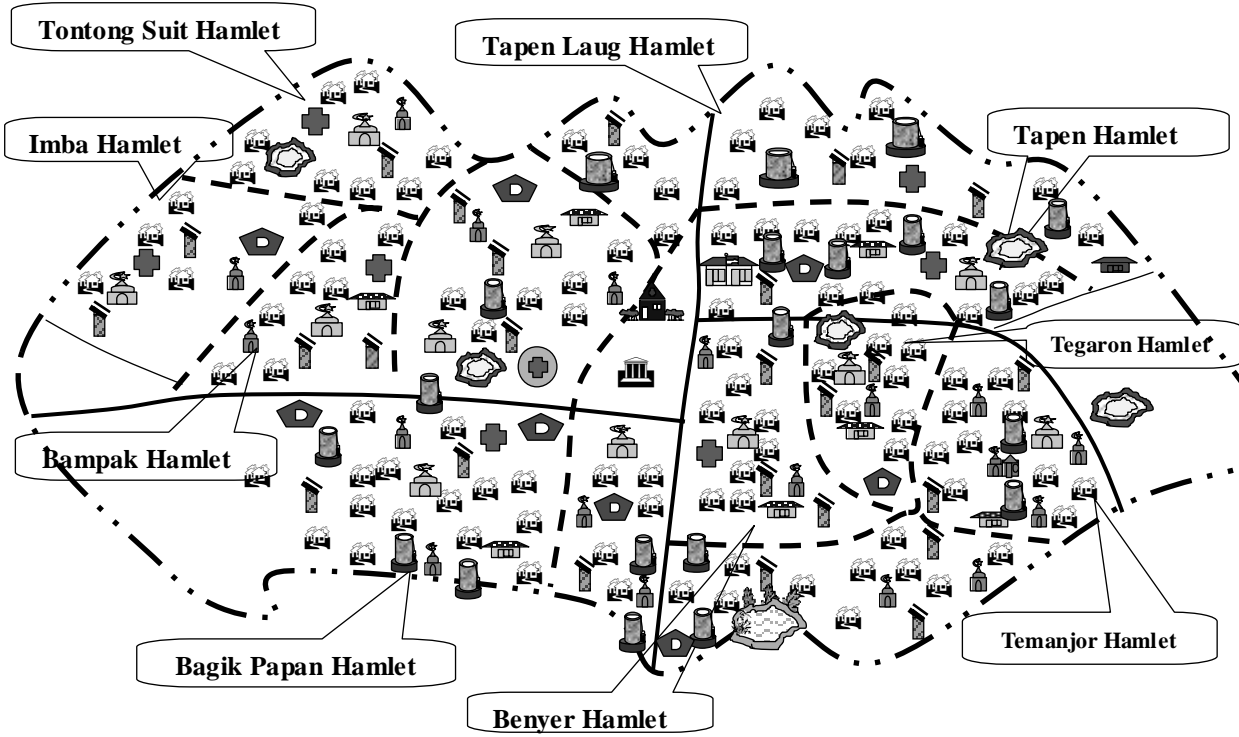
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SKETCH OF BAGIK PAPAN



- Legend:**
- Lake
 - Irrigation Water Users
 - Women Movement Group
 - NGO's Alusto
 - Islamic school
 - Latrine
 - Praying Group
 - Village Health Post
 - Household
 - House of Hamlet Head
 - Village Clinic
 - Dug Well
 - Mosque
 - School
 - Village Office
 - Sub Health Center
 - Village Border
 - Hamlet Border
 - Road
 - Narrow Road

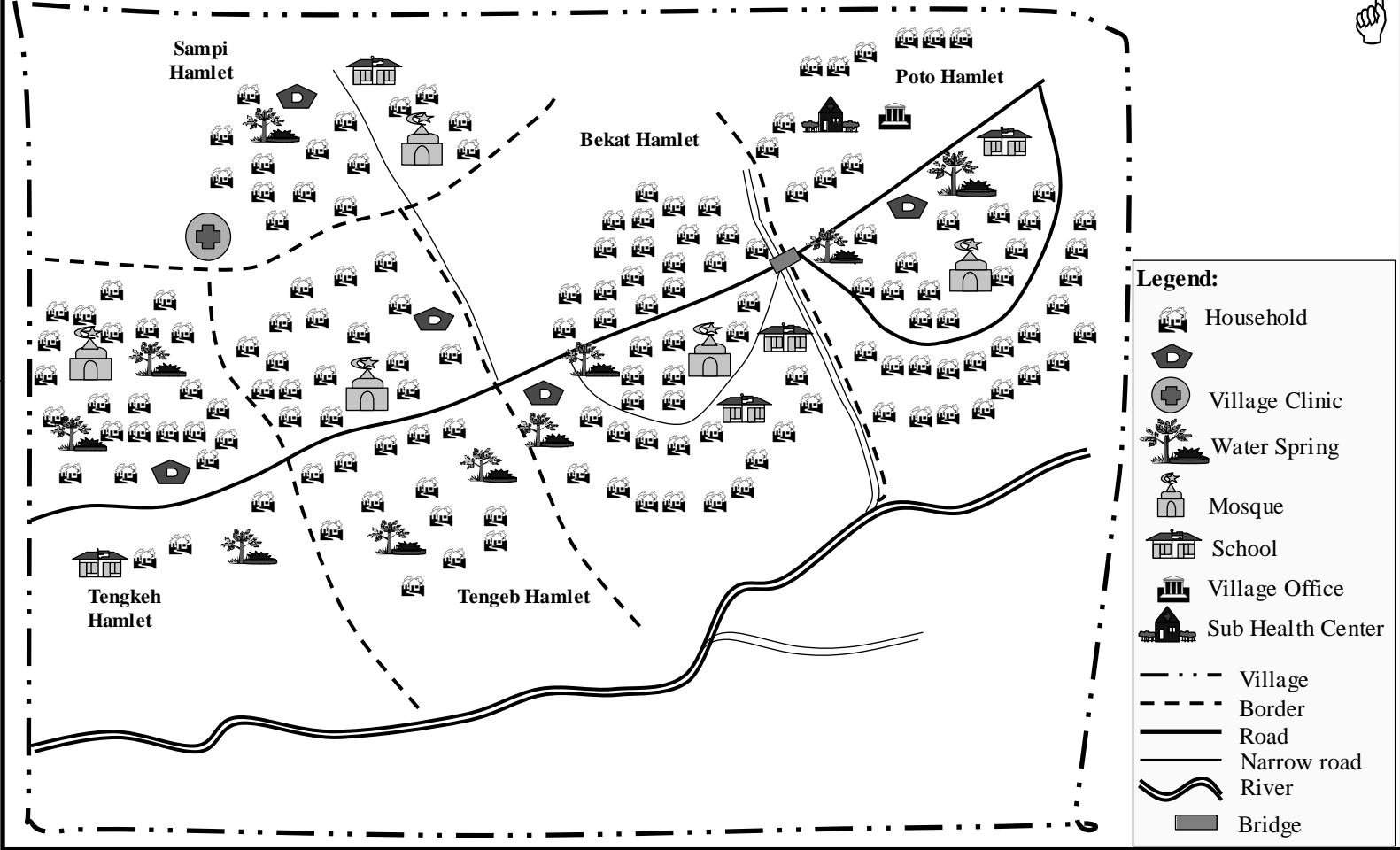


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Figure A16-1
NTB No.10 Bagik Papan



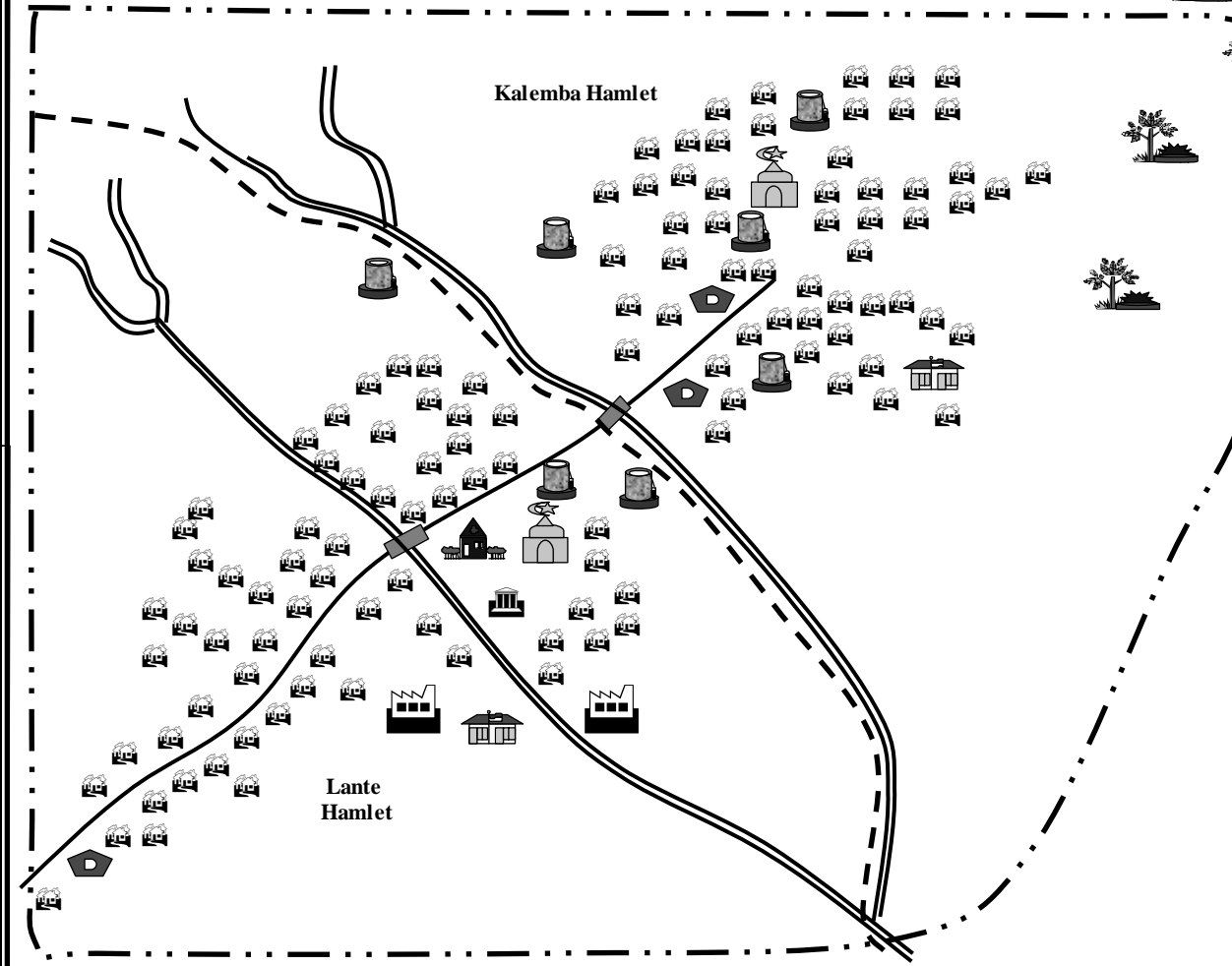
SKETCH OF POTO



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Figure A16-2
NTB No.15 Poto

SKETCH OF KAWUWU

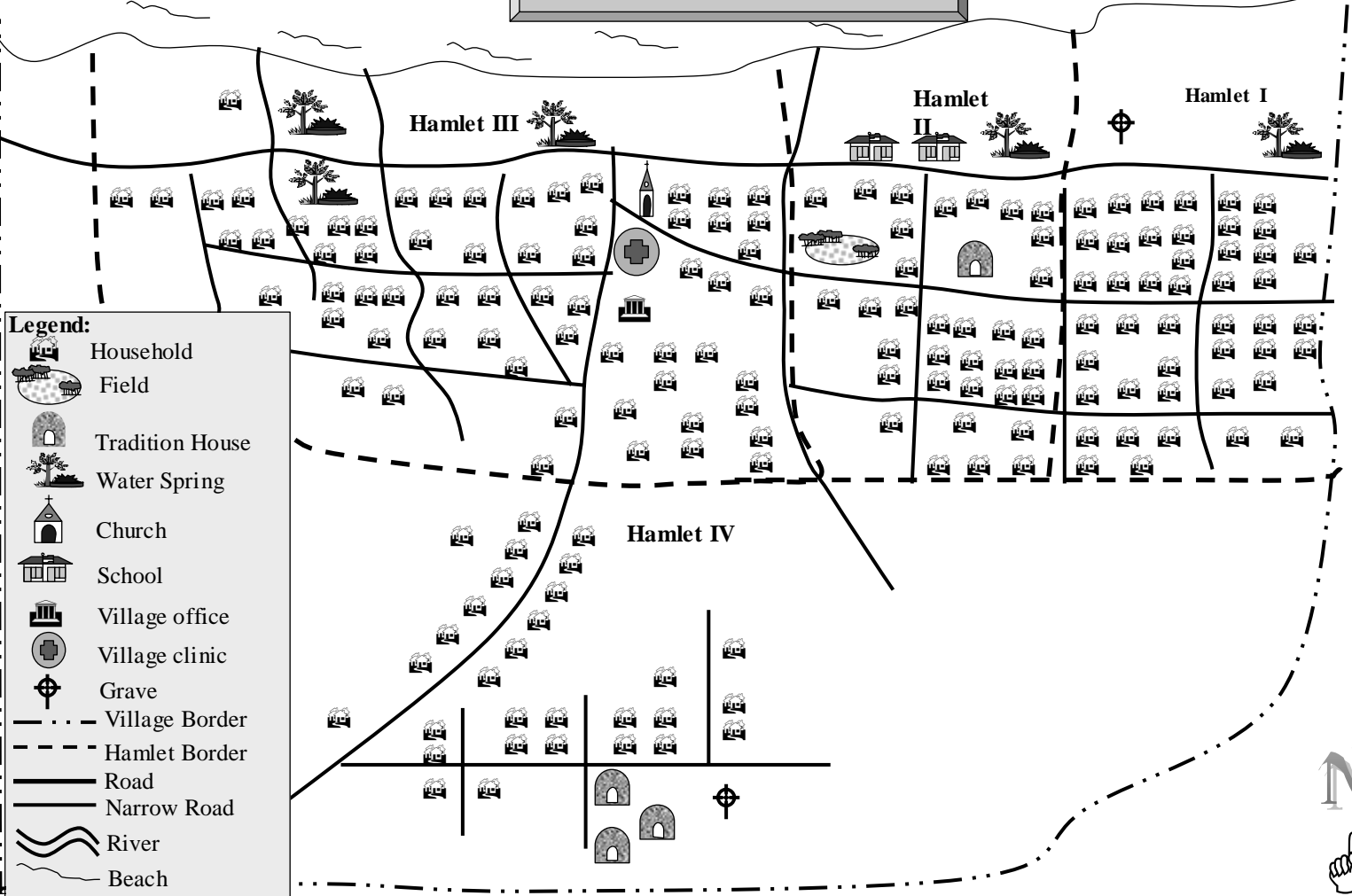


- Legend:**
- Household
 - House of Hamlet H.
 - Water Spring
 - Dug Well
 - Mosque
 - School
 - Village Office
 - Sub Health Center
 - Teacher Houses
 - Village Border
 - Hamlet Border
 - Road
 - Narrow Road
 - River
 - Bridge

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Figure A16-3
NTB No.18 Kawuwu

SKETCH OF SINAR HADING



- Legend:**
- Household
 - Field
 - Tradition House
 - Water Spring
 - Church
 - School
 - Village office
 - Village clinic
 - Grave
 - Village Border
 - Hamlet Border
 - Road
 - Narrow Road
 - River
 - Beach

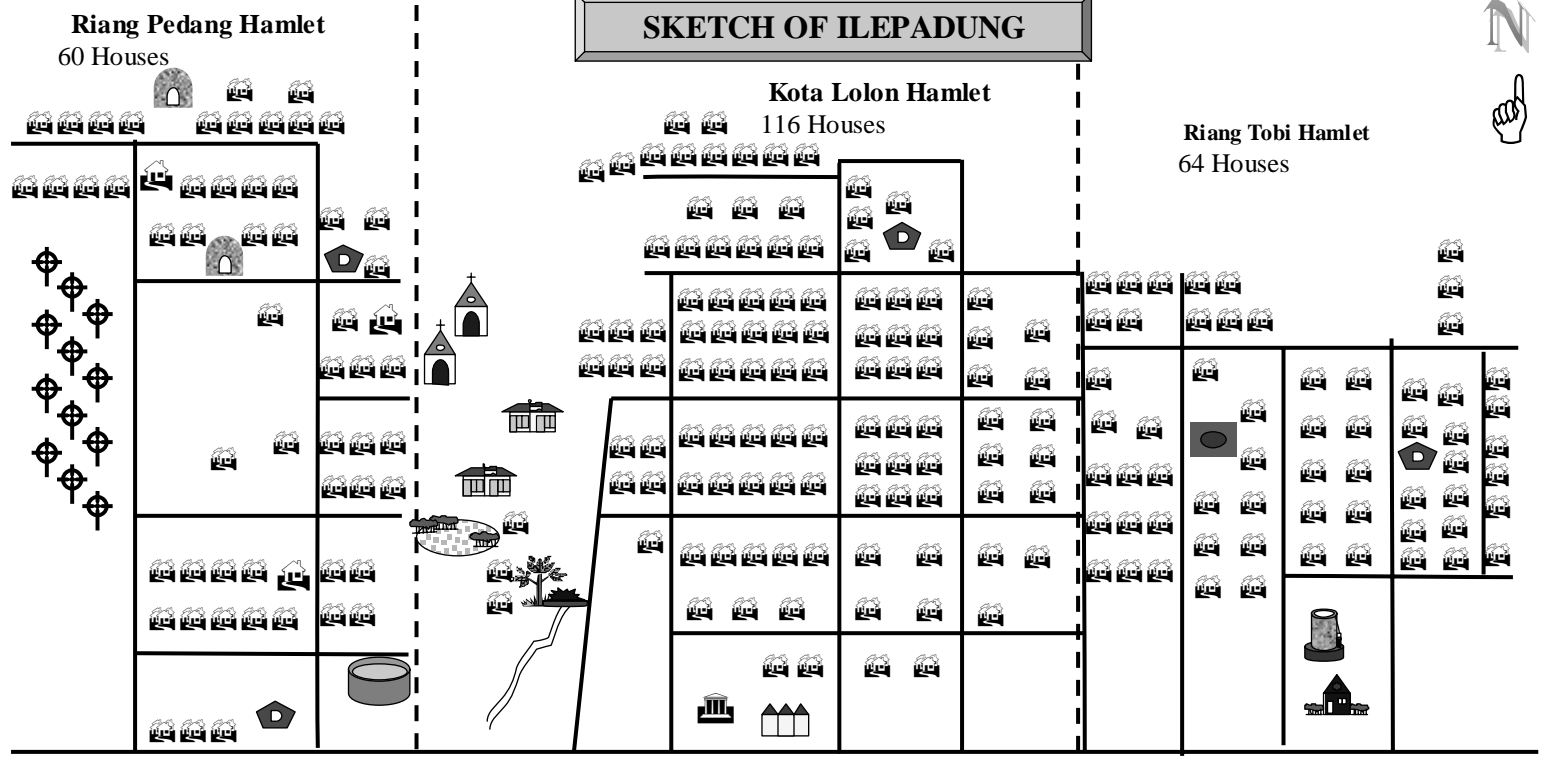
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Figure A16-4
NTB No.6 Sinar Hading





SKETCH OF ILEPADUNG



Legend:

	Household		Church		House of village head		Grave
	Field		School		House of Hamlet Head		Village Border
	Tradition House		Village Office		Market		Hamlet Border
	Fiber Tank		Sub Health Center		Water Spring		Road
			Dug Well				Narrow road
							River

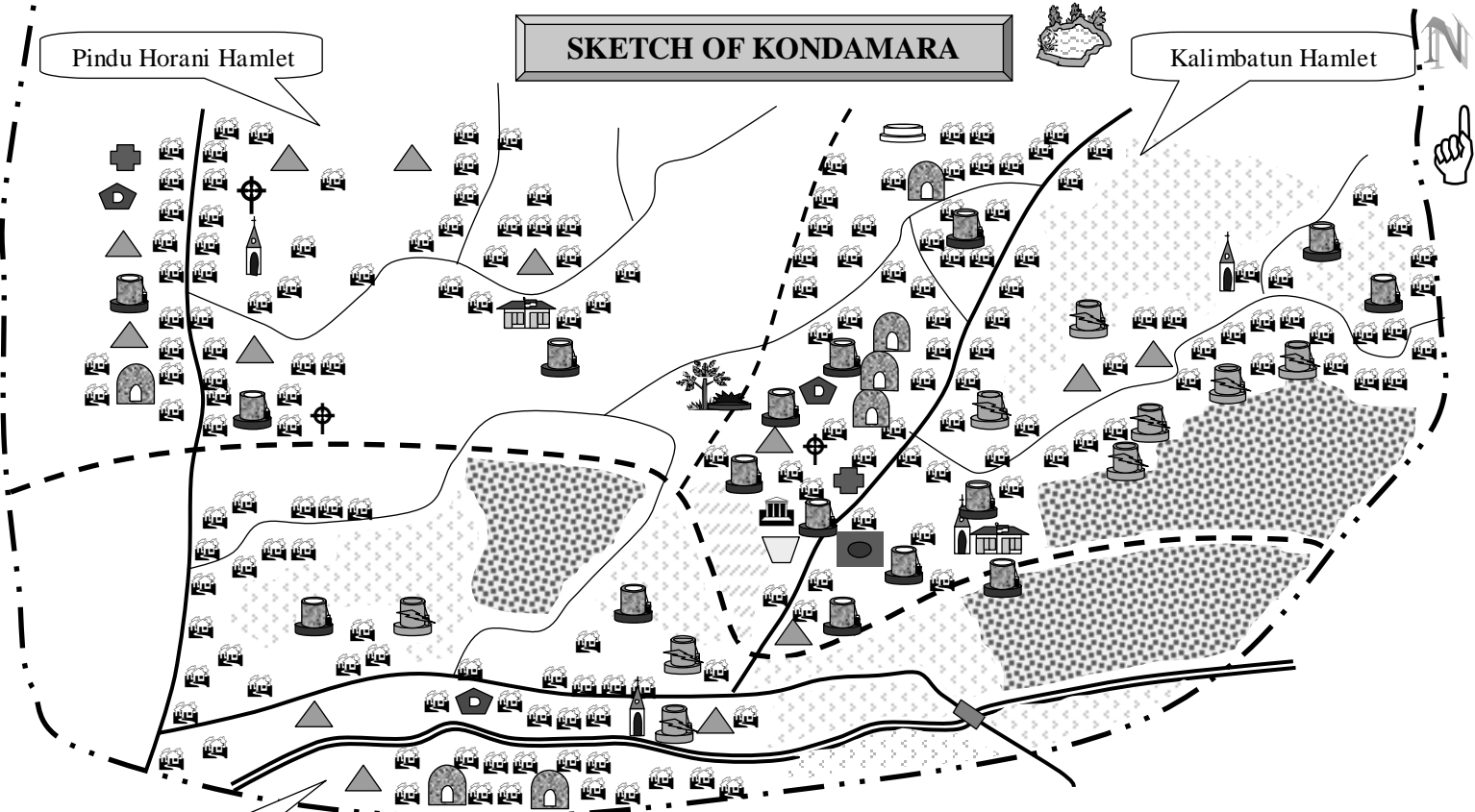


Riang Pedang Hamlet
60 Houses

Kota Lolon Hamlet
116 Houses

Riang Tobi Hamlet
64 Houses

SKETCH OF KONDAMARA



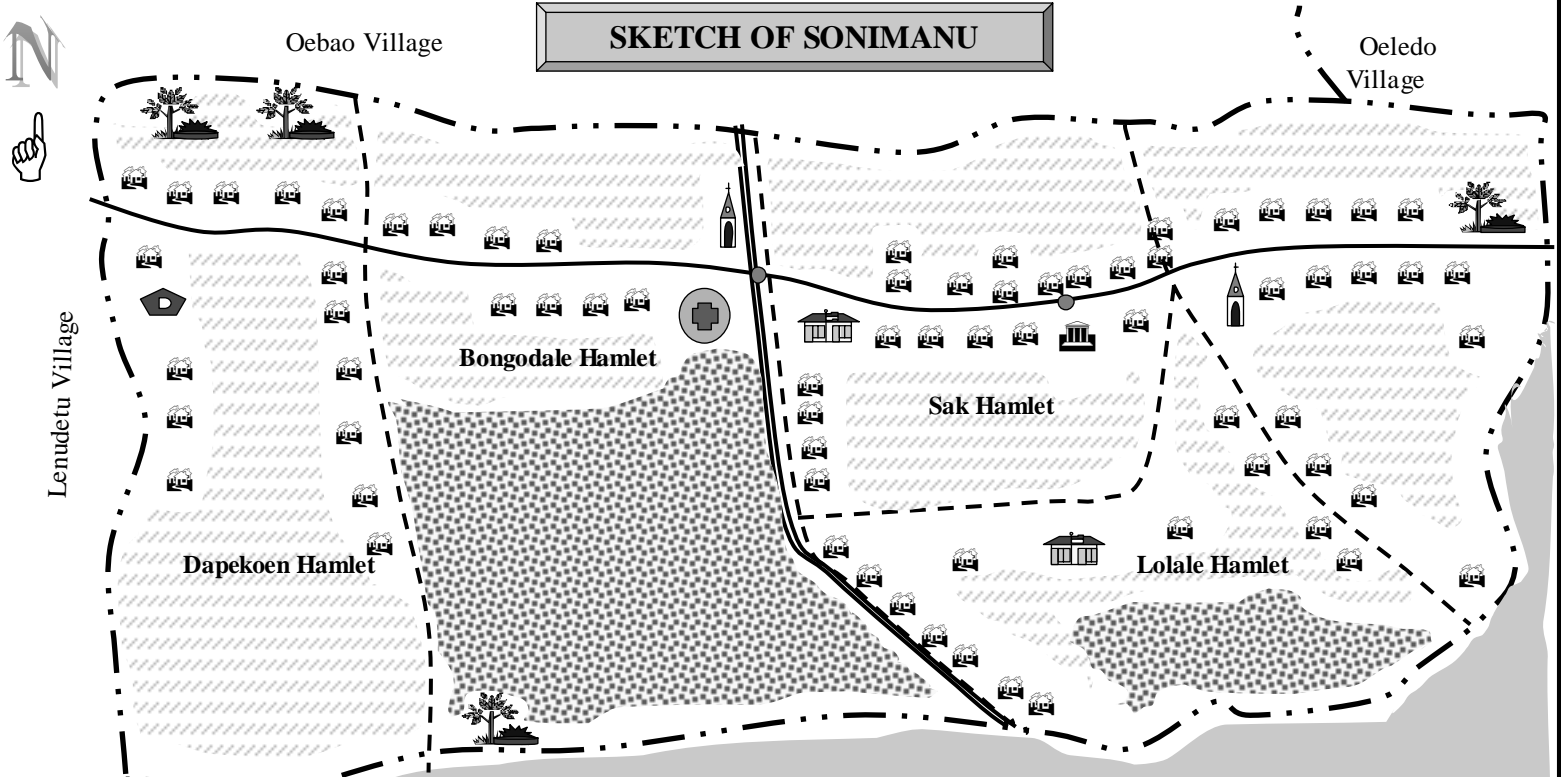
Legend:

Household	Church	House of village head	Village Border	Lake
Tradition House	School	House of hamlet head	Hamlet Border	Rice Field
Dug well	Village Office	House of TBA	Road	Forest
Dry dug well	Water Spring	Village Rice store	Narrow road	Unirrigated Field
Village health post			River	Field Grave
			Bridge	



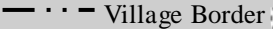



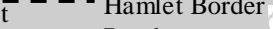



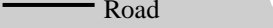



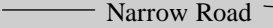
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Figure A16-6
NTB No.10 Kondamara

SKETCH OF SONIMANU



Legend:

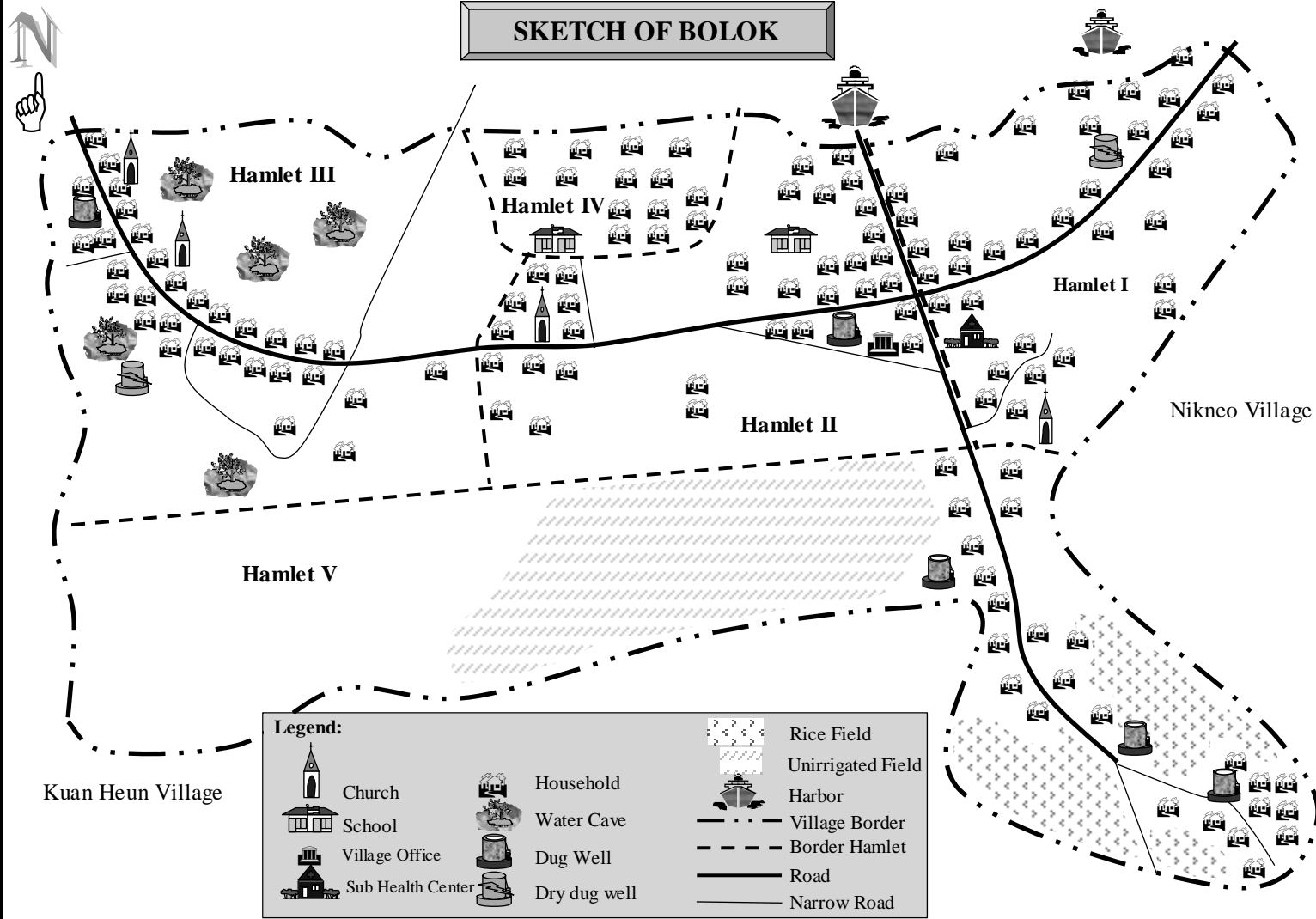
- | | | | | | | | |
|---|----------------|---|-----------------|--|----------------|---|-------------------|
|  | Church |  | Household |  | Village Border |  | Field |
|  | School |  | House of Hamlet |  | Hamlet Border |  | Unirrigated Field |
|  | Village Office |  | Small Brighe |  | Road |  | River |
|  | Village Clinic |  | Water Spring |  | Narrow Road | | |

Hindia Ocean

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Figure A16-7
NTB No.22 Sonimanu

SKETCH OF BOLOK



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Figure A16-8
NTB No.25 Bolok

Appendix 17

***IMPLEMENTATION PROGRAM FOR HEALTH
AND HYGIENE EDUCATION***

Appendix 17

IMPLEMENTATION PROGRAM FOR HEALTH AND HYGIENE

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Appendix 17

IMPLEMENTATION PROGRAM FOR HEALTH AND HYGIENE EDUCATION

Table A17-1 Logical Framework

	Summary	Variable Indicators	Means of Verification	Assumption
	<p>OBJECTIVE: To improve Knowledge, Attitudes and Practices (KAP) of communities in water use, health, hygiene and sanitation.</p>			
OUTPUT :	<p>1. Appropriate IEC manuals and guidelines in health and hygiene education for use in project villages.</p>	<p>Relevant manuals identified, reviewed and appraised by IEC Task force.</p> <p>Sustainable manuals and guidelines prepared for use in project sites.</p>	<p>Report by IEC Task Force.</p> <p>IEC manuals for use in the project.</p>	<p>That the IEC Task Force will be effective and active.</p> <p>That proper and suitable material will be identified and suitable materials can be prepared under the project.</p>
	<p>2. Health and hygiene education promotion in communities.</p>	<p>Improved community awareness of health and hygiene.</p>	<p>Interviews with community members.</p> <p>Report of PRA/FGD in communities.</p> <p>Communities Self-monitoring survey results.</p> <p>Puskesmas, PMD/Posyandu records.</p>	<p>That the communities' members will want to improve health and hygiene conditions.</p> <p>That the IEC Task Force will be willing to support the proposed activities.</p>
	<p>3. Health and hygiene activities implemented by households/families.</p>	<p>Communities take initiative to improve their environment by building latrines, wastewater, and garbage disposal.</p> <p>Communities take initiative to improve their houses and local environment.</p> <p>Improved KAP.</p>	<p>Spot checks/surveys of households.</p> <p>WUG records.</p> <p>Dasa wisma records.</p>	<p>Those households build/manage and use their own latrines, waste water and garbage disposal.</p> <p>Those households improve their houses and local environments.</p> <p>That community members will apply improved KAP for health, hygiene and sanitation.</p>
	<p>4. Evaluation and monitoring of community health and hygiene education related to water management.</p>	<p>Establishment of a monitoring system for the communities.</p> <p>Application of the monitoring system by communities.</p>	<p>Review by Consultant.</p> <p>Result of the monitoring analyzed by Consultant.</p>	<p>That a suitable monitoring system for the project can be developed and implemented.</p>

Table A17-2 Implementation Program for Health and Hygiene Education (1/4)

No	Plan Activities	Responsible Person	Participants	Location		Time Duration	
				NTB	NTT		
I	Step -1 Mobilization Works (1)	- Prepare Job Description for Community Health Education Specialist (CHES) & Information Education Communication (IEC) Specialist	Project Management	-	Province	Province	2 days
		- Recruitment of CHES (Indonesian) - Recruitment of IEC Specialist	Project Management (Team Leader)	-	Province	Province	2 weeks
	Project Mobilization	- Develop job description for Health Field Officer (HFO)	CHES	-	Province	Province	10 days
		- Develop Training Curriculum for training HFOs	CHES	-	Province	Province	10 days
		- Recruitment of HFOs	Project Management CHES	Project Team/Expert	District	District	2 weeks
		- Training HFOs/NGOs - Community development training - IEC training using participatory methods	CHES NGO Coordinator Training Expert	HFOs CFOs	Province Province Village	Province Province Village	2 weeks (14 days) (17 HFOs)
		- Training Health Field Officer on how to using PHAST for Health and Hygiene Education	CHES Training Expert	All Health FO s from each Project Sites	Village	Village	1 week (7 days)
		- Develop TOR for KAP Survey for baseline survey at household	CHES IEC Specialist	50% household at target area (Project site)	Village	Village	7 days
II	Step-1 Mobilization Works (1) Preparation of Manuals and Guidelines	- Conduct Meetings at Sub-district level - explain about the project and IEC Campaign and the importance of Task Force legalized by Head of sub-district - Task Force legalized by Head of Sub-district (Camat) - Define tasks and function of working group concerning IEC promotion	CHES HFO	- Head of sub-district - Women Movement Organization (PKK) - Head of Communicable Disease Office - Education Department staff - Midwife - Community Empowerment staff - Religious Department staff	Sub-district Village	Sub-district Village	3 times (3 days /Project Location 17 villages)

Table A17-2 Implementation Program for Health and Hygiene Education (2/4)

No	Plan Activities		Responsible Person	Participants	Location		Time Duration
					NTB	NTT	
II	Step - 1 Mobilization Works (1)	- Identify and select the existing IEC manuals, guidelines, materials and visual aids at Sub district level	IEC Specialist CHES HFO		Sub-district	Sub-district	
	Preparation of Manuals and Guidelines	- Provide IEC training Task Force at Sub district level	IEC Specialist CHES Training Expert HFO	- Education Department - Community Empowerment Department - Community Health	Sub-district	Sub-district	3 days/villages (17 villages)
III	Step -2 Mobilization Works (2)	- Conduct meetings at Village level to explain IEC planning and the importance of Formal/Informal Leader's involvement on promoting/campaign	CHES HFO NGO Coordinator	- Head of the Village (Desa) - Head of Hamlet (Dusun) - Head of Neighborhood (RT) - Village Council Members (BPD) - Religious Leader - Culture Leader - Teachers - Women Movement (PKK) - Leader of Praying Group	Village	Village	2 days (17 village)
	Social Preparation	- Conduct KAP Survey for baseline data (data base)	CHES + HFO Local survey contractor	Households (17 villages) only target area	10 Villages	7 Villages	7 days per village
		- Develop Terms of Reference/Job Description for Environmental Health Cadres.	HFO (assistance from CHES)		District/ Project	District Project	7 days
		- Develop criteria for selection of Environmental Health Cadres at Village	HFO (assistance from CHES)		Village 10	Village 7	2 days
		- Develop Training Curriculum for Environmental Health Cadres	CHES together with HFO		Province	Province	7 days
		- Select Environment Health Cadre at Village level (Project Sites) a) Select Cadres from each neighborhood b) Select Cadre for coordination at village level	Community from each neighborhood HFO	Representative from each neighborhood at all villages (WUG)	Village Neighborhood	Village Neighborhood	2 days (17 villages)
		- Training on tasks and functions of Environmental Health Cadres at the Village level	HFO under supervision of Training Expert	Selected cadres from each WUG at (17 villages)	Village 10	Village 7	5 days

Table A17-2 Implementation Program for Health and Hygiene Education (3/4)

No	Plan Activities	Responsible Person	Participants	Location		Time Duration	
				NTB	NTT		
IV	Step - 3 People's Education and Sensitization	- IEC Workshop Using Swot Analysis, (SWOT : strengths, weaknesses, opportunities and threats) - Workshop on Indicator Program Development - Task Force - PRA Workshop at the village	HFO with assistance of CHES & IEC Specialist	- Selected health cadres - Community leaders - Teachers - Cultural leaders - Religious leader - Member of WUG - Women Movement - Youth Group	Village 10	Village 7	3 days (17 villages)
		- Plan of Action Workshop on Health and Hygiene Education and physical activities at each neighborhood	HFO Community leaders	All household under supervision of Health Cadre and WUG members	Village 10	Village 7	2 days
		- Training how to use Field Manual and PHAST methods	HFO	All cadres formal/informal leader/WUG members	Village 10	Village 7	3 days/village (17 villages)
		- Intensive promotion of hygiene, sanitation and water usage through counseling in mosque, church, drama performance, cultural performance, group discussions at praying group. - Teaching health and hygiene at elementary school	- HFOs, EH cadres, formal/informal (religious/cultural) leaders - Teachers	All members of households/WUG members, Youth Group, Elementary School children	Village 10	Village 7	6 Months (Project period). this activities will be performed every week or ever special occasion in the village level
		* Physical of implementation environmental improvement activities : - Collect local material for water supply - Build garbage disposal (self support) - Build wastewater disposal (self support) - Build latrine (self support) - Clean house and environment (self support) * Encouragement & motivation for : - Bathing twice a day - Washing hands before eating - Washing hand before after defecating - Washing feet before go to bed every day	HFOs EH Cadres Formal/informal leaders WUG Parents Teachers	All Communities at 17 villages	Village Village Village Village Village Village Village Village Village Village 10	Village Village Village Village Village Village Village Village Village Village 7	Every day monitored by WUG/Cadres (long process during project period) 2003 - 2004

Table A17-2 Implementation Program for Health and Hygiene Education (4/4)

No	Plan Activities	Responsible Person	Participants	Location		Time Duration	
				NTB	NTT		
V	Step 4 Participatory Monitoring	- Visit to each WUG and conduct home visits to check physical activities Use check list (data sheet in Annex 18-2)	HFOs, EH Cadres Community Leaders	All Household (target group) at 17 villages	Village 10	Village 7	3 months
		- Assessing existing methods and evaluating the impact of IEC using FGD	HFOs, EH Cadres Community Leaders	All Household (target group) at 17 villages	Village	Village	Every 3 months
		- Assessing health problems in the village through home visit using check list (data sheet in Annex 18-2) and Posyandu data	HFOs, EH Cadres Community Leaders	All Household at 17 villages	Village	Village	Every month
		- Assessing the physical activities at household : > garbage place > waste water disposal > latrine > House cleaning activities > activity of cleaning their environment - Using physical check list (data sheet in Annex 18-2)	HFOs, EH Cadres Community Leaders	All Household (target group) at 17 villages	Village Village Village Village Village	Village Village Village Village Village	Every month
VI	Step 4 Participatory Monitoring and Final Evaluation	- Conduct KAP Survey for final evaluation	Local survey contractor HFOs, WUG, CHES, EH Cadres	All Household (target group) at 17 villages	Village	Village	After 18 months implementation physical + KAP
		- Workshop and presenting the result of KAP Survey to all community for follow-up action		All Community at 17 villages	Village	Village	

Appendix 18

***MANUAL OF HEALTH
AND HYGIENE EDUCATION***

Appendix 18

MANUAL OF HEALTH AND HYGIENE EDUCATION

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Appendix 18 MANUAL OF HEALTH AND HYGIENE EDUCATION

18.1 Introduction

The majority of the villagers in NTT and NTB are suffering with a number of different ailments which are caused by poor health and hygiene practices. There is an acute lack of knowledge about the importance of nutrition, personal and environmental hygiene, sanitation and the management of potable water in the maintenance of primary healthcare. Only 32% of the population in the NTB target areas have latrines, the remaining 68% defecate in the river, their gardens, on the beach or in other public areas. About 64% of households are infested with rats, 88% harbor swarms of mosquitoes and 33% of the children only take a bath once every two days. In NTT 17% of the households have rats, 70% are mosquito infested and 36% are full of garbage. 45% of the houses are attached to stables or others areas occupied by animals.

An intensive public health, hygiene and sanitation program is urgently required to develop community awareness and promote sustainable health and hygiene practices in the communities; an essential complement to a rural water supply development project. This manual has been prepared to assist extension workers carrying out assignments in this area in the field. It sets out a number of suggested methods for delivering effective education packages on health, hygiene and sanitation in rural communities, all of which have proved effective and sustainable in comparable circumstances.

It is proposed that a comprehensive education program be designed, for implementation in all villages selected for the water supply projects. The consultant will work with members of the established Information, Education and Communication (IEC) Task Forces at Sub-District level. Each Task Force comprises Community Health Center staff, (Sanitarian, Midwife and Communicable Diseases Officer), Community Empowerment (PMD) Officer, Religious Officer and Women's Movement Organization members. The IEC Task Forces will coordinate the activities of the proposed Health Field Officers and their Extension Worker Teams.

18.2 Extension Worker Teams

18.2.1 General

It is proposed to establish teams of extension workers (field staff) comprising Health Field Officer (HFO) and Environmental Health Cadre (EH Cadre) for the

delivery of health and hygiene education programs in project areas. The EH Cadre must be resident in the villages in order to present the program at the level of intensity needed to achieve sustainability.

18.2.2 Task and Responsibilities of HFO & EH Cadre

The tasks and responsibilities of the HFO and EH Cadre are as follows.

The HFO is responsible for:

- Training the EH Cadre (EH Cadre);
- Liaison, coordination and enhancing cooperation with community;
- Organizing and mobilizing the community to undertake hygiene activities after receiving health and hygiene education; and
- To act as a liaison between the local government agencies and the communities for health and hygiene matters.

The EH Cadre an extension worker who will be selected at village level to become a village volunteer. The EH Cadre responsible for:

- Conducting the family interviews and household observations (using household questionnaires and family record attached in Annex 18-1 and 18-2);
- Conduct intensive education for family members and community on Health, Hygiene and Sanitation promotion use participatory methods;
- Working closely with IEC Task Force to establish good relationships with the Community Health Center to ensure support and technical assistance for building sanitation and wastewater disposal systems at the family level

18.3 Family Preparation for Health and Hygiene Education

Before developing a detailed education package it is necessary to collect comprehensive and detailed information from each household in order to ensure that the package reflects the actual health, hygiene and sanitation problems in the project villages. In order to obtain this information the EH Cadre is required to:

- Collect family hygiene and sanitation data through well-designed and implemented questionnaire (see Annex 18-1);
- Record accurate information on the Family Master Charts (see Annex 18-2);
- Tabulate the data for use in monthly community meetings.

18.4 Approach FOR Health AND Hygiene Education

One of the effective approaches in solving these problems is incorporate genuine community participation involving the full spectrum of community members. This participation will be achieved through a range of activities including home visits, group discussions, group meetings, cultural and religious activities, as outlined below.

18.4.1 Home Visit

(1) Importance of home visit by HFO

Through home visit, the HFO and EH Cadre will be able to build a close relationship with the families. They can:

- Identify the family's problems concerning health, hygiene, sanitation and water usage habits;
- Follow up with the family who not come to medical check up at the Integrated Health Post (Posyandu) by referring to the village midwife or nurse at the Community Health Center or Village Clinic;
- Teach mothers and the children about the importance of personal and environmental hygiene, sanitation and water utilization;
- Improve the personal hygiene practices by teaching about the importance of washing hands after defecating and/or before eating;
- Encourage the family members initiate implementation of appropriate garbage and sanitation facilities (self-help support).

(2) When should the Health Field Officer and EH Cadre make home visit?

- The HFO and EH Cadre may make home visits weekly after or prior to the prayer group gatherings. This will provide the opportunity for them to discuss health, hygiene and sanitation issues while at the same time enlisting the help of religious leaders. By combining health and hygiene education with their faith, the messages will be more easily absorbed by the people and this will encourage their participation.
- The HFO and the EH Cadre may also make home visits after the monthly Integrated Health Post (Posyandu) sessions.

(3) How HFOs and EH Cadres make their first home visit?

The HFO and EH Cadre should take account of the following approaches in planning and conducting the first home visit.

- Introduce themselves and explain the purpose of their visit.
- Explain each of their roles.
- Talk with everybody who is present at the meeting.
- Allow enough time to talk to all family members who are present to discuss about themselves and the reason for their visit. Don't rush the visit!
- Encourage the family members to ask questions until the purpose of the visit is clearly understood by the whole family.
- Do not at this first visit give education or instructions. Let everyone get to know the HFO and EH Cadre first in order to gain their trust and make it easier to discuss their concerns.

(4) Special Home Visits

The HFO and the EH Cadres can make special visits to families (households) if:

- There are some emergencies such as if someone has diarrhea or high fever
- There are newly born babies in the home because babies often get diarrhea during the first three months.

(5) Visit Timing

In order to have enough time for an effective visit, the best time to schedule the home visits are:

- In NTB, early in the morning but in NTT late in the afternoon or evening. In this way you can meet all the family members at home.
- Make home visits on the weekend as people are usually free and at home during that time.
- Schedule visits to a cluster of households in one day.

18.4.2 Follow-up Activities

- Check all the records (from family Master Chart see Annex 18-2). Prepare beforehand and make sure to complete the records during the home visit.
- Always give feed back on the family Master Chart in every community meetings.

- Plan the education schedule after you have talked to them and they have agreed to it.
- Identify which families need a priority attention (the home visits should focus on this family).
- Place all the data into the family file for follow up action.
- Develop a schedule for a hygiene campaign and implement through:
 - Family discussion (home visit)
 - Involve teachers (Bapak Guru) or religious leader (Imam) at the mosque in NTB as the facilitator or supporter.
 - Involve traditional religious leaders (Penatua) or Priest/Pastor at the church or church performance with or cultural leaders (Musalaki) in NTT as facilitators or support.
 - Involve other cultural leaders and youth groups as facilitators through drama or art performances in the village.
 - Utilize the local radio broadcast such as Local Government Radio (RPD) or Radio Pemerintah Daerah, to address the campaign and its benefits.

18.5 How to deliver Information Education Communication (IEC) Package

The IEC Package will be implemented using participatory techniques such as participatory health and sanitation transformation series (PHAST). It is expected that using this approach will raise the motivation and enthusiasm of families so they will more easily recognize their poor health and hygiene behavior. In this Manual it is suggested that EH Cadres use Flash Card (see Annex 18-3), which is one of several effective tools that can help increase the participant's attention. Prior to the meeting HFO should prepare other tools to use with the Flash Cards in the presentation. For example flip-charts, pens, blank paper. Existing health education materials (Kartu Jodoh) from other programs will be used as appropriate (eg WSSLIC, AusAID, UNICEF etc.). These are available from Community Health Center (Puskesmas) and district Health Department (Environmental Hygiene & Sanitation Section).

18.5.1 Problem Identification

Problem identification will be undertaken with groups of about 10 – 20 families (Dasa Wisma) the HFO and EH Cadre will use “Community Story” approaches.

Participants will identify, and develop an understanding of, the important issues affecting their community. This process will take about 20 minutes.

- Show the series of Flash Cards showing common environmental health problems, to the participants. Let them observe and discuss among the group.
- Ask the participants to tell what they see in the pictures and write down what the participants describe on the flip chart. Place the flip chart in front of the group so that every body can read and comment.
- Ask participants to divide in smaller groups. Each group will consist of 5-8 members. If possible the group comprise a mix women and men.
- Ask participants to select from the Flash Cards those cards which describe their particular environmental health situation, and then discuss it among them selves.
- After discussion, ask the participants to conclude which of the environmental health problems selected is the highest priority for their community.

18.5.2 Problem Analysis

Problem analysis will be undertaken at a follow-up meeting with the same group.

- The participants divide into smaller groups and use the Flash Card previously selected for priority community environmental health problems, continue group discussion.
- This process will facilitate by HFO/EH Cadre using the problem analysis forms (Form A and Form B see Annex 18-3).

Form A: The participants will discuss and fill in the form recording problems, causes, impacts, solutions and resources.

After group discussion finish with form A and discussion continue using Form B - Strength, Weaknesses, Opportunity and Threat (SWOT) analysis. The smaller groups are reconvened for this step.

Form B: This process can help encourage participants to gain an in depth understanding of their hygiene and sanitation behavior. After small group discussion the results from each group are brought to the larger group for comment from all participants.

18.5.3 Village - Hamlet Map

At a further meeting with the larger group (Dasa Wisma) the HFO and EH Cadre will guide the participants to draw a map of each hamlet. This provides the opportunity to discuss the existing water and sanitation facilities; sanitation and hygiene conditions; good and bad habits related to water use, sanitation, health and hygiene practices; and how the diseases spread. The results of the community mapping is used for the next step.

18.5.4 Planning for Solution

At the next meeting the participants review the result of the community mapping and starting the next step. The HFO and EH Cadre will facilitate the participants to:

- Plan on how to prevent the spread of diseases;
- Select the barriers or constraints to overcome these problems;
- Determine the roles of men and women in the community in overcoming these constraints.

Continually, as selection of options, the group will have made an informed choice about the changes to facilities and hygiene behaviors.

- Ask the participants to choose from the series of Flash Cards representing one of the identified Sanitation and Hygiene problems.
- Base on the selected problem (Flash Card) ask questions of the participants
- What kind of sanitation improvement do they want?
- What kind of hygiene behavior should be improved?
- The participants should consider the requirements for facilities as well as behavior change in this process.

18.5.5 Planning for Behavior Change

Decide which hygiene behavior the community wants to address

- Give 30 minutes to select their existing hygiene behavior and ask each group to explain the reasons for selection from Flash Cards.
- Facilitate a group discussion until reaching an agreement which habits are good or bad and what the most important for them to improve.
- Ask the participants to identify who will make the improvements and how?

- Each education topic will be scheduled for a separate meeting (weekly or every two weeks depending on the group).
- Follow up during home visits (check the knowledge and practices whether the families applies the knowledge after receiving the education package).

18.5.6 Education Session

During the above processes the group members have been recognizing their specific local problem facing their community related to health, hygiene, sanitation and water usage. In the next step they will select problems which they want to learn about and discuss in more detail.

The education session will be undertaken by the following processes. The process is performed with active participation of all members.

- Ask the participants to choose type of water borne diseases they consider as a priority to learn in the first in education session.
- For example if the participants select Diarrhea as priority topic to learn then the schedule will start with “Diarrhea”. Possible issues for discussion include:
 - What is Diarrhea?
 - What are the symptoms of Diarrhea?
 - How is Diarrhea spread?
 - When is Diarrhea contagious?
 - What to do when get Diarrhea?
 - How to prevent Diarrhea?
 - The EH Cadre will provide specific Flash Card to assist participants.
- Start discussion and answer questions.
- If the EH Cadre find some points needing further explanation he/she will explain and provide correct information.
- The Diarrhea content perhaps will take 3 to 4 meetings.
- At the end of the diarrhea topic the EH Cadre will ask the family group to develop a schedule for physical activity at household (cleaning the environment, digging a pit for garbage disposal, building wastewater disposal).
- Subsequently other topics can be covered using same procedure.

18.6 Education Package on Health, Hygiene and Sanitation

The purpose of the package is to assist EH Cadres to explain the underlying mechanisms for disease prevention and describe environmental sanitation to all community members.

The process will start with local specific problems, selected using Flash Cards and open group discussion. The education will be repeated several times at community discussions, meetings, praying group and in the WUG.

The following are examples of lessons for particular aspects of environmental sanitation. Detail syllabus for the education package will be developed during implementation.

Sample Material for Education Package

Aspect	Key Considerations and Actions
Excreta Disposal	<p>A good disposal method is one that does not contaminate the soil surface because surface water, ground water, flies, cockroaches and animals can spread disease if they contact the excreta should not come in contact with the excreta.</p> <p>Key requirements for excreta disposal include:</p> <ol style="list-style-type: none"> 1. Excreta must not contaminate the soil surface. 2. Excreta should not be handled. 3. Disposal system should be free from odors. 4. Latrines should be simple and easy to construct. 5. Latrines should accord with customs/social/religious requirements.
Sullage (Wastewater) Disposal	<p>Sullage is the wastewater from dwellings but excluding excreta. It includes wastewater from bathing, cooking, cleaning etc. Sullage is mainly water with some solids content.</p> <p>There are two ways of disposing sullage:</p> <ol style="list-style-type: none"> 1. Disposal by land, where it is used to irrigate agricultural crops or allowed to seep into the ground; 2. Disposal in to waterways such as rivers, lakes or the sea. <p>Key requirements for wastewater disposal from houses include:</p> <ol style="list-style-type: none"> 1. Wastewater from households should be disposed properly; 2. There should be no stagnant water around the house. 3. Because this serves as good breeding places for flies and mosquitoes. <p>Teach people in the project area the advantages of building drainage. Demonstrate how to construct open or closed drainage using bamboo pipe or PVC pipe to a drainage pit.</p>

Aspect	Key Considerations and Actions
<p>Water Purification</p>	<p>Water borne disease</p> <p>Different type of diseases can be transmitted directly or indirectly through water.</p> <ol style="list-style-type: none"> 1. Make communities aware of the importance of water and the role it can play in transmitting the diseases. 2. Explain some of diseases which are water borne such as bacterial and amoebic dysentery, cholera, typhoid fever and parasitic infections. <p>Water Purification at household</p> <p>Improper handling can easily contaminate water such as by using dirty or open containers.</p> <ol style="list-style-type: none"> 1. It is better to use containers with small openings to minimize soiling during handling. 2. One easy way of treating water at home is boiling. Boil the water for at least ten minutes and allow it to cool before using.
<p>Garbage and Trash Disposal</p>	<p>Garbage and disease</p> <p>Waste materials from the house should be properly disposed. Leftover vegetables, animal and fish materials from the kitchen give off foul odors when decayed. Piles of waste become a breeding place for flies, insects and rats, which are carriers of disease. Scattered waste materials are also unsightly.</p> <p>Dispose of garbage by:</p> <ol style="list-style-type: none"> 1. Burial: Deposit garbage including such items as used bottles, broken glass, tin cans and metals in pits then cover with soil. A soil cover 1-2 meters thick prevents excavation of the buried materials by dogs and other animals. 2. Feeding to animals: Use the left over food to feed dogs chickens or fish other poultry and live stock. 3. Composting: Deposit garbage, leaves, animal manure and other rubbish in to a pit. Cover with 1/2 meters of soil and turn it regularly, the compost materials may later be used as fertilizer for agriculture use.

Aspect	Key Considerations and Actions
Food Hygiene	<p>Food Handling</p> <p>When the food is contaminated with bacteria, parasites or toxins, it becomes a vehicle for the spread of disease. Food may become contaminated when carelessly handled during preparation, storage and serving.</p> <p>Prevent contamination through improved storage and handling:</p> <ol style="list-style-type: none"> <li>1. Food to be stored should be clean; <li>2. Keep the food covered; <li>3. Protect the food from flies, cockroaches and other insect; <li>4. Store food in cool, dry place away from substances with strong odors. <p>Food infections</p> <p>Some common diseases that can be associated with the eating of contaminated food are typhoid, cholera, bacterial and amoebic dysentery, and parasitic infections.</p> <p>Food poisoning caused by bacteria can prevented by</p> <ol style="list-style-type: none"> <li>1. Washing hands before handling or preparing food; <li>2. Washing fruit and vegetables thoroughly and rinsing with cooled, boiled water before use; <li>3. Keeping the kitchen clean always; <li>4. Using clean kitchen utensils, dishes, eating/preparation surfaces; <li>5. Protecting food from flies and insects at all the times; <li>6. Preventing persons with acute respiratory infections and those with open wounds from handle food; <li>7. Keeping the clean water storages closed at all times when not in use.

Aspect	Key Considerations and Actions
<p>Vector Control (Vectors of Disease)</p>	<p>Flies</p> <p>Flies are known to transmit dysentery, typhoid fever, cholera and other intestinal diseases. The major sources of flies are garbage cans (uncovered) piles of wastes and manure of cattle, pig, and poultry.</p> <p>Rats and mice</p> <p>Rats and mice can transmit diseases like the plague, salmonella and typhus. There are many kinds of domestic rats and they may found in cupboards, in doors, in the roof, between walls etc. Some burrow in the ground and rubbish dumps. To avoid problems from rats:</p> <ol style="list-style-type: none"> 1. Prepare proper garbage and trash disposal; 2. Prepare proper food storage; 3. Keeping the house clean and orderly; 4. Use the latrine to defecate. <p>Cockroaches, bed bugs and fleas</p> <ol style="list-style-type: none"> 1. These can be controlled by use of chemical spray or powder; 2. Keep food covered and screened to protect it from cockroaches. <p>General</p> <p>Prevent access to potential breeding places for these pest by keeping the kitchen, the cabinets and shelves and the storage rooms clean, as well as repairing all the cracks or holes in walls</p>
<p>Common Communicable Diseases</p>	<p>Communicable diseases are transmitted from one person to another or from an animal to a person. They may be transmitted by touching objects that an infected individual has handled or by direct or indirect contact. Communicable diseases are some times transmitted by a carrier who shows no sign of sickness but is carrying the organism that produce it.</p>

Aspect	Key Considerations and Actions
Dysentery	<p><i>What is dysentery?</i></p> <p>It is an infection of the intestinal tract caused by amoebae. Severe cases may result in an abscess of the liver or hepatitis as a complication.</p> <p><i>Signs of dysentery include:</i></p> <ol style="list-style-type: none"> 1. Abdominal dysfunction and pain; 2. Slight and irregular fever; 3. Nausea and vomiting; 4. Loss of weight; 5. Alternating constipation and diarrhea; 6. Semi fluid stools with flecks of blood and mucus and characteristic foul smell. <p><i>How does dysentery spread?</i></p> <p>The source is human excreta which impacts through:</p> <ol style="list-style-type: none"> 1. Through contaminated water supply; 2. Raw vegetables that grow close to the soil; 3. Infected food handlers and insects. <p><i>When can dysentery be contagious?</i></p> <p>Until organism have disappeared from the feces.</p> <p><i>What to do?</i></p> <ol style="list-style-type: none"> 1. The patient should rest in bed. 2. Maintain a bland diet. 3. Immediately be referred to a doctor <p><i>How to prevent dysentery?</i></p> <ol style="list-style-type: none"> 1. Supervision by HFO and EH Cadre. 2. Asking the village midwife or nurse of village health clinic to do examinations. 3. Maintaining general cleanliness. 4. Ensuring good personal health and sanitary practices of persons preparing and serving food in public catering places. 5. Examining food handlers periodically. 6. Referring carriers for active treatment 7. Teaching and supervising environmental sanitation such as (a) Proper excreta disposal; (b) Control of water and food supply; (c) Boiling of drinking water; and (d) Protecting food from flies and insects.

Aspect	Key Considerations and Actions
<p>Diarrhea</p>	<p><i>What is diarrhea?</i> Diarrhea is excessive discharge of watery material from the bowel. The danger is excessive loss of fluid. It also interferes with nourishment. Diarrhea may be due to different causes such as poor eating or drinking habits, or allergic reaction. Bacterial and infection also may cause diarrhea.</p> <p>Accidental swallowing of chemical substances harmful to the body, such as arsenic or lead will also bring on diarrhea usually accompanied by severe pain and vomiting.</p> <p><i>What is sign of diarrhea?</i> Frequent and excessive discharge of watery feces.</p> <p><i>How diarrhea spreads?</i> The source of infection is human excreta through:</p> <ol style="list-style-type: none"> 1. Contaminated food and water; 2. Materials contaminated by flies and other insects; 3. Objects soiled with discharge from an infected person's bowel discharges. <p><i>When diarrhea is contagious?</i> From the onset until microorganisms have disappeared from bowel discharges.</p> <p><i>What to do when we have diarrhea?</i></p> <ol style="list-style-type: none"> 1. Give oral dehydrating solution (oral hydration packages can help to stop and prevent from dehydration) 2. Restore the fluid balance and prevent dehydration by giving the patient a high fluid intake such tea, juice or light soup (traditional soup from rice and some leaves) 3. If after the second day the diarrhea does not stop, immediately refer the patient to the doctor at Community Health Center or Hospital. <p><i>How to prevent diarrhea?</i></p> <ol style="list-style-type: none"> 1. Isolate infected individuals and do not allow them to handle or prepare food. 2. Supervise the processing and the preparation of food particularly those that are moist and eaten raw. 3. Provide education (using participatory teaching methods) on environmental cleanliness, hygiene and sanitation. Focus on specific subject such as: <ul style="list-style-type: none"> ▪ Sanitary disposal of human feces. ▪ Control of flies and others carriers. ▪ Covering or screening all foods. ▪ Taking care of infants - special attention should be given to personal hygiene of breast-feeding and the boiling of milk for infant feeding. ▪ Washing all fruits and vegetables before eating. ▪ Washing hands with soap after defecating.

ANNEX A18-1 HOUSEHOLD QUESTIONNAIRE

HOUSEHOLD :
HAMLET :
VILLAGE :

HOUSEHOLD QUESTIONNAIRE
(QUESTIONNAIRE FOR EACH HOUSEHOLD)

**THIS QUESTIONNAIRE USE FOR BASELINE SURVEY
ON RURAL WATER SUPPLY PROJECT
IN WEST NUSA TENGGARA AND EAST NUSA TENGGARA**

**HOUSEHOLD SURVEY QUESTIONNAIRE
ON RURAL WATER SUPPLY PROJECT
IN WEST NUSA TENGGARA AND EAST NUSA TENGGARA**

Number : **District** :
Date : **Sub District** :
Surveyor : **Village** :
Respondent's Occupation : **Hamlet** :

DIRECTION : Fill in the blank with the answers on the right side

SOCIO ECONOMIC CHARACTERISTIC

A. GENERAL

- | | | |
|---|----------------------|--------|
| 1. How many people live in this house? | <input type="text"/> | People |
| 2. How many children live with you in this house? | <input type="text"/> | People |
| 3. How many heads of families live in this house? | <input type="text"/> | KK |

B. FINANCE AND OWNERSHIP

4. From which sector does the income source of the family come?
- | | | |
|-----------------------------|-----------------------|----------------------|
| 1. Private business | 2. Weaving | <input type="text"/> |
| 3. Making traditional drink | 4. Construction labor | |
| 5. Farmer labor | 6. Trading | <input type="text"/> |
| 7. Animal husbandry Trading | 8. Other labor | <input type="text"/> |
| 9. Civil Servants | 10. Agriculture | |
5. Does this family have a rice field and/or dry land?
- | | | |
|--------|----------------------|----------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="text"/> | <input type="text"/> |
6. How large?
- | | | |
|---------------|----------------------|----|
| 1. Rice field | <input type="text"/> | Ha |
| 2. Dry land | | Ha |
7. Do this family cultivate other family's land?
- | | | |
|--------|----------------------|----------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="text"/> | <input type="text"/> |
8. If they cultivate other family's land, how large is it?
- | | | |
|-------------------------------|----------------------|----|
| 1. Rice field.....hectare (s) | <input type="text"/> | Ha |
| 2. Dry landhectare(s) | | Ha |

9. How many does this family earn in a month?
(The calculation includes salary, pension fund, production crop, animal husbandry, and allowances for children)
1. Less than Rp. 10,000
 2. Between Rp. 10,000 – Rp. 20,000
 3. Between Rp. 20,000 – Rp. 40,000
 4. Between Rp. 40,000 – Rp. 100,000
 5. More than Rp. 100,000
10. Do this family own properties and animals/ cattle as mentioned below?:
1. Radio/Tape recorder
 2. Television
 3. Buffaloes, cows, horses
 4. Goats/sheep
11. How many animals/cattle do this family own?
1.Buffaloes, cows, horses
 2.Goats/sheep
12. Can this family earn their living on crops?
1. Yes Yes No
 2. No
13. How often does this family harvest their crops?
1. Once a year
 2. Twice a year
 3. Three times a year
14. Do you save your money every month?
1. Yes Yes No
 2. No
15. How much money does this family save every month?
Rupiahper month Rupiah

C. HOUSING

16. Condition of the house
1. Permanent
 2. Semi Permanent
 3. Woven bamboo
 4. Temporary
17. Does the land belong to this family?

- | | | |
|---------------------------------------|--------------------------|--------------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Does this house have electricity? | | |
| 1. Yes | Yes | No |
| 2. No | <input type="checkbox"/> | <input type="checkbox"/> |

D. WATER RESORCE AND UTILIZATION

19. How does this family get water for cooking and drinking?

More than one answer can be given

Rainy/Wet Season

- | | |
|---------------------------------------|--------------------------|
| 1. House connection | <input type="checkbox"/> |
| 2. Neighbour's pipe/Public | <input type="checkbox"/> |
| 3. Own dug well | <input type="checkbox"/> |
| 4. Spring | <input type="checkbox"/> |
| 5. River | <input type="checkbox"/> |
| 6. Own rain water tank | <input type="checkbox"/> |
| 7. Neighbour's rain water tank/Public | <input type="checkbox"/> |
| 8. Buying water | <input type="checkbox"/> |
| 9. Others/mention | <input type="checkbox"/> |

Dry Season

- | | |
|---------------------------------------|--------------------------|
| 1. Adjoining house | <input type="checkbox"/> |
| 2. Neighbour's pipe/Public | <input type="checkbox"/> |
| 3. Own well | <input type="checkbox"/> |
| 4. Spring | <input type="checkbox"/> |
| 5. River | <input type="checkbox"/> |
| 6. Own rain water tank | <input type="checkbox"/> |
| 7. Neighbour's rain water tank/Public | <input type="checkbox"/> |
| 8. Buying water | <input type="checkbox"/> |
| 9. Others/mention | <input type="checkbox"/> |

20. What is your opinion about the quality of the drinking water that they have drunk?

- | | |
|-----------------|--------------------------|
| 1. Good | <input type="checkbox"/> |
| 2. Rather dirty | |
| 3. Dirty | |
| 4. Salty | |

21. How far is your house to the water resource?

(The Surveyor has to check the answer with the condition at the site)

Rainy/Wet Season:

1. Close (between 0 – 100 meters)
2. Far (more than 100 meters)
(Mention the distance).....Metre(s)/Kilometre(s)

Dry Season:

1. Close (between 0 – 100 meters)
2. Far (more than 100 meters)
(Mention the distance)Meter(s)/Kilometre(s)

22. Who usually collects water from the well?

1. Women
2. Men
3. Girls
4. Boys

23. How much water do you buy?

The Surveyor check the amount of water purchased based on the size of the water jug?

Per litre, per pail, or Jerry Can Rupiah
Rupiah/litre

24. How much water do you buy in a week?

Rp. Rupiah

25. Where do you get water for washing and bathing?

(The answers can be more than one)

Rainy Season/Wet Season

1. Own pipe
2. Neighbor's pipe/Public pipe
3. Own dug well
4. Spring
5. River
6. Own Rain Water Tank
7. Neighbor's Rain Water Tank/Public
8. Others/mention.....

Dry Season: _

1. Own pipe
2. Neighbor's pipe/Public pipe
3. Own dug well

- 4. Spring
- 5. River
- 6. Own Rain Water Tank
- 7. Neighbor's Rain Water Tank/Public
- 8. Others/mention.....

26. How often do you collect water in a day?
- 1. Father.....times
 - 2. Mothertimes
 - 3. Childrentimes

27. Is the water resource used by other people?
- 1. Yes Yes No
 - 2. No

28. Where is the water stored?
- 1. Pail, clay pot, jug, bamboo, Jerry Can
 - 2. Inside tank
 - 3. Drum
 - 4. Outside tank

29. Do you boil water before drinking it?
- 1. Yes Yes No
 - 2. No

E. CLEAN WATER NEEDED

30. What sort of Clean Water system do you like best?
 (The Surveyor explains the possible system, which will be assisted by JICA)
- 1. Water installation with meter
 - 2. Public taps (10 – 25 houses)
 - 3. House connection for 4 – 8 houses with meters
 - 4. Installation to tank/tub with water installation for 4 hours per day
 (2 hours in the morning and 2 hours in the evening)
 - 5. Dug well
 - 6. Pumped water (Deep & shallow wells)
 - 7. Rain water tank

31. Would you and your family help build clean water facilities for free
 (Collect local materials, help in installation of water pipes)
- 1. Yes Yes No
 - 2. No

F. HYGIENE AND SANITATION

32. Where do you and your family defecate?

Rainy/Wet Season

- 1. Own latrine
- 2. Public latrine
- 3. Neighbor's latrine
- 4. River/rivulet
- 5. Garden
- 6. Yard
- 7. Irrigation channel
- 8. At the sea side

Dry Season

- 1. Own latrine
- 2. Public latrine
- 3. Neighbor's latrine
- 4. River/rivulet
- 5. Garden
- 6. Yard
- 7. Irrigation channel
- 8. At the sea side

33. How is the condition of their own latrines?(The Surveyor should check it)

- 1. Emergency latrine/simple
- 2. Pit latrine
- 3. Permanent latrine

34. Is the water available in the latrine?

- 1. There is water in the tank/tub
- 2. Carry water when needed
- 3. No water

G. OPERATION AND MAINTENANCE

35. Is there a water users group?

- 1. Yes Yes No
- 2. No

36. If there is, do you think they are active?

- 1. Yes Yes No
- 2. Sometimes
- 3. No

37. Is there any fee for the operation and maintenance of the clean water facilities?
- | | | |
|--------|--------------------------|--------------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="checkbox"/> | <input type="checkbox"/> |
38. If not, give the reasons.
39. If yes, how much?
- | | |
|------------------------------------|--------------------------|
| 1. Rupiah/month | <input type="checkbox"/> |
| 2. Rupiah/every three months | |
| 3. Rupiah/every six months | |
| 4. Rupiah/every year | |
| 5. | |
40. Do you think it is necessary to have Water Users Group?
- | | | |
|--------|--------------------------|--------------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="checkbox"/> | <input type="checkbox"/> |
41. If yes, Are you willing to participate in this group?
- | | | |
|--------|--------------------------|--------------------------|
| 1. Yes | Yes | No |
| 2. No | <input type="checkbox"/> | <input type="checkbox"/> |
42. If not, why?

ANNEX A18-2 FAMILY RECORD

PHYSICAL CONDITION ON HYGIENE, WATER USE, AND SANITATION

DATA SHEET No.1

Name :
 Number of House :
 Total Family members :
 Village :
 Neighborhood :

1. Water Supply

Source of Water	Storage	Transport
- Dug Well <input type="checkbox"/>	- Jar <input type="checkbox"/>	- Cans <input type="checkbox"/>
- Spring <input type="checkbox"/>	- Can <input type="checkbox"/>	- Jars <input type="checkbox"/>
- Rain water storage <input type="checkbox"/>	- Clay Pot <input type="checkbox"/>	- Bamboo <input type="checkbox"/>
- Cave <input type="checkbox"/>	- Plastic Containers <input type="checkbox"/>	- Clay Pot <input type="checkbox"/>
- Pipe <input type="checkbox"/>	- Others <input type="checkbox"/>	- Others <input type="checkbox"/>
- Others <input type="checkbox"/>		

2. Toilet

Type of Toilet	Location
- Pit Latrine <input type="checkbox"/>	- In the house <input type="checkbox"/>
- Flush Latrine <input type="checkbox"/>	- Out of house <input type="checkbox"/>
- River <input type="checkbox"/>	- River <input type="checkbox"/>
- Yard <input type="checkbox"/>	- Public Latrine <input type="checkbox"/>
- Bush/garden <input type="checkbox"/>	- Garden/Bush <input type="checkbox"/>
- Others <input type="checkbox"/>	- Direct to animals stables <input type="checkbox"/>
	- Others <input type="checkbox"/>

3. Garbage

How is it Collected	How is it disposed
- Collect <input type="checkbox"/>	- Burning composting <input type="checkbox"/>
- Every day <input type="checkbox"/>	- Throw into river/canal <input type="checkbox"/>
- Some time <input type="checkbox"/>	- Neglected <input type="checkbox"/>
- Once a week <input type="checkbox"/>	- Others <input type="checkbox"/>
- Once a month <input type="checkbox"/>	
- Neglected <input type="checkbox"/>	

4. Wastewater disposal

House with disposal	
- Concrete with cement	<input type="checkbox"/>
- Concrete with bamboo	<input type="checkbox"/>
- Just swamp	<input type="checkbox"/>
- Neglected	<input type="checkbox"/>

5. Animal or livestock

- Houses together with animals or livestock	<input type="checkbox"/>
- Houses without animals	<input type="checkbox"/>
- Chain of animals (children, goat, ship, duck)	<input type="checkbox"/>

FAMILY MASTER CHART

No	Activity	2003								2004								2005								
		M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
	House Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Health Education																									
	- Diseases Factor (Y/N)																									
	- Underlying cause (Y/N)																									
	- Sanitation Toilet (Y/N)																									
	- Water purifying (Y/N)																									
	Physical Activity																									
	- Garbage Place (Y/N)																									
	- Waste water disposal (Y/N)																									
	- Latrine (Y/N)																									
	- Clean environment (Y/N)																									
	- Clean housing (Y/N)																									

DIRECTION: HOW TO FILL IN FAMILIES MASTER CHART

How to fill in the family Health, Hygiene and Sanitation Record

- House number: when the baseline survey is conducted in Project location, each household will have a house number. Use the same number and fill in Family Master Chart. With this system, the achievement of each household after project intervention can be monitored during and after the project period.
- Clip or attach this form in the log notebook. When the month is over, file this in a folder or a brown envelope marked:
- Health Education:
Diseases factor (Y/N) : Y meaning Yes, have received education
N meaning No, not yet received

For Examples:

Source of Water	Storage	Transport
- Dug Well <input checked="" type="checkbox"/>	- Jar <input type="checkbox"/>	- Cans <input type="checkbox"/>
- Spring <input type="checkbox"/>	- Can <input checked="" type="checkbox"/>	- Jars <input type="checkbox"/>
- Rain water storage <input type="checkbox"/>	- Clay Pot <input type="checkbox"/>	- Bamboo <input type="checkbox"/>
- Cave <input type="checkbox"/>	- Plastic Containers <input type="checkbox"/>	- Clay Pot <input checked="" type="checkbox"/>
- Pipe <input type="checkbox"/>	- Others <input type="checkbox"/>	- Others <input type="checkbox"/>
- Others <input type="checkbox"/>		

- At the end of the month, remove the Master Chart forms from your log notebook and replace with new forms for the incoming month.
- All Master Chart forms should be arranged successively with the latest month on top, and clipped together in a folder or a brown envelope.
- At the end of the year, give this file folder to the project to analyze and provide the result to the communities through workshops for follow up action.
- Start a new folder file for the coming year.
- Keep any files. Data used for evaluation at the every end of the year.
- Log Notebooks
 - All filled up notebooks should be turned over to your supervisor (CHES) as file (filling) for project record.
 - Ask for another notebook and start recording your activities in the new notebook.

ANNEX A18-3 FLASH CARD AND PROBLEM ANALYSIS FORMS

1. FLASH CARD

LIST OF FLASH CARD SERIES FOR PHAST

Series of Problems

1	Picture of Poor Environment
2	Picture of Poor Habit Related to Garbage
3	Picture of Poor Food Hygiene
4	Picture of Poor Habit in Water Utilization
5	Picture of Poor Habit with Food Hygiene and Impact
6	Picture of No Washing Hand before Eating

Series of Problem Solution

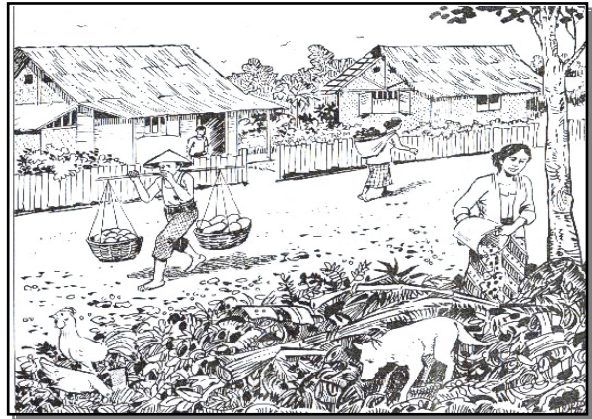
7	Picture of House Hygiene
8	Picture of Teaching Families Member about Environmental Hygiene
9	Picture of Garbage Disposal
10a – 10b – 10c	Picture of Teaching Communities on Garbage Disposal Place and Utilization Garbage
10d – 10e – 10f	Picture of Teaching Families to Clean the Environment
10g – 10h	Picture of Personal, Environmental Hygiene Management Picture of Teaching School Children on Hygiene and Give Example.
11a	Picture of Waste Water Disposal Management
11b	Picture of Teaching Community to do their own Waste Water Disposal
11c	Pictures of Different types of Waste Water Disposal
12	Picture of a Toilet
13a – 13b – 13c	Picture of Food Hygiene
14a – 14b	Picture of Personal Hygiene (bathing everyday) with soap
15a – 15b	Picture of Treated Water Collection
16	Picture of Boiling Water
17a – 17b	Picture of House Hygiene

FLASHCARD SERIES FOR PHAST

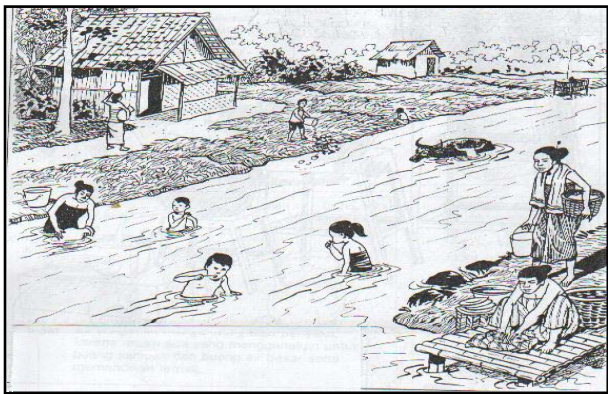
Series 1



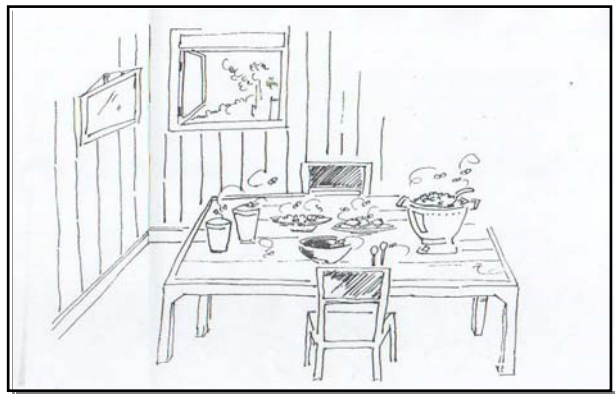
Series 2



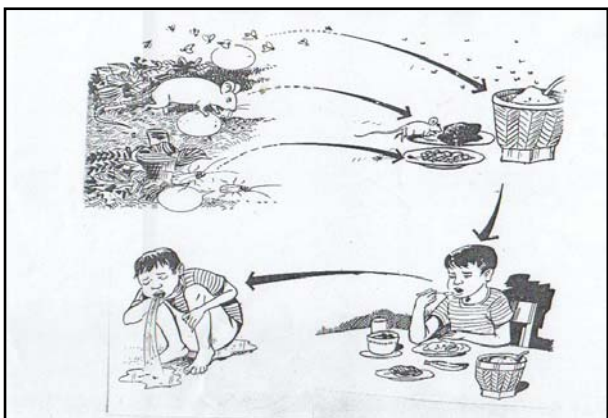
Series 3



Series 4



Series 5



Series 6



Source/Inspiration: Community Health Development Book Publish by Ministry of Health

FLASHCARD SERIES FOR PHAST

Series 7



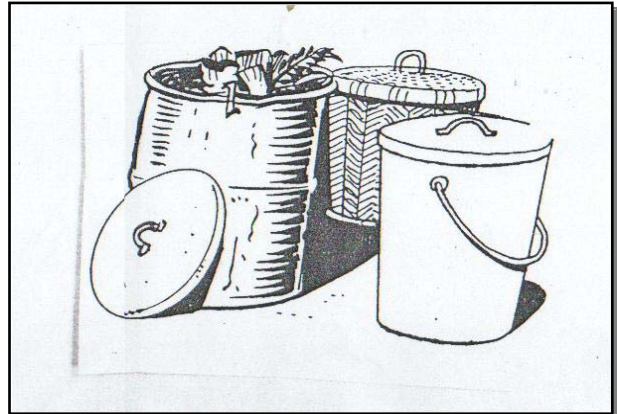
Series 8



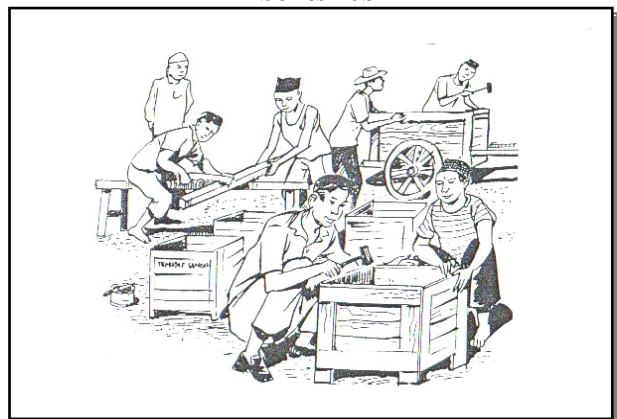
Series 9



Series 10a



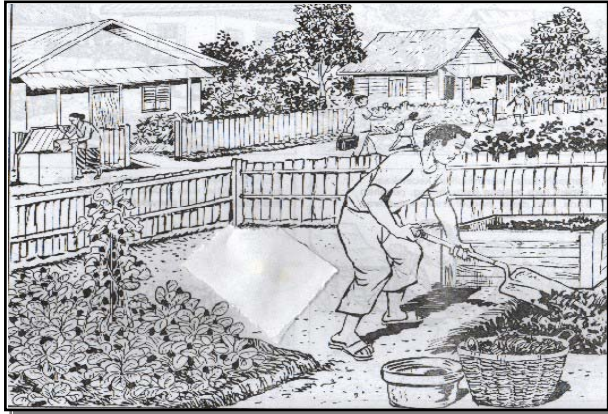
Series 10b



Source/Inspiration: Community Health Development Book Publish by Ministry of Health

FLASHCARD SERIES FOR PHAST

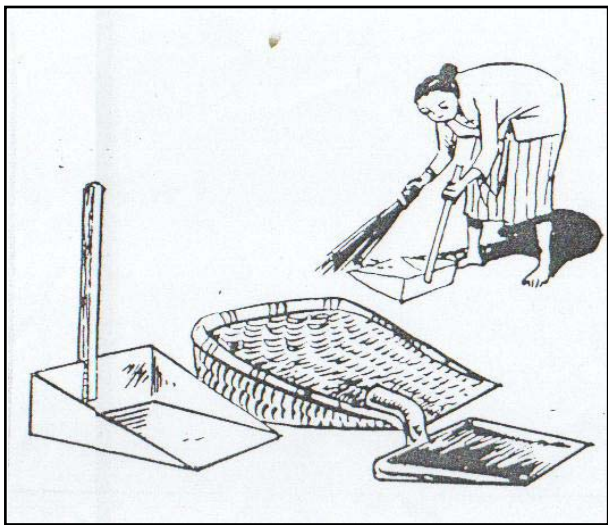
Series 10d



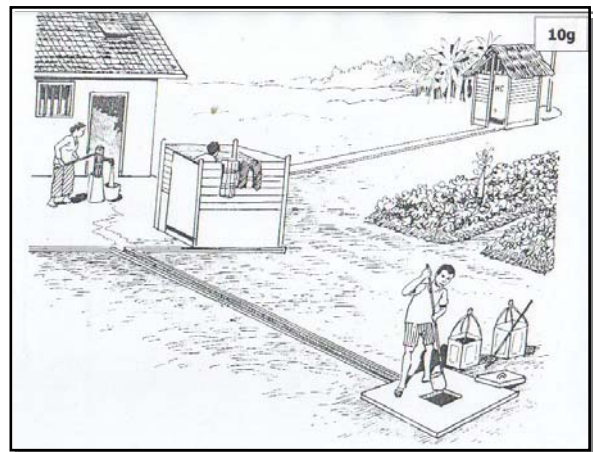
Series 10e



Series 10f



Series 10g



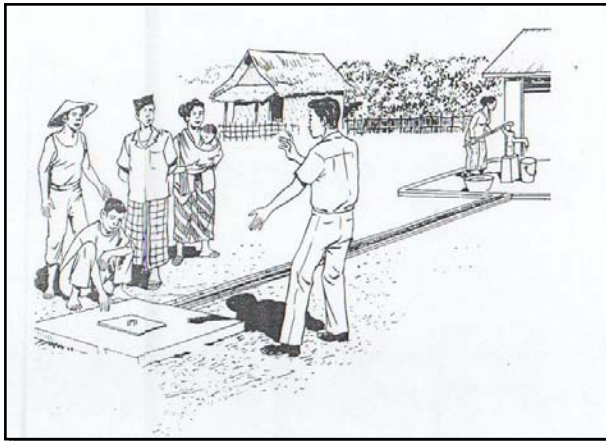
Source/Inspiration: Community Health Development Book Publish by Ministry of Health

FLASHCARD SERIES FOR PHAST

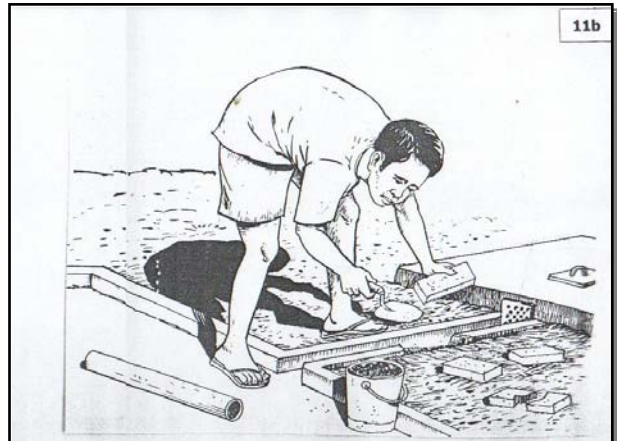
Series 10h



Series 11a

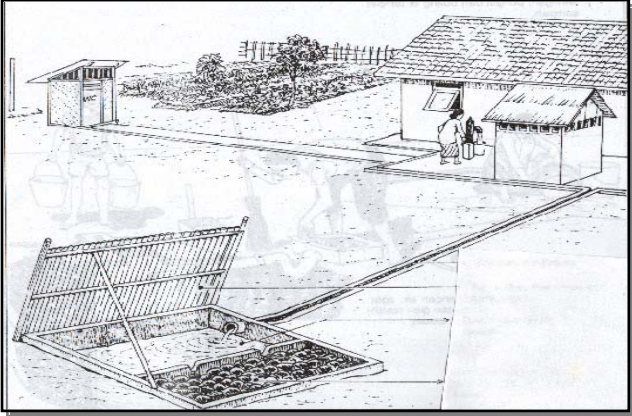


Series 11b

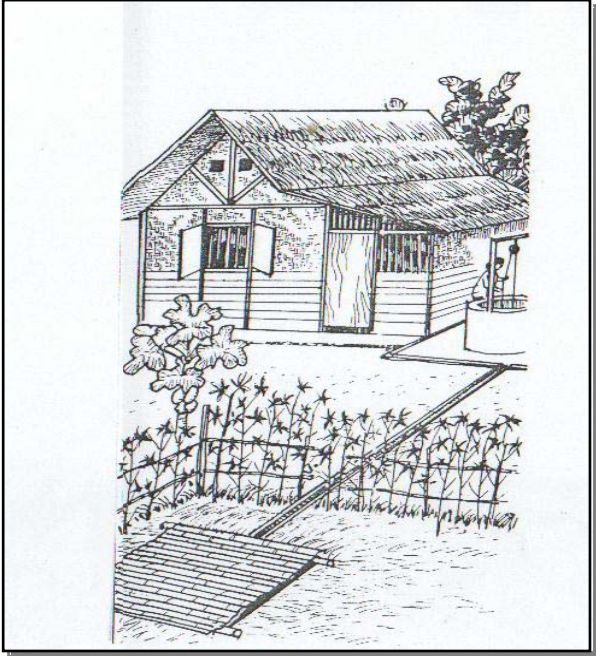


FLASHCARD SERIES FOR PHAST

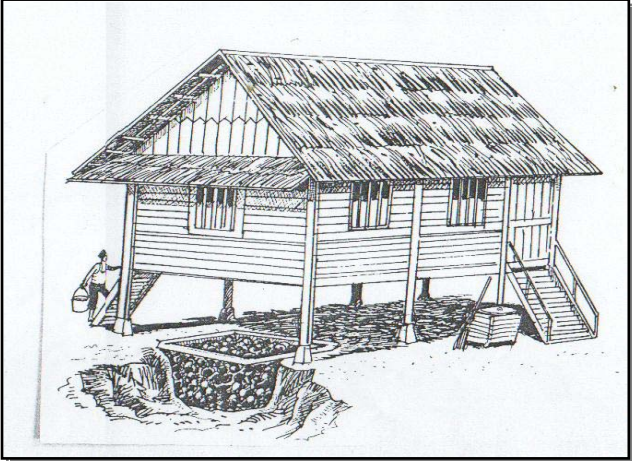
Series 11c



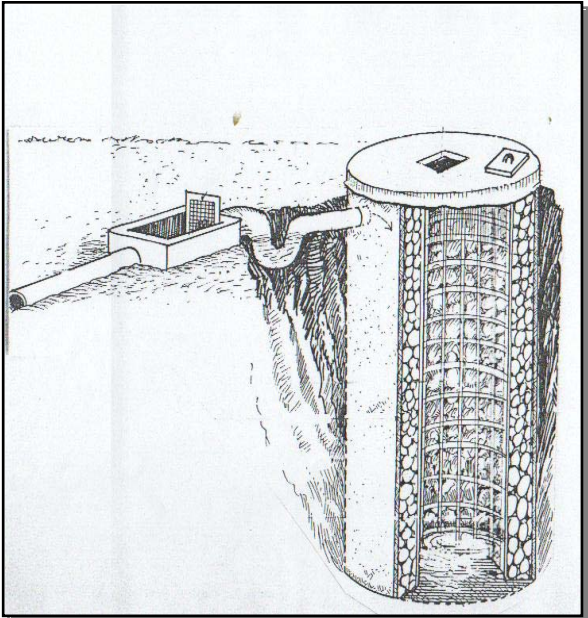
Series 11c



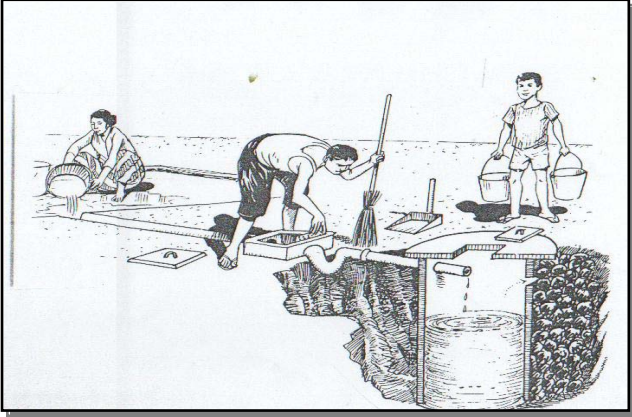
Series 11c



Series 11c



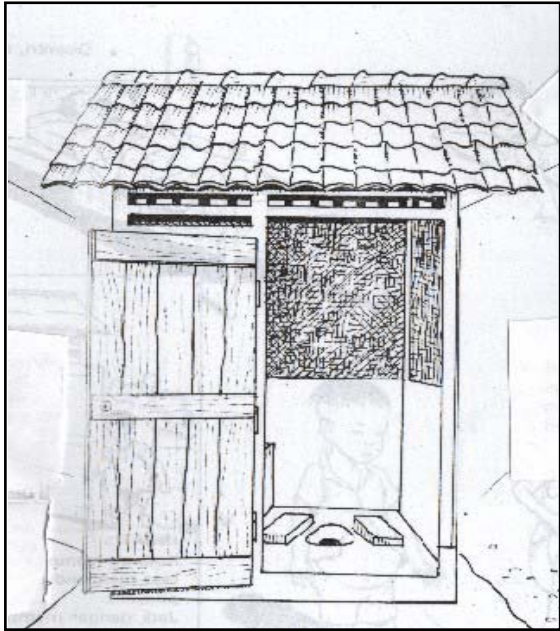
Series 11c



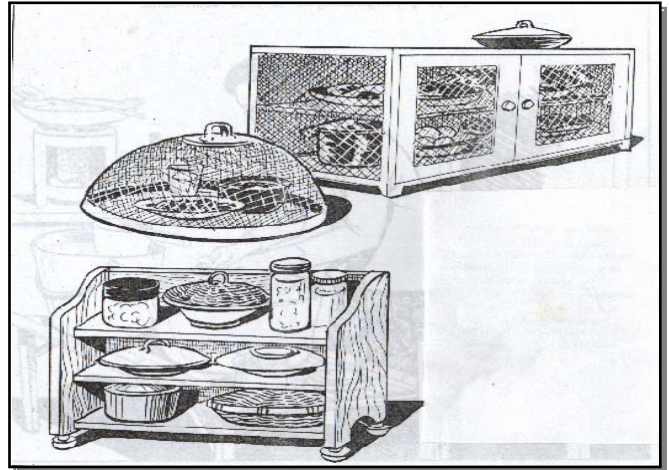
Source/Inspiration: Community Health Development Book Publish by Ministry of Health

FLASHCARD SERIES FOR PHAST

Series 12



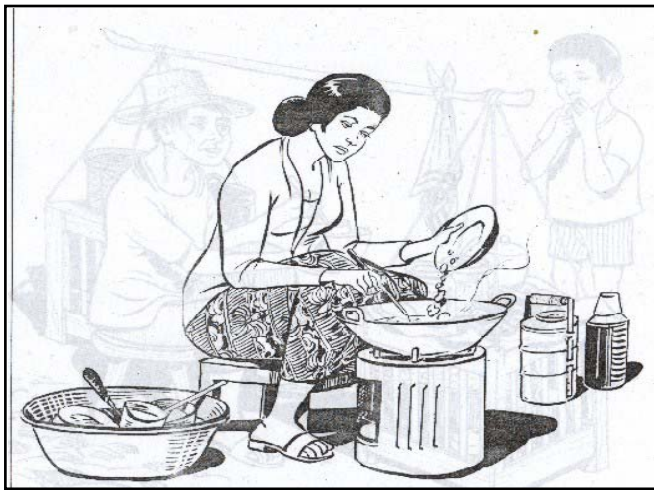
Series 13a



Series 13c



Series 13b



Source/Inspiration: Community Health Development Book Publish by Ministry of Health

2. PROBLEM ANALYSIS FORM (Form A and Form B)

2.1 Form A

- Problem: list all problems related to health & hygiene and especially common diseases, which have occurred in the village.
- Cause of problem: discuss the cause of the problems.
- Impact to communities: discuss what were the impacts on the communities.
- Possible solution: discuss what kinds of solution can be implemented to solve the problems
- Local potential: identify what kind of existing resources are available in the village that can be used for solving the problems.

Table of Form A

No	Problems	Cause of problems	Impact of problems to communities	Possible Solution	Local Potential
1.					

2.2 Form B

- Possible solution: List the possible solution which were decided by all participants in Form A
- Discuss the strength of each solution
- Discuss weakness of each solution
- Discuss the opportunity of every solution
- Discuss the threat of every possible solution

Table of Form B

No	Alternative Solution	Strength	Weaknesses	Opportunities	Threats
1.					

Appendix 19

**COMMUNITY OPERATION
AND MAINTENANCE PLAN**

Appendix 19

COMMUNITY OPERATION AND MAINTENANCE PLAN

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Appendix 19 COMMUNITY OPERATION AND MAINTENANCE PLAN

19.1 Introduction

For sustainable community operation & maintenance it is of paramount importance that community members form user groups and continually participate in the O&M of the water supply schemes. There is substantial experience in the application of community management approaches for rural water supply in NTB and NTT. An essential part of a community management approach is community participation in decision-making and management of key aspects of planning, design, implementation, financing and operation & maintenance of proposed systems. This community operation & maintenance plan will provide a guideline for implementation of community management approaches to enhance the effective and sustainable use of the water supply systems.

19.2 Purpose and Outputs

19.2.1 Purpose

The purpose is to facilitate and support communities and institutions with the establishment of sustainable water supply system operation and maintenance arrangements.

19.2.2 Outputs

In order to achieve this purpose, three key outputs are required during implementation of the project:

1. Mechanisms, processes and improved capacity for community members to have an equitable voice in decision-making and be empowered to actively contribute to the community development activities;
2. Established WUAs and WUGs and increased member's capabilities to sustainably manage the water supply facilities, and
3. Strengthened relationships between WUA/WUG members and their relevant stakeholders such as PDAM, Camat, Department of Community Empowerment (PMD) and Village Representative Council (BPD).

19.2.3 Activities

In order to achieve these outputs, the following activities are required to be implemented during the planning and implementation period of the project.

Outputs	Activities
<p>Mechanisms, processes and improved capacity for community members to have an equitable voice in decision-making and be empowered to actively contribute to the community development activities.</p>	<p>Community members will:</p> <ul style="list-style-type: none"> - clarify and develop their demands for the water supply systems; - decide technology choice, form of social organization, financing mechanism, community responsibilities, WUA/WUG members; - discuss WUA/WUG regulations and roles. - develop awareness on water management, gender awareness, self reliance, and interest for O&M; - be empowered for community development especially through involvement of participatory planning and evaluation.
<p>Established WUAs/WUGs and increased member's capabilities to sustainably manage the water supply facilities.</p>	<p>WUA/WUG members will:</p> <ul style="list-style-type: none"> - develop capabilities in organization, leadership, financial, problem solving, administrative and technical matters, and social and gender issues; - develop WUA/WUG regulations; - master participatory planning and evaluation skills; - carryout field trips to other WUA; - competently undertake their individual roles in water supply management; - monitor and evaluate their activities regularly.
<p>Strengthened relationships between WUA/WUG members and their relevant stakeholders such as PDAM, Camat, PMD and BPD.</p>	<p>WUA/WUG members will:</p> <ul style="list-style-type: none"> - organize workshops with related stakeholders for formal agreement at the social preparation stage; - organize regular meetings and discuss their roles; - report WUA/WUG activities regularly to stakeholders.

19.3 Design of Community Operation and Maintenance

19.3.1 O&M Management Arrangement with PDAM

The community operation & maintenance plan will be implemented for the project proposals which include a total of 19 water supply systems for 17 villages (10 in NTB and 7 in NTT). The proposed O&M arrangements provide for three different types of management classified as follows:

- Type A – PDAM management;
- Type B – Community management with PDAM support; and
- Type C – Community management.

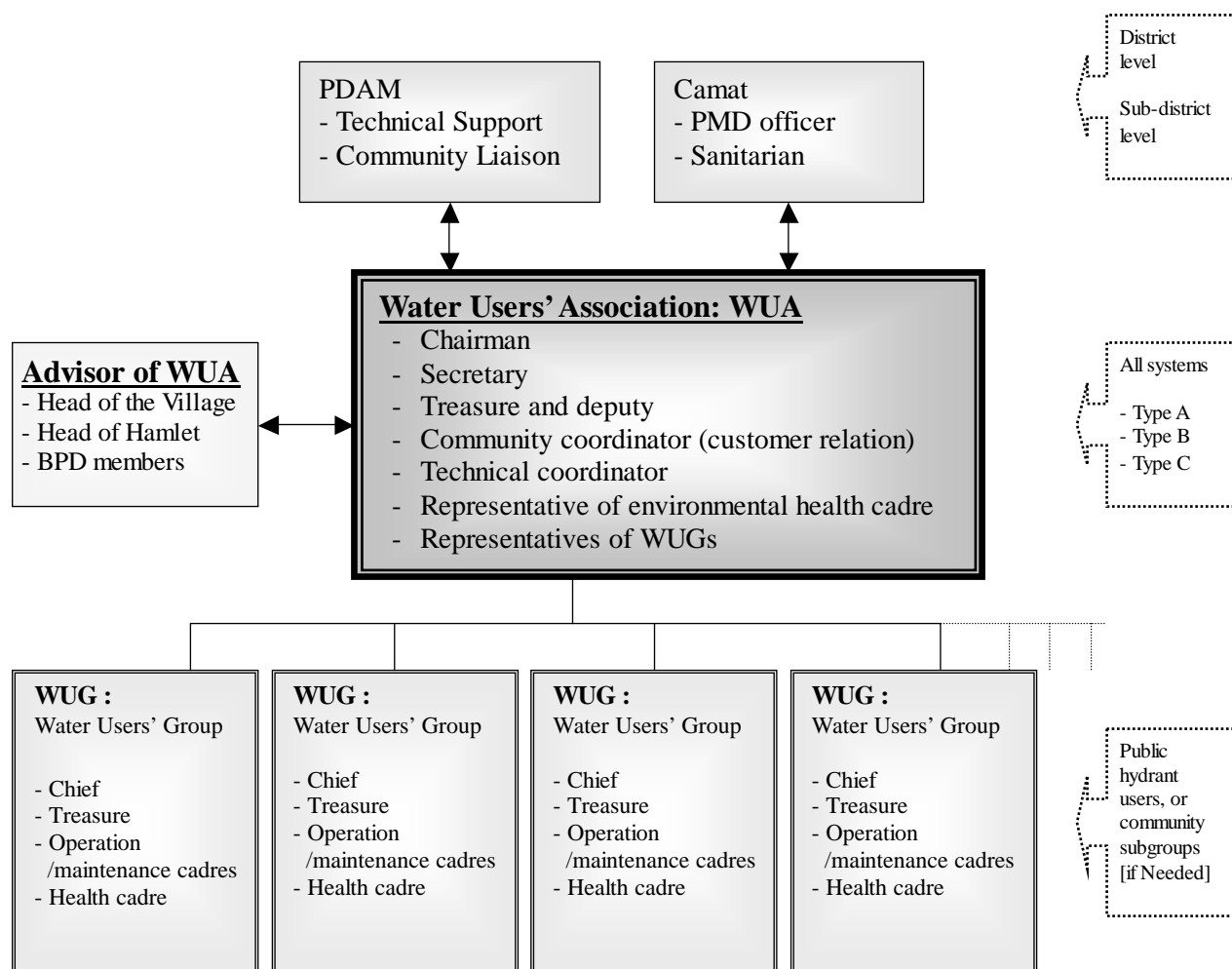
Both Type A (PDAM) and Type B and C schemes will involve community management through the creation of WUAs and WUGs. The objectives, roles and responsibilities of the WUAs and WUGs will however be different in each case (see Chapter 6.2.4, Community Management Approach). Communities for Type B & C have overall responsibilities for all aspect of system operation & maintenance, even though technical support will be provided from PDAM for Type B systems. On the other hand, the requirements for Type A systems are different, particularly in that there will be very limited requirement for community involvement in financial management as tariffs will be paid by consumers to the PDAM.

Therefore, community managed schemes (Type B & C) might need more intensive counseling and motivational activities for the community members and WUA/WUG members, in terms of training and community capacity building.

Moreover, the proposed operation & maintenance arrangements for the three proposed operation models are set out in Table 6.2.11 to 6.2.13 in the Main Report. These tables indicate the various activities, tasks, responsible organizations, timing and the role of the Project in operation and maintenance from Project initiation through to long-term operation & maintenance of the completed systems. The detail explanation of expected community documentation is noted at Section 19.5.3.

19.3.2 Community Operation & Maintenance Structure

The community operation & maintenance structure will be established by the Project through the community operation & maintenance plan within the existing community structure as outlined below:



19.3.3 Establishment of WUA / WUG

Water Users' Association (WUA) will be established at the village level. Water Users' Groups (WUGs) are proposed to represent the interest of village subgroups such as public hydrant users or other community subgroups. Communities will decide on the need for the structure of WUGs. It is important that the WUAs particularly, and also the WUGs, are appropriately constituted both to represent the broad interests of consumers and also to ensure that there are appropriate skills to undertake their role. There must be appropriate representation from women on WUAs and WUGs.

(1) The main roles of WUA include the following:

- Ownership of the assets of the water supply system on behalf of the community.
- Effectively manage assets of the water supply to deliver water supply services to consumers.
- Establish regulations for water management and use of assets including penalties.

- Hold regular meeting to consider appropriate matters related to water supply management.
 - Keep record of meetings.
 - Resolve problems identified by constituents and members.
 - Ensure constituents are regular informed about relevant water issues.
 - Establish user charges.
 - Collect user charges from consumers.
 - Establish and maintain bank accounts and financial records.
 - Carry out periodical monitoring of systems and their performance.
 - Conduct participatory planning and monitoring sessions with members.
 - Promote networking with other stakeholders.
- *Some of the roles will not require for Type A systems.

(2) The main roles of WUG include the following:

- Effectively manage the operation of public hydrants and other appropriate assets
- Resolve problems identified by constituents and/or members.
- Ensure regular and effective maintenance of public hydrants
- Hold periodic meetings.
- Keep record of meetings
- Report to WUA on important matters.

19.4 Action Plan

As a brief action plan, the major activities are divided into four stages; project preparation stage, social preparation stage, training and extension stage, and operation and maintenance stage. Detail Action Plan of O&M is shown in Table A19-4.1 with activities, responsible person, participants, location and duration.

(1) Step-1: Mobilization (1) – Preparation of manuals and guidelines:

- 1) Preparation of manuals and guidelines
- 2) Baseline survey needs assessment of the community

(2) Step-2: Mobilization (2) – Social Preparation:

(Expected community document: Implementation agreement)

- 1) Community mobilization and workshops (development of awareness on water management, and decisions on technology choice, financing mechanism, form of social organization)
- 2) Implementation agreement with PDAM and related stakeholders.

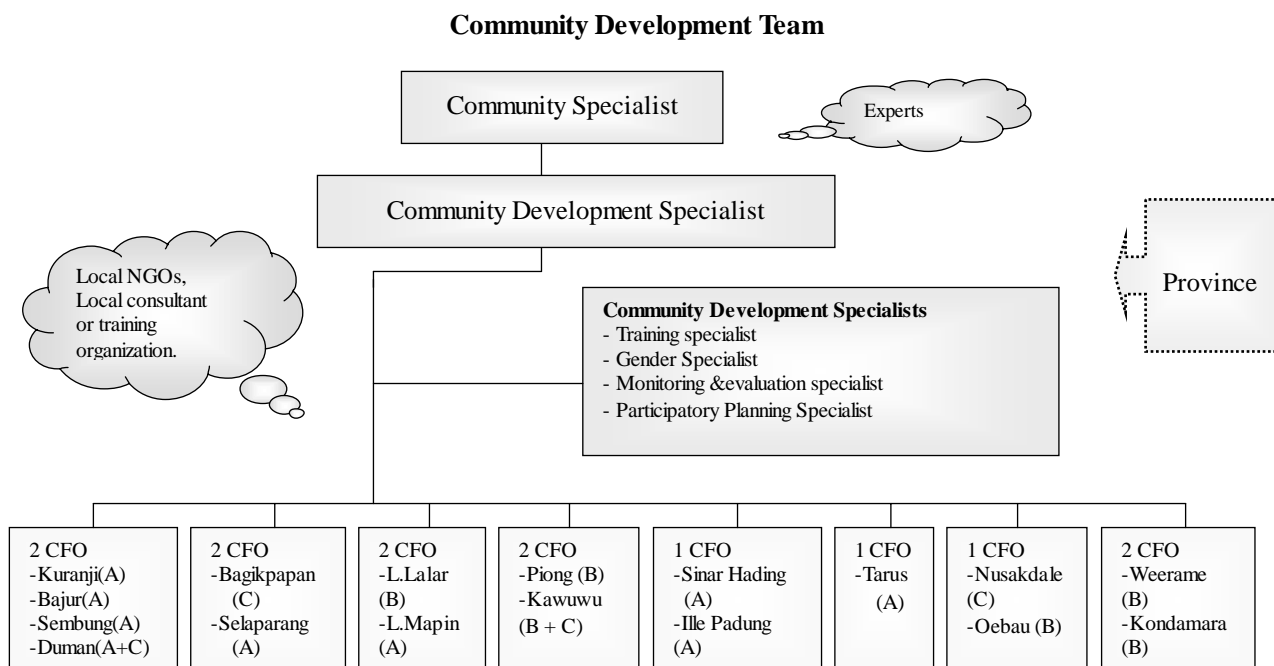
- (3) Step-3: Supporting WUA/WUA:
 (Expected community document: WUA/WUG legal registration form, WUA/WUG regulation)
- 1) Community capacity building and community empowerment (develop gender awareness, self-reliance, and basic O&M skills; and discuss community regulation and roles, community responsibilities, and WUA/WUG members).
 - 2) WUA/WUG members: establishment WUA&WUG, series of training, conduct meetings for community to make WUA/WUG regulations, participatory planning report.
 - 3) Strengthen appropriate relationships with stakeholders (organize regular meetings and discuss their roles; report WUA/WUG activities regularly to stakeholders.)
- (4) Step-4: Monitoring and evaluation through participatory approach:
 (Expected community document: self-monitoring report, WUA progress report, bank statements, participatory planning reports)
- 1) Operation/maintenance
 - 2) Participatory evaluation and participatory planning

19.5 Implementation Plan

19.5.1 Organization

The detailed community operation & maintenance plan will be provided by the design and supervision Expert appointed by the Agency. The Expert will engage appropriate local organizations to assist in this work directly. Appropriate organizations will include local NGOs, local experts, and training organizations.

The team for community development activities will be structured as indicated below. A Community Specialist (an international expert) will control and monitor overall activities through the Community Development Team Leader who will direct and control the three expert groups; PDAM Organization Development, Community Development and Training. This Community Development Team will organize Community Field Officers (CFOs), who will directly undertake the work in one to three villages to introduce community management approaches into the communities.



19.5.2 Input

Scope of each specialist is as follows:

(1) Community Specialist

Community Specialist will control and supervise overall activities of community development and management. He/she will make intermittent site visits on strategic occasions and attend periodic meetings to provide guidance and improve the quality of the outcomes. The major responsibilities are as follows:

- Needs assessment and detailed design.
- Selecting and directing specialists.
- Approving the appointment of community field officers (CFOs).
- Approving work schedules, documents, forms, manuals and guidelines prepared by local consultants.
- Coordination between stakeholders especially at the initial stages.
- Quality Control of overall expert activities.
- Monitoring and evaluation of the project progress and outcomes.

(2) Community Development Specialists

The Community Development Specialists will select, direct, coordinate, control and supervise specialists and community field officers. This will include:

- Selecting and directing local specialists and community field officers.

- Developing community management manuals for CFOs and community members to develop awareness and ownership about related water supply issues and community operation & maintenance, and developing members' enthusiasm and willingness for the community management and development.
- Preparing the implementation plan with other specialists and implementing the community management approach and community development.
- Training and facilitating CFOs (community participation, management and development, and appropriate technology).
- Conducting baseline survey together with monitoring and evaluation specialists.
- Preparing work plans, progress reports, budgeting of all project activities.
- Supervising each specialists and CFOs.
- Coordinating possible problems during implementation.

(3) Training Specialist

The Training Specialist will design, plan, conduct, and assess the training and capacity building activities. This will include:

- Assessing training needs for community management and development for the community.
- Preparing training manuals and guidelines.
- Conducting training to transfer technologies.
- Assessing the training and capacity building

(4) Gender Specialist

The Gender Specialist will:

- Implement simple gender analysis
- Develop and conduct awareness raising and water management training specifically targeting women.
- Establish mechanisms to facilitate women's participation in the WUAs/WUGs activities.

(5) O&M Expert

The O&M Expert will:

- Develop technical manuals and guidelines for the technical cadres and WUA/WUG members.
- Train technical cadres and PDAM staff who will operate and maintain the water supply systems.

- Assess the training outcomes for sustainable skills development.
- The Technical Specialists will be drawn from the Expert's technical team for design and construction supervision.

(6) Monitoring and Evaluation Specialist

The M&E Specialist will establish and implement socio-economic assessment techniques necessary for monitoring and evaluation of the community operation and maintenance including:

- Conducting base-line surveys.
- Identifying indicators to be monitored and evaluated, and preparing a monitoring and evaluation plan and schedule.
- Selecting participatory monitoring and evaluation methods.
- Gathering basic data and information necessary to monitor and evaluate.
- Implementing the regular monitoring and evaluation with CFOs and WUA members.

(7) Participatory Planning Specialist

The Participatory Planning Specialist will conduct, train and facilitate CFOs to strengthen the capacity of communities to assess their needs related to water and socio-economic conditions and to formulate a community-based plan for WUA management, water, health and hygiene plan, and to establish the network with other donors/supporters who may participate in development funding for village action plan implementation. Activities will include:

- Formulating a village committee for participatory planning.
- Selecting and training community members to participate in community-based WUA management, water, health and hygiene plan.
- Conducting a simple and participatory local appraisal in each community, using a method such as Rapid Rural Appraisal or Participatory Rural Appraisal.
- Preparing development plans such as the village action plan for GOI and/or other donor funding.

(8) Community Field Officer

Community Field Officers (CFOs) will work in each village. CFOs will be appointed by the Community Development Specialist to work in each village to introduce community development approaches into the communities. CFOs will be the key link between the project and the community. CFOs will be trained in their roles by the Project. The use of local CFOs will maximize the exposure of communities to the proposed methodologies. The use of local staff (at least from

the same province and preferably the same island) will also ensure that the community process is sensitive to and appropriately adjusted to suit local cultural and community situations. CFO activities will include:

- Needs assessments in the proposed communities.
- Consultation to create awareness and ownerships.
- Organizing group meetings to formulate WUA and WUG.
- Assisting WUA and WUGs to strengthen their organizations.
- Calling at homes to coordinate community opinions and problem solving.
- Organizing a series of meeting and workshops with related officials to discuss operation and maintenance issues.
- Coordinating and facilitating the WUA members through development of systems and methodologies to manage relationships with stakeholders.
- Facilitating the preparation of implementation agreements with related officials and the legal registration of WUAs/WUGs, WUA/WUG regulations for water use.
- Training the selected community members on organizational behavior and intercultural communication.
- Assisting and facilitating the participatory planning with specialist team members.
- Assisting and facilitating the intensive training and capacity building activities with the specialist team members.
- Assisting the promotion of health and hygiene education with health field officers and health cadres.
- Facilitating and mobilizing WUA/WUG members to be able to operate & maintain water supply systems by themselves.
- Providing on the job training for WUA/WUG members and community members.
- Regularly monitoring and evaluating project outcomes.

19.5.3 Reporting requirements

All stakeholders shall be responsible for the preparation of the following reports. In addition, the Community Specialist (International) shall assess the physical progress and impact of the project on the target beneficiaries in line with the project objectives and purposes. It is recommended to use other qualitative methods to assess community participation in and management of facility upgrading and to share the information with the stakeholders. The following reports prepared by respective stakeholders could be presented to the formal project meeting for further discussions and clarifications.

Reporting Requirements

From	Items	To
Community Specialist	Project detail design report Quarterly progress report Evaluation report	Team leader Team leader Team leader
Community Development Specialist	Baseline survey report Monthly progress report Quarterly progress report Quarterly financial report Evaluation report	Community Specialist Community Specialist Community Specialist Community Specialist Community Specialist
Training Specialists	TOT manual & guidelines Community management approach guidelines O&M manual and guidelines Training manuals and scheduling Training assessment report	Team Leader Community Dev. Specialist O&M Expert Team leader Team leader
Gender Specialist	Gender manual and guidelines	Community Dev. Specialist
Monitoring and Evaluation Specialist	Baseline survey report Monitoring and evaluation manual Monitoring and evaluation report	Community Dev. Specialist Community Dev. Specialist Community Dev. Specialist
Participatory Planning Specialist	Participatory planning manual Participatory planning report	Community Dev. Specialist Community Dev. Specialist
Community Field Officer	Monthly progress report	Community Dev. Specialist
WUA	Implementation Agreement WUA/WUG legal registration WUA/WUG regulation Participatory planning Self-monitoring report WUA progress report	PEMDA Camat Kepala desa, Camat, CFO, Kepala desa, Camat, CFO, Kepala desa, Camat, (PDAM) CFO, Kepala desa, PMD, Camat, CFO, PDAM

Expected documents for submission by WUA and community members have been mentioned before. These documents are required to assess the progress and achievement of community monitoring and evaluation. Brief details are provided below:

(1) Implementation Agreement

After a series of workshops and meetings between community members and related officers including PDAM (especially for Type A), the roles and responsibilities of administration, finance, operation and maintenance could be agreed. For sustainable O&M, agreement is crucial to ensure all stakeholders understand their roles and responsibilities.

(2) WUA/WUG Legal Registration

The formal WUA formation will be legalized through a registration letter from the Camat.

At least for Type B and C schemes a financial unit of the WUA will be formed as a Cooperative and notarized. Its accounts will be audited yearly from outside the community, such as Camat.

(3) WUA/WUG Regulation

The WUA/WUG regulations will define the responsibilities and rewards for the community and WUA/WUA members, such as water charges, water management responsibilities, meeting attendance, member's roles, etc. The regulations have to be developed carefully through broad consultation and discussion by all members. The regulations will be the key instrument for long term operation of the WUAs and WUGs.

(4) Participatory Planning

Participatory planning is an advantageous vehicle to strengthen the capacity, local appraisal and strategic management at a community level. Without strategic management at a community level, the improved conditions of water supply management, health and hygiene and WUA activities will not be sustainable. The village action plans which are produced from the participatory planning process will be presented to relevant Government agencies, NGOs and donor agencies for development funding support.

(5) Self-Monitoring Report

Monitoring and evaluation is an effective management method to understand the level of progress and constraints on a regular basis. The results of monitoring and evaluation will provide useful information for operation and management of the projects to be improved. The monitoring and evaluation process should be participatory and the results must be disclosed to the public for transparency.

(6) WUA Progress Report

Regular documents for submission to the related officers such as PDAM, PMD, and Kepala Desa is crucial to maintain the continuous support and attention of stakeholders.

Table A19-4.1 Detailed Action Plan of Operation and Maintenance (1/2)

Stages		Activities	Responsible Person	Participants	Location	Duration
Step-1: Mobilization (1) Preparation of manuals and guidelines	1	Explain and discuss the plan / request cooperation (Bupati, PDAM Camat)	Project management	Bupati, PDAM, Camat,	Province, District Sub district	2 weeks
	2	Formulation of community development team: recruitment and selection of key experts.	Project management	Experts/ NGOs	Province	1 month
	3	Develop manual for community management, guidelines, training manual and curriculum for training.	Community Specialist	Experts	Province	2 months
	4	Project preparation activities at community - Explanation of the project (scope, implementation schedule, funding etc.) - Conduct baseline survey - Conduct workshops for needs assessment: clarification of demands, technical options (source, transmission & distribution system, connections), proposed management arrangements, community responsibilities, and cost.	Experts	Leaders Community members	Community	2 month
Step-2: Mobilization (2) Social Preparation	1	Explain and discuss the plan / request coordination (Bupati, BAPPEDA, PDAM, Camat, PMD)	Project management	Bupati, BAPPEDA, PDAM, Camat,	Province, District Sub district	2 weeks
	2	Recruit, Select and Train Community Field Officers.	Expert	Community Field Officers (CFO)	Province	2 months
	3	Workshops with PDAM and related stakeholders.	-Community Specialist -Organization Development Specialist	Bupati, PDAM, Camat,	Province, District Sub district	1 month
	4	Community motivation and agreement with stakeholders: - Orientation and review the technical design assumptions, costs, management arrangements, and community obligations. - Community consultation/awareness training on water management, water & sanitation for health, management arrangements. - Consultation of WUA/WUG organizational. - Workshops for implementation agreement with stakeholders	-Community Specialist -Training Specialist -Community Development Specialist	CFOs/NGOs	Community	3 months

Table A19-4.1 Detailed Action Plan of Operation and Maintenance (2/2)

Stages		Activities	Responsible Person	Participants	Location	Duration
Step-3: Supporting WUA/WUA	1	Establishment of WUA/WUG: <ul style="list-style-type: none"> - Consideration of WUA/WUG organizational. - Establishment of WUA/WUG organizational and representational requirements. - Election of WUA & WUG members - Initial training of WUA & WUG members - Discussion of WUA/WUG regulations - Legally register WUA/WUGs - Establish WUA bank account - Prepare plan for health and hygiene education 	Community Development Team	-Community members -WUA/WUG members -Head of the village -BPD -Camat	Community	4 months
	2	Motivations and community empowerment <ul style="list-style-type: none"> - Caretakers, awareness, self-reliance, community development, and basic O&M skills, etc. - Gender awareness, Self-reliance - Involved in participatory planning conducted by WUA and CFO. - Practical health and hygiene activities through campaign and programs. 	Community Development Team	-Community members	Community	4 months
	3	O&M training for members <ul style="list-style-type: none"> - Administration: networking, problem solving, regular meeting, minutes recording, participatory planning (for community development funds, etc). - Finance: water charge, record-keeping, accountability. - Technical: adequate skills for monitoring, operation, maintenance, inspection and reparation of facilities 	Community Development Team	-WUA/WUG members	Community	1 month
	4	Reformulate and strengthen the WUA/WUG <ul style="list-style-type: none"> - Preparation of WUA/WUG regulations - Revise and define the WUA members 	Community Development Team	-Community members -WUA/WUG members	Community	1 month
Step-4: Monitoring and evaluation through participatory approach	1	Practice: Conduct regular meeting by WUA, collect and record keeping O&M fees, regular inspection and reparation, regular visit by community facilitators or technical assist.	Community Development Team	-Community members -WUA/WUG members	Community	Every 2 weeks – 1 month
	2	Field trip to observe other WUA for discussion with successful WUA, review and reconstruct WUA management system.	Community Development Team	-WUA/WUG members	Province	1 month
	3	Participatory Planning to prepare village action plan <ul style="list-style-type: none"> - Village action planning for sanitarium programs, income generation activities, environmental protection of water source areas, etc. 	Community Development Team	-Community members -WUA/WUG members	Community	1 month
	4	End of cycle training: participatory monitoring and evaluation.	Community Development Team	-Community members -WUA/WUG members	Community	1 month
	5	Monitoring and evaluation: Community level performance, health and hygiene conditions and effects, regular monitoring by community member.	Community Development Team	-Community members -WUA/WUG members	Community	Every 2 weeks – 1 month

Appendix 20
PDAM DATA

Appendix 20

PDAM DATA

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Appendix 20 PDAM DATA

20.1 Introduction

The project was conceived as a rural water supply project, which would provide water supply systems for project villages in NTB and NTT. The project envisaged management of water supply systems by the villages without formal support from government water supply agencies.

However, during the initial phases of the study it became apparent that local government water enterprises, or PDAM, would be involved in at least some of the proposed water supply systems for various reasons. Accordingly a study of the institutional capacity of PDAM was undertaken as part of the project in order to identify:

1. The capacity of PDAM to provide the required operation & maintenance role in the specific project villages and to provide support to community managed systems with specific needs;
2. Capacity constraints which might impact on the PDAM's ability to perform these roles;
3. Capacity building opportunities to strengthen the PDAM in support of village water supply systems.

The study was undertaken during the period 1 September to 24 November. During that time visits were made to each PDAM and discussions held with management and staff on a wide range of matters. Formal reports were collected and inspections of facilities undertaken. In advance of these visits, a questionnaire was circulated to the PDAM in the project area and responses were received.

In some district discussions were also held with other agencies including Kimpraswil, BAPPEDA, Community Empowerment Department, and with district and village officials and residents. Visits were made to some of the project villages. Visits were also undertaken to villages in which piped water supplies were previously implemented under other funding arrangements in order to determine what lessons could be learned and adapted to this project particularly with regard to enhanced sustainability.

The key conclusions of the study are set out in Chapter 6 (Section 6.3), however this Appendix contains the detailed data collected and prepared during field investigations as well as analysis and conclusions in relation to individual PDAM.

20.2 Role of PDAM in Project

20.2.1 Institutional Background

Perusahaan Daerah Air Minum, or PDAM, are autonomous water enterprises owned by their respective local (district or city) government. The role of the PDAM (in accordance with the prevailing legislation) is to provide water supply services to cities and towns essentially on a commercial basis. In reality, many PDAM in the project provinces (and throughout Indonesia) do not make a profit and require (and receive) on-going government support, in various forms, in order to sustain their operations.

20.2.2 PDAM and Rural/Village Water Supply

While the project was conceived as a rural water supply project for which support would be provided directly to villages to assist them in implementation, operation & maintenance of village water supply projects, it became clear during the study that there would be a role for the PDAM to support the long term sustainable operation of water supply systems for a number of reasons:

1. PDAM are the primary source of technical expertise in their respective district for the operation & maintenance of water supply facilities;
2. Many villages are located close to and can access water supplies from existing PDAM systems without the need to develop new sources and headworks, thus providing savings in capital investments for implementation;
3. Increasingly, district governments have decided as a matter of policy that their respective PDAM will take the lead role in supporting the development of water supplies outside their traditional locations in district and district capitals and directly adjacent peri-urban areas;
4. Experience has shown that even when communities elect to implement and manage their own water supply systems, there is a need for support from time to time in some areas including technical planning, operation of more complex systems, and maintenance & repair of larger and more complex facilities including pumps and larger pipelines, particularly when special tools and equipment are required such as for electrical and mechanical equipment.

20.2.3 Proposed Role of PDAM in This Project

The above situations apply to some of the proposals for rural water supply systems under this project.

The project proposes to implement 19 rural water supply systems in 17 villages in 9 district (including Rote – formerly part of Kupang). This institutional study included 10 PDAM. These were selected because at the time the study commenced the project proposed to implement village water supplies in their respective city/district, namely: Mataram Lombok Barat, Lombok Timur, Sumbawa, Dompu, Bima, Sikka, Flores Timur, Kupang, Sumba Timur and Sumba Barat. PDAM Kupang continues to cover the island of Rote even though it is now a separate district.

Following completion of the technical investigations, surveys and engineering designs, the number of villages has been reduced. There is no longer a project village located in Kabupaten Dompu or Kabupaten Sikka. The proposed role of the PDAM as recommended in the Final Report is summarized in the following Table. (Further details are contained in Chapter 6.)

Summary O&M Arrangements

Management Arrangements	NTB	NTT	Total Systems
Type A – PDAM management	Kuranji Bajur, Sembung Duman (lower) Seleparang Lb Mapin 6 systems	Sinar Hading Ile Padung Tarus 3 systems	9 systems
Type B – Community management with PDAM support	Lb Lalar Piong Kawuwu (lower) 3 systems	Weerame Kondamara Oebau 3 systems	6 systems
Type C – Community management	Duman (upper) Bagik Papan Kawuwu (upper) 3 systems	Nusukdale 1 system	4 systems
Totals	12 systems	7 systems	19 systems

20.3 General Assessment of PDAM Capacity

The performance of the PDAM was assessed from the questionnaires completed, data collected, observations in the field, and discussions with PDAM staff and consumers. A series of standard spreadsheets was used to record the data collected for each PDAM, where possible in a consistent format and structure. These spreadsheets are contained in Annex 8-1 to this Appendix. A summary of the key data and performance indicators derived there from are set out in the attached Tables A8.1, A8.2 and A8.3.

Key conclusions from the study are set out in Chapter 6 (Section 6.3) of the Final Report and are not repeated here. However additional comments on the data and conclusions from the field observations, discussions and analysis in relation to the individual PDAM are contained in the following section.

20.4 Individual PDAM Assessments

20.4.1 Menang Mataram

(1) General

PDAM Menang Mataram provides water supply services to both Kotamadya Mataram and Kabupaten Lombok Barat. The city and the district have agreed on a single PDAM and have put in place appropriate institutional arrangements to reflect this joint ownership with Kabupaten Lombok Barat holding 65% equity and Kotamadya Mataram holding 35%. The PDAM operates a network of 10 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers.

Menang Mataram is the largest PDAM in Nusa Tenggara with some 31,000 active consumers, making it nearly 50% larger than Kupang, the second largest PDAM in the region. It is the only PDAM in Nusa Tenggara, which currently makes a profit, and it has no accumulated losses.

Over the 5 years from 1995 - 2000, PDAM Menang Mataram has achieved consistent yearly increases in consumers (17% per annum), and water sales have increased at a similar rate. Revenue has also increased consistently (24% per annum) while expenses have also increased but at a lower rate (19% per annum). Bottom line results have improved from small losses in 1995 & 1996 to modest profits in 1998 – 2000. Significantly, tariff increases have averaged only 7% per annum over this period compared to inflation of about 17% (Biro Pusat Statistik, Indeks Harga Konsumen Dan Inflasi Di 44 Kota Tahun) per annum. UFW is relatively low by Indonesian standards (28%). The accuracy of UFW details is suspect for all PDAM due to lack of bulk supply meters and the significant proportion of defective consumer meters. In the case of PDAM Menang Mataram the data indicates that UFW has changed little over this period.

A corporate plan is in preparation and is reportedly nearly complete. A water supply master plan is also in preparation.

PDAM Menang Mataram is currently providing support to village water supply systems in Gerung where the district government has implemented a sub-district

based water enterprise to serve a number of hamlet supplied by gravity and pumping from a PDAM transmission main.

The following information is based on technical reports for January 2001 (December 2000 data) and audited financial reports for FY 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

Menang Mataram is fortunate in having access to good quality sources of clean water, primarily from high level springs, from which consumers can be supplied by gravity. A 24 hour supply is maintained in most of the distribution area and service levels are generally acceptable. Supplies are reported to be chlorinated, but we understand that chlorination is not always carried out.

The water supply systems may be considered to include 3 major separate systems, all of which involve extensive transmission pipelines. These systems include:

- A major system serving Mataram, and extensive adjacent areas north to Senggigi and south to Lembar;
- A system serving Pemenang, Tanjung and Gangga in the northwest;
- A system serving Bayan in the north.

Coverage is 42% of the current service area population indicating significant potential for increasing connections and water sales in future. Adequate quantities of water are supplied to customers with average consumption being 27.4 m³/connection/month.

(3) Organization and Staffing

The organization structure for PDAM Menang Mataram is similar to other PDAM except for the fact that it has a more extensive branch office network. Branch offices provide both technical and finance/administration functions.

Staffing levels are the lowest in Nusa Tenggara at 5.6/1000 connections. In part this is due to the fact that the systems are gravity and do not require treatment, but the major reason is clearly that the PDAM is more efficient than the others. There is an apparent imbalance between technical and finance/administration functions with 109 of a total of 174 (63%) staff being responsible for the finance/administration functions. The qualifications of staff are high with 23 staff (13%) holding tertiary qualifications, and 97 (56%) having graduated from senior high school. Notwithstanding the evidence of strong technical competence, there is a lack of technical staff with tertiary qualifications in water supply.

(4) Finance and Administration

PDAM Menang Mataram has a very substantial asset base at Rp 48.5 billion, approximately 50% of the total of the 10 PDAM included in the study.

Key details from a review of FY 2000 Financial Report are as follows:

- A full year profit (after tax) of Rp 1.4 billion was produced.
- Accumulated profits to end December 2000 totaled Rp 1.8 billion.
- The base tariff is Rp 345, effective from September 2001, uniform across all service areas.
- The average tariff in FY 2000 was Rp 610/m³.
- The average monthly bill in FY 2000 was Rp 22,612/connection.
- Cash flow in FY 2000 was marginally negative in FY 2000 with a deficit of Rp 1.0 billion.
- Major expense items included salaries (23%), depreciation (36%), general expenses (16%), and interest on loans (10%). Power and chemical costs are low consistent with gravity systems and untreated supplies.
- Cash reserves at end December 2000 total Rp 7.2 billion.
- Long-term debt at end December 2000 was Rp 10.0 billion (30% of equity). This included loans from central government and the ADB.
- Accounts receivable (debtors) at end December 2000 total Rp 1.88 billion, equivalent to 20% of annual business revenue (2.4 months). Note that in common with other PDAM, but to a much lesser extent, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months. However a consistent methodology is used by all PDAM to determine bad debt provisions in the balance sheet.
- In gross terms the cost of water production is estimated at Rp 840/m³ compared with the average gross selling price of Rp 932/m³, a margin of 10%.

A computerized financial system is used for accounting and billing however PDAM Menang Mataram is one of three PDAM in Nusa Tenggara not using the SISKAS software.

PDAM Menang Mataram plans to implement regular CPI based tariff increases in future to avoid the problems generated by infrequent and larger tariff increases.

(5) Technical (Operation and Maintenance) Issues

The technical capabilities of PDAM Menang Mataram include capacity for planning, design and construction management. PDAM technical staff

demonstrated a good understanding of their water supply system, its constraints and medium term augmentation requirements.

Private sector resources are accessed for implementing the house connection program in preference to using internal resources. The PDAM believes it is able to provide improved quality of works at a lower cost using its own resources for project management & supervision. This applies to works for expansion of the pipe networks as well as house connections.

Workshop facilities are poor and equipment/spare parts storage and inventory management could be improved based on limited review of current facilities.

Increased attention should be paid to improve metering both for bulk supplies and consumers in an effort to properly assess and manage UFW. Twenty percent (20%) of consumer meters are not operational. Whilst UFW levels have remained static, this has occurred in parallel with improved service levels including higher distribution system pressures.

Reasonable service levels and low levels of technical staffing tend to indicate better physical asset quality compared to other PDAM.

Detailed as-built drawings are not available. A master plan is in preparation and detailed planning for system expansion is also in process (implementation may require further borrowings). The PDAM advised that the existing systems require substantial water storage augmentation to maintain and improve service levels. Menang Mataram is the only PDAM which has an hydraulic model of its systems to assist with network management and system augmentation planning. The model was not reviewed.

20.4.2 Lombok Timur

(1) General

PDAM Lombok Timur provides water supply services to both the district town of Selong as well as 10 other towns. The PDAM operates a network of 10 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers.

Lombok Timur is an average size (for the study region) PDAM with 7,750 active connections. Significantly, the district capital of Selong represents only 30% of the customer base reflecting the high population densities in other district in Lombok Timur. PDAM Lombok Timur operates at a loss but for various reasons adequate financial data was not obtained for analysis.

A Corporate Plan was reported to exist but was not shown or provided to the team. The following information is based on technical reports for January 2001 (December 2000 data) together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Lombok Timur has access to good quality sources of clean water, primarily from high level springs, from which the majority of consumers can be supplied by gravity. A 24 hour supply is maintained in most of the distribution area.

The water supply systems are supplied from 10 springs and 1 river source to supply the 11 supply areas. Some larger springs serve several towns while some towns are supplied by more than one smaller source. A slow sand filter treatment plant is used for treatment of the river source supplying Sambelia. All supplies are reported to be chlorinated.

Coverage is 27% of the current service area population indicating significant potential for increasing connections and water sales in future. Based on the questionnaire responses provided by the PDAM there are clearly some concerns regarding service levels from consumers including continuity of supply and lack of adequate water quantity. However, water sales data indicates that customers receive on average 27.5 m³/connection/month that is at the high end of the range for all PDAM. Service levels may vary significantly in the different systems.

(3) Organization and Staffing

The organization structure for PDAM Lombok Timur is similar to other PDAM except for the fact that it has a more extensive branch office network. Branch offices provide both technical and finance/administration functions.

Staffing levels are about average for Nusa Tenggara at 11.5/1000 connections. There is an apparent imbalance between technical and finance/administration functions with only 28 of a total of 89 (31%) staff being responsible for the technical functions. The qualifications of staff are high with 6 staff (7%) holding tertiary qualifications, and 53 (60%) having graduated from senior high school.

(4) Finance and Administration

PDAM Lombok Timur was unable to provide financial reports for FY 2000. Apparently an Annual Report and balance sheet was not prepared for FY2000. Requests for earlier data (FY1999) were not fulfilled

Very little specific information can be provided in relation to finance and administration of PDAM Lombok Timur.

According to the completed project questionnaire, the PDAM loses money each year but manages to sustain itself on a cash-flow basis without funds from the district government or other sources. PDAM management are pessimistic about the achieving profitability in the near future.

The base tariff is Rp 300/m³, which was implemented effectively from 1999. Previously the tariff was Rp 200/m³ established in 1988. A further increase of about 35% is proposed to be implemented in 2002.

Because of hardware problems the PDAM uses SISKKA software for billing only. It plans to introduce SISKKA for accounting in FY 2002.

(5) Technical (Operation and Maintenance) Issues

Comprehensive technical data and reports were provided by the PDAM. The data presented in the tables (A8.1, A8.2, and A8.3) and Annex 8-1 is based on the Technical Report for the period January to March 2001. The technical staffs were confident of their capacity to operate and maintain systems but concerned about the PDAM financial capacity to support the organization.

Workshop facilities are poor. Based on a limited review of current facilities, storage of equipment and spare parts including inventory management, could be improved. Storage facilities for large diameter PVC pipes are inappropriate. A meter test bench provided by AusAID appears inoperable.

There are reportedly either bulk meters and/or Thompson weirs on all transmission mains for measuring water production. 26% of consumer meters are reportedly not serviceable. Increased attention clearly needs to be directed to properly assessing and managing UFW, which is reportedly very high at 50%.

Detailed as-built drawings are not available. There is no comprehensive master plan for system development. There is no hydraulic model of the water supply network to assist with planning and management.

20.4.3 Sumbawa

(1) General

PDAM Sumbawa provides water supply services to the district capital town, Sumbawa Besar, and 10 other towns. The PDAM operates a network of 10 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers. However, two of these branches are currently not operating. The PDAM supplies 9,326 active connections of which 32% are from Sumbawa Besar. Water sales volumes are very low either as a consequence of

constrained production or consumers reverting to other sources because of low service standards.

PDAM Sumbawa Besar operates at a loss and has accrued substantial losses over several years. A significant proportion of water production requires pumping and treatment, which means the cost of production, is high. At current tariffs water is being sold for about half the cost of production.

No corporate plan has been prepared for PDAM Sumbawa.

The following information is based on technical and financial reports for December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Sumbawa manages 11 water supply systems utilizing 18 separate sources. Two systems in, Taliwang and Lunyuk, are no longer operating. The sources include rivers, springs and bores. Ninety percent of the production capacity requires pumping and about 70% requires treatment by conventional water treatment processes.

The systems operate for between 7 and 24 hours/day. Most pumped systems including Sumbawa Besar operate for 12 hours/day or less. Coverage is 41% of the current service area population indicating significant potential for increasing connections and water sales in future. However, water sales data indicates a major problem with only 12.6m³/connection/month being sold to consumers – about 50% of the average for the 10 Project PDAM. The reasons for the low sales need to be better understood and addressed appropriately.

(3) Organization and Staffing

The organization structure for PDAM Sumbawa is similar to other PDAM.

The staffing level at 17.7 staff/100 connections is the second highest of the 10 project PDAM. While Sumbawa Besar would not be expected to have the lowest ratio because of the high pumping and treatment staffing requirements, the ratio is excessive. There is a reasonable balance between technical and finance/administration functions with 89 of a total of 165 (54%) of staff being responsible for the technical functions. The qualifications of staff are comparatively lower than the other PDAM with only 3 staff (2%) holding tertiary qualifications. However, some 139 (84%) graduated from senior high school.

(4) Finance and Administration

PDAM Sumbawa Besar has assets totaling at Rp 8.5 billion, the 3rd largest of the project PDAM. The financial performance is very poor from a number of

perspectives including profit & loss results, accumulated losses, tariffs, and accounts receivable.

Key conclusions from a review of the FY 2000 Financial Report are as follows:

- A substantial loss of Rp 972 million (82% of annual business revenue) was incurred.
- Accumulated losses to 31 December totaled Rp 7.3 billion (610% of annual business revenue)
- The base tariff was Rp 400/m³, implemented in 1998.
- The average tariff in FY 2000 was Rp 543/m³.
- The average monthly bill in FY 2000 was Rp 9,960/connection.
- Cash flow was basically neutral in FY 2000 with a small surplus of Rp 11 million.
- The available data on profit & loss does not permit accurate analysis of expenditure however based on supporting data on electricity cost the major expense items are estimated to include salaries (23%), electricity & chemicals (25%), and depreciation (42%). High power and chemical costs are consistent with a high proportion of pumped and treated supplies.
- Cash reserves totaled Rp 14 million at 31 December.
- The long-term debt was Rp 1.27 billion at 31 December.
- Accounts receivable (debtors) total Rp 967 million, equivalent to 81% of annual core business revenue (9.7 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months. This issue is very significant for PDAM Sumbawa because of the high level of debtors.
- In gross terms the cost of water production is estimated at Rp 1,647/m³ compared with the average selling price of Rp 848/m³.

Clearly the impact of low water sales is important. Variable costs are a relatively small percentage of total costs (25-30%) so that the impact of increased sales on financial performance would be significant.

The SISKAs software is used for billing but not for accounting. There are constraints with both hardware and operator capability.

PDAM Sumbawa increased tariffs in 1998. A further increase is planned for implementation in FY 2002.

(5) Technical (Operation and Maintenance) Issues

There are some particular technical issues with the operation of PDAM Sumbawa. The main supply for Sumbawa Besar utilizes water from the Pungka River. There are persistent pump breakdowns, which appear to be a result of either an inappropriate pump selection or incorrect pump repairs (The pump is rebuilt on a regular basis at intervals of 1 – 3 months.). In addition 2 systems for Taliwang and Lunyuk are inoperative and have been so for some time.

Workshop facilities are poor. Equipment and spare parts storage and inventory management could be improved based on a limited review of current facilities.

Increased attention should be paid to improved metering in an effort to properly assess and manage UFW, which is moderate at 35% (Assessments are not accurate and the real UFW situation is probably worse.). This is likely to increase if service levels are improved. Twenty (20%) of consumer meters are reportedly not functioning and there are no bulk meters. Because of the poor financial situation there is a reliance on development funds (through P3P) for consumer meter replacement, which should be financed from consumer charges.

Service levels are low and the problems with operation & maintenance of the main supply pumps in Sumbawa Besar constrain the supply to the town.

Detailed as-built drawings are not available. There is no master plan. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning. There is a long term plan to develop a gravity source (Semongkat) for Sumbawa Besar and thereby avoid pumping costs. However development requires construction of approximately 19 km of 300 mm diameter pipeline.

20.4.4 Dompu

(1) General

PDAM Dompu provides water supply services to the district capital town (Dompu) and two other district towns. The PDAM operates 2 branch offices to support the operation & maintenance of its IKK assets and to maintain relationships with its customers. The PDAM supplies 4,183 active connections of which significantly 90% are from Dompu town.

PDAM Dompu operates at a loss and has accrued substantial losses over several years. A significant proportion of water production is by gravity systems however pumping is required for several sources. A slow sand filtration plant treats most of

the water supplying the town of Dompu. At current tariffs water is being sold for about 60% of the cost of production.

A corporate plan was prepared for PDAM Dompu (ESWS Dompu Corporate Plan, November 1994.) but this is now out of date.

The following information is based on technical and financial reports for FY to December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Dompu manages 3 water supply systems utilizing 12 separate sources. The Dompu town system is by far the major asset with the 2 IKK systems being very small. The sources include rivers, springs and bores. Nearly 90% of the production capacity is supplied by gravity and about 70% is treated by slow sand filtration.

The systems operate for between 8 and 24 hours/day. Most pumped systems operate for 8 - 12 hours/day while gravity systems operate 24 hours/day. Coverage is 40% of the current service area population indicating significant potential for increasing connections and water sales in future.

Water sales are 19.1 m³/connection/month, which is reasonable but significantly below the average of 24 for the 10 PDAM. There may be a constraint to supply resulting in unfulfilled demand.

(3) Organization and Staffing

The organization structure for PDAM Dompu is similar to other PDAM (refer organization chart in Chapter 6, Section 6.3).

The staffing levels at 11/1,000 connections is the third lowest of the 10 Project PDAM. There is a significant imbalance between technical and finance/administration functions with only 14 of a total of 46 (30%) staff being responsible for the technical functions. The qualifications of staff are relatively lower with only 3 staff (7%) holding tertiary qualifications. However, some 37 (80%) graduated from senior high school.

(4) Finance and Administration

PDAM Dompu has assets totaling at Rp 3.5 billion. The financial performance is very poor from a number of perspectives including profit & loss results, accumulated losses, tariffs, and accounts receivable.

Key conclusions from a review of FY 2000 Financial Report are as follows:

- A substantial loss of Rp 307 million (50% of annual business revenue) was incurred in FY 2000.
- Accumulated losses to 31 December totaled Rp 4.5 billion (732% of annual business revenue – the highest relative figure of all Project PDAM).
- The base tariff was Rp 300/m³, following a 45% increase implemented in 2001.
- Data to calculate the average tariff in FY 2000 was not available but this is estimated to be approximately Rp 420/m³.
- Similarly, data to calculate the average monthly bills for FY 2000 was not available but the estimated value is Rp 14,800/connection.
- Cash flow was marginally positive in FY 2000 with a surplus of Rp 36 million.
- A subsidy of Rp 10 million was received from the district government for purchase of new computers.
- The major expense items included salaries (32%), general expenses (7%), and depreciation (44%).
- Cash reserves totaled Rp 44 million at 31 December.
- The long-term debt was Rp 1.29 billion at 31 December.
- Accounts receivable (debtors) totaled Rp 667 million, equivalent to 110% of annual core business revenue (13.1 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months. This issue is particularly significant for Dompu, which has (relatively) the highest debtor position of the Project PDAM.
- In gross terms the cost of water production is estimated at Rp 772/m³ compared with the average gross selling price of Rp 510/m³.

The SISKA software is used for billing and accounting.

PDAM Dompu increased tariffs in 2001. The 45% increase in tariff in 2001 will not be sufficient to achieve “break-even”, at least not without other improvements.

(5) Technical (Operation and Maintenance) Issues

The main source of supply for Dompu is from a river/canal with treatment by slow sand filtration (SSF). However the water quality during the wet season frequently exceeds the raw water quality limits for this SSF. As a consequence the treated water quality is unacceptable. The system is frequently shut down during periods of very high raw water turbidity. The raw water quality is expected to deteriorate further in time and will result in unacceptable service levels and a loss of customers if action is not taken to correct the situation.

Workshop and storage facilities are reasonable. Equipment and spare parts inventory management could be improved based on limited review of current facilities.

Increased attention should be paid to improved metering in an effort to properly assess and manage UFW, which is very high at 50% (Assessments are not accurate and the real UFW situation may be worse.). Seventeen (17%) of consumer meters are reportedly not functioning and there are no functioning bulk meters.

Detailed as-built drawings are not available. There is no master plan, even for the Dompur urban system. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.5 Bima

(1) General

PDAM Bima provides water supply services to the large urban center of Bima/Raba and 7 other towns. The PDAM operates 7 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers. The PDAM supplies 9,226 active connections of which 48% are from Bima/Raba.

PDAM Bima operates at a loss and has accrued substantial losses over several years. A significant proportion of water production is provided from gravity systems however pumping is required for several sources. Two conventional water treatment plants provide water for Bima/Raba (part only) and Sape. At current tariffs water is being sold for about 73% of the cost of production.

There is no corporate plan for PDAM Bima.

The following information is based on technical and financial reports for FY to December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Bima manages 7 water supply systems utilizing 13 separate sources. The sources include rivers, a dam, springs, a well and bores. Approximately 62% of the production capacity is supplied by gravity and about 60% requires treatment by conventional water treatment (flocculation, sedimentation and rapid sand filtration).

The systems operate for between 16 and 24 hours/day. Most pumped systems operate for 16 hours/day while gravity systems operate 24 hours/day. Coverage is

25% of the current service area population indicating significant potential for increasing connections and water sales in future.

Water sales at 17.2 m³/connection/month are the second lowest after Sumbawa and significantly below the average of 24 for the 10 PDAM. There may be a constraint to supply through insufficient hours of operation or system capacity problems.

(3) Organization and Staffing

The organization structure for PDAM Bima is similar to other PDAM.

The staffing level at 13.4 staff/1000 connections is high. There is an imbalance between technical and finance/administration functions with only 52 of a total of 123 (42%) staff being responsible for the technical functions. The qualification of staff is very high with 24 staff (20%) holding tertiary qualifications, and 90 (74%) having graduated from senior high school.

(4) Finance and Administration

PDAM Bima has assets totaling at Rp 3.4 billion. The financial performance is very poor from a number of perspectives including profit & loss results, accumulated losses, tariffs, and accounts receivable.

Key conclusions from a review of FY 2000 Financial Report are as follows:

- A substantial loss of Rp 536 million (35% of annual core business revenue) was incurred in FY 2000.
- Accumulated losses to 31 December totaled Rp 5.3 billion (345% of annual business revenue) – quite high relative to other Project PDAM.
- The base tariff is Rp 450/m³, following a 45% increase implemented in 1999.
- The average tariff in FY 2000 was Rp 688/m³.
- The average monthly bill for FY 2000 was Rp 13,833/connection.
- Cash flow was marginally negative in FY 2000 with a deficit of Rp 20 million.
- A breakdown of major expense items by category is not available from the data collected.
- Cash reserves totaled Rp 71 million at 31 December 2000.
- The long-term debt is Rp 1.0 billion at 31 December 2000.
- Accounts receivable (debtors) total Rp 1,174 million, equivalent to 77% of annual business revenue (9.2 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months.
- In gross terms the cost of water production is estimated at Rp 1,100/m³ compared with the average selling price of Rp 805/m³.

The SISKA software is used for billing but not for accounting because of a constraint with a lack of trained operators.

PDAM Bima increased tariffs in 1999 and a further increase of about 25% is being planned. This alone will not be sufficient to achieve “break-even”.

(5) Technical (Operation and Maintenance) Issues

The PDAM Bima manages a wide range of systems involving both gravity and pumped supplies, treated and untreated supplies. The systems are also spread geographically. Service levels seem generally acceptable. However the low water sales figures may indicate that demand is not being met at least in some areas.

There are no formal operation & maintenance plans. Most maintenance is reactive in response to reported problems. Workshop and storage facilities are reasonable. Spare parts inventory management could be improved based on limited review of current facilities.

Increased attention should be paid to improved metering in an effort to properly assess and manage UFW, which is high at 36% (Assessments are not accurate and the real UFW situation may be worse.). Twenty (20%) of consumer meters are reportedly not functioning and bulk meters where they exist are unreliable. The cost of UFW is high on system such as those operated by PDAM Bima involving substantial pumping and treatment costs.

Detailed as-built drawings are not available. There is no master plan, even for the Bima/Raba urban systems. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.6 Kupang

(1) General

PDAM Kupang provides water supply services to the large urban center Kupang including both Kotamadya Kupang and the adjacent urban areas in Kabupaten Kupang, and 6 other towns. Currently PDAM Kupang is also responsible for the island of Rote, which has recently become a new district. The PDAM operates 6 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers. The PDAM supplies 21,756 active connections of which 92% are from the greater Kupang area.

PDAM Kupang operates at a loss and has accrued losses over the past 4 years. However, accumulated losses are, in relative terms, significantly less than for other Project PDAM. A significant proportion of water production requires pumping but

most sources are supplied without treatment. At current tariffs water is being sold for about 84% of the cost of production.

Work has commenced on preparation of a corporate plan for PDAM Kupang, based on recent training provided through PERPAMSI.

The following information is based on technical and financial reports for the FY to December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Kupang manages 8 water supply systems. For Kupang alone there are some 18 sources. A small scheme at Tarus is managed as part of the Kupang operation. Six other systems, all of which are very small, are managed through 6 branch offices these include 2 IKK systems on the island of Rote and 2 on the island of Sabu. The sources include 10 springs (69%) and 8 bores (31%). Approximately 42% of the production capacity is supplied by gravity and about 58% requires pumping. One source is treated by direct filtration during the wet season only.

The systems operate for between 9 and 24 hours/day. Most pumped systems operate for 9 – 12 hours/day while gravity systems operate 24 hours/day. Coverage for the Kupang urban area only is 54% of the current service area population indicating further potential for increasing connections and water sales in future.

Adequate quantities of water are supplied to customers with average consumption being 28.7 m³/connection/month, the highest of any PDAM.

(3) Organization and Staffing

The organization structure for PDAM Kupang is similar to other PDAM. The Supervisory Board for PDAM Kupang is unusual in that it includes an NGO representative to look after the broader interests of consumers.

The staffing level at 10.6 staff/1000 connections remains high even though it is the second lowest after Mataram. Kupang has the highest ratio of technical/total staff of all PDAM with 119 out of a total of 231, a ratio of 52%. The qualifications of staff are high with 24 staff (10%) holding tertiary qualifications, and 167 (72%) having graduated from senior high school.

(4) Finance and Administration

PDAM Kupang has substantial assets totaling at Rp 18.8 billion. While the financial performance is less than optimum, it is much better than all other Project PDAM except Mataram.

Key conclusions from a review of FY 2000 Financial Report are as follows:

- A loss of Rp 962 million (18% of annual business revenue) was incurred for FY 2000.
- Accumulated losses to 31 December totaled Rp 5.0 billion (92% of annual business revenue) – a relatively low figure by comparison with other Project PDAM.
- The base tariff of Rp 210/m³ has been in place since 1994.
- The average tariff in FY 2000 was Rp 599/m³.
- The average monthly bill for FY 2000 was Rp 18,942/connection.
- Cash flow was positive in FY 2000 with a surplus of Rp 515 million.
- The major expense items include salaries and allowances (38%), electricity fuel and chemicals (4%), maintenance (7%), depreciation (22%), and general items (24%).
- Cash reserves totaled Rp 1.14 billion at 31 December.
- The long-term debt was Rp 3.55 billion at 31 December.
- Accounts receivable (debtors) totaled Rp 1,288 million, equivalent to 23% of annual business revenue (2.8 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months.
- In gross terms the cost of water production is estimated at Rp 867/m³ compared with the average selling price of Rp 732/m³.

All accounting is done manually, an extraordinary situation given the size of PDAM Kupang. An alternative program to SISKKA is used for billing.

PDAM Kupang approved tariff increases of 100% in 2000 but implementation did not proceed because of lack of approval by DPR. Consideration is being given to smaller staged increases but no firm decisions have been made. A tariff increase of about 20% is required to break even based on FY 2000 data.

(5) Technical (Operation and Maintenance) Issues

The PDAM Kupang systems predominately serve the Kupang urban area. Other IKK systems are small and also very dispersed geographically with 4 systems on the islands of Rote and Sabu. Service levels seem generally acceptable. Kupang has a prolonged dry season and alternative sources of supply, particularly in the urban area are difficult.

Increased attention should be paid to improved metering in an effort to properly assess and manage UFW. Official figures on UFW are reasonable at 20% (Assessments are not accurate and the real UFW situation is likely to be worse.) but unofficial PDAM estimates put it higher at 40%. About 10% of consumer meters

are reportedly not functioning and there are no bulk meters installed. The cost of UFW is high in a system such as Kupang involving substantial pumping costs.

Contractors are used for house connection construction rather than internal PDAM resources.

There is no operation & maintenance plan. Most maintenance is reactive in response to reported problems. Spare parts inventory management could be improved based on limited review of current systems. Large stocks of essential materials are held including replacement meters and some bulk meters.

Detailed as-built drawings are not available. A master plan for Kupang's water supply exists covering the period from mid 1990's to 2015. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.7 Sikka

(1) General

PDAM Sikka provides water supply services to the district capital of Maumere as well as 5 IKK towns. The PDAM operates 5 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers. The PDAM supplies 6,132 active connections of which 69% are from Maumere.

PDAM Sikka operates at a loss and has accrued substantial losses over several years. A significant proportion of water production is provided from pumped systems particularly for Maumere. There are however no water treatment plants. At current tariffs water is being sold for about 83% of the cost of production.

PDAM management staff have undertaken training in corporate plan preparation but have not yet progressed to preparing a plan for PDAM Sikka.

The following information is based on technical and financial reports for FY to December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Sikka manages 6 water supply systems utilizing 15 separate sources. The sources include a river, several bores and springs. Approximately 57% of the production capacity requires pumping.

The systems operate for between 5 and 24 hours/day. Most pumped systems operate for 8 - 16 hours/day while gravity systems generally operate 24 hours/day.

Coverage for Maumere only is 39% of the current service area population indicating significant potential for increasing connections and water sales in future. Water sales are 19.0 m³/connection/month, which is reasonable but significantly below the average of 24 for the 10 PDAM. There may be a capacity constraint to supply.

(3) Organization and Staffing

The organization structure for PDAM Sikka is similar to other PDAM.

The staffing level at 14.2 staff/1000 connections is high. There is a better balance than many other PDAM between technical and finance/administration functions with 45 of a total of 87 (52%) staff being responsible for the technical functions. The qualifications of staff are high with 7 staff (7%) holding tertiary qualifications, and 57 (64%) having graduated from senior high school.

(4) Finance and Administration

PDAM Sikka has assets totaling only Rp 2.6 billion – the lowest asset value of all PDAM for which data was available. The financial performance is very poor from a number of perspectives including profit & loss results, accumulated losses, tariffs, and accounts receivable.

Key conclusions from a review of the FY 2000 Financial Report are as follows:

- A loss of Rp 167 million (20% of annual business revenue) was incurred.
- Accumulated losses to 31 December totaled Rp 1.3 billion (157% of annual business revenue).
- The base tariff was Rp 200/m³, which has been in place since 1995.
- The average tariff in FY 2000 was Rp 320/m³.
- The average monthly bill in FY 2000 was Rp 11,221/connection.
- Cash-flow was marginally positive in FY 2000 with a surplus of Rp 63,000.
- The major expense items include salaries and allowances (38%), electricity and fuel (18%), maintenance (8%), and depreciation (31%).
- Cash reserves totaled Rp 80 million at 31 December.
- There is no long-term debt at 31 December.
- Accounts receivable (debtors) total Rp 260 million, equivalent to 31% of annual business revenue (3.8 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months.
- In gross terms the cost of water production is estimated at Rp 712/m³ compared with the average selling price of Rp 591/m³.

The SISKKA software is used for billing and accounting.

PDAM Sikka planned and approved an increase of 100% in tariffs in 1999 but implementation did not proceed. This issue is under consideration and the tariff increase is expected to be implemented in early 2002. This increase should be sufficient to achieve profitability.

(5) Technical (Operation and Maintenance) Issues

The PDAM Sikka systems seem to be reasonably well maintained and in particular there have been few problems in managing pumped systems. Service levels seem generally acceptable. Water sales data may indicate some un-met demand.

Increased attention should be paid to improved metering in an effort to properly assess and manage UFW, which is high at 30% (Assessments are not accurate and the real UFW situation may be worse.). One third (33%) of consumer meters are reportedly not functioning. Some bulk metering exists but not all are working. The cost of UFW is high on systems such as those operated by PDAM Sikka involving substantial pumping. The PDAM is seeking development budget funding for a meter replacement program. Some replacements are being undertaken with PDAM funds.

There is no operation & maintenance plan but O&M manuals have been provided for some facilities such as pump stations. Most maintenance is reactive in response to reported problems. Spare parts inventory management could be improved based on limited review of current systems.

Detailed as-built drawings are not available. There is a master plan for Maumere from 1995. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.8 Flores Timur

(1) General

PDAM Flores Timur provides water supply services to the district capital, Larantuka, and 2 IKK other towns. Previously it was also responsible for the town of Lowaleba, which is now part of the new Kabupaten Lembata. The PDAM operates 2 branch offices to support the operation & maintenance of its assets and to maintain relationships with its customers. The PDAM supplies 3,611 active connections of which 78% are from Larantuka.

The PDAM operates at a loss but because it has only recently been established as a PDAM it does not have large accrued losses. Springs provide the bulk of the water, which is distributed by gravity. There is one small bore and a small spring from which water is delivered by pumping. There is no water treatment. At current

tariffs water is being sold for less than the cost of production (but the data is inadequate to provide specific details on sale and production costs).

There is no corporate plan for PDAM Flores Timur.

The following information is based on technical and financial reports for the 6 months to December 2000, together with supplementary information provided by PDAM management. There are anomalies in the data, which make presentation of many details difficult or unreliable.

(2) Water Supply Systems

PDAM Flores Timur manages the 3 water supply systems utilizing 12 separate sources. The sources are predominantly springs, but include a river gallery and a bore. Two sources are pumped but the vast majority of the water is distributed by gravity. The system for Larantuka includes extensive transmission mains.

The systems operate for between 4 and 17 hours/day. Coverage data is unavailable, however it is clear that there is potential for system expansion in Larantuka.

Water sales are 19.5 m³/connection/month which is reasonable but significantly below the average of 24 for the 10 PDAM. There may be a capacity constraint to supply.

(3) Organization and Staffing

The organization structure for PDAM Bima is similar to other PDAM.

The staffing level at 17.5 staff/1000 connections is very high. There is a reasonable balance between technical and finance/administration functions with equal staff numbers. The qualifications of staff are lower than other PDAM with only management having tertiary qualifications. Thirty-two staff (61%) has graduated from senior high school.

(4) Finance and Administration

PDAM Flores Timur has assets totaling at Rp 8.1 billion. The financial performance is difficult to assess in detail because of changes in reporting systems and inconsistencies between technical and financial data. However, it is clearly running at a loss. The PDAM accounts commenced in June 2000 and cover the 6 month period to December 2000.

Key conclusions from a review of 6 months to December 2000 Financial Report are as follows:

- A loss of Rp 44.9 million (11% of annual business revenue) was incurred.
- Accumulated losses to 31 December are also Rp 44.9 million

- The base tariff was Rp 200/m³, unchanged since 1992.
- The average tariff (based on 12 months to December 2000) was Rp 367/m³.
- The average monthly bill (based on 12 months to December 2000) was Rp 9,538/connection.
- Cash flow was marginally negative with a deficit of Rp 4.7 million.
- The major expense items include salaries & allowances (45%), maintenance (14 %), general expense (23%), and depreciation (18%).
- Cash reserves totaled Rp 14 million at 31 December.
- There was no long-term debt at 31 December.
- Accounts receivable (debtors) total Rp 210 million, equivalent to 26% of business revenue (3.1 months).

The SISKA software is used for billing and accounting.

PDAM Flores Timur has a proposal for tariff increases of more than 100%, which is under consideration (a draft decree has been prepared).

(5) Technical (Operation and Maintenance) Issues

The PDAM Flores Timur systems provide essentially gravity supplies of untreated water from springs. The main system for Larantuka is characterized by very extensive transmission mains from the major sources. Recently the PDAM has been supporting some small village systems including provision of electricity using surplus capacity in gensets.

No data is available in relation to UFW however it is anticipated that UFW levels will be similar to those in other towns. Increased attention should be paid to improved metering in an effort to properly assess and manage UFW. 50% of consumer meters are reportedly not functioning and bulk meters do not exist.

There is no operation & maintenance plan. Most maintenance is reactive in response to reported problems. There are good stocks of spare parts but in common with other PDAM there is no inventory management system. With changes in management there has been recent acquisition of some essential tools and equipment for operation & maintenance.

Detailed as-built drawings are not available. There is no master plan for the PDAM or even for the main Larantuka system. However, a general 5 year plan for water supply development within the district has been prepared in part for an AusAID Project Design Mission. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.9 Sumba Timur

(1) General

PDAM Sumba Timur provides water supply services to the district town of Waingapu and 3 IKK towns. The PDAM operates 3 small branch offices to support the operation & maintenance of its IKK assets and to maintain relationships with its customers. The PDAM supplies 5,189 active connections of which 88% are from Waingapu.

PDAM Sumba Timur operates at a loss and has accrued substantial losses over several years. All water production for Waingapu and the IKK systems is distributed by gravity and without treatment. At current tariffs water is being sold for about 60% of the cost of production.

There is no corporate plan for PDAM Sumba Timur. PDAM management have participated in corporate planning training but there has been no follow-up activity.

The following information is based on technical and financial reports for FY to December 2000, together with supplementary information provided by PDAM management.

(2) Water Supply Systems

PDAM Sumba Timur manages 4 water supply systems. For Waingapu there are two spring sources providing good quality spring water. Springs also serve the IKK town systems.

The systems operate 24 hours/day. In Waingapu the service levels are generally satisfactory although in some areas supply is difficult during peak periods. Coverage is relatively high at 54% of the current service area population but there is room for increasing connections and water sales in future.

However, water sales data indicates that customers receive on average 26.9 m³/connection/month, at the high end of the range for the 10 PDAM.

(3) Organization and Staffing

The organization structure for PDAM Sumba Timur is similar to other PDAM.

The staffing level at 14.3 staff/1000 connections is high particularly for a system with a gravity supply and no treatment. There is a very high proportion (69%) of finance/administration staff with 51 out of a total of 74. Qualifications of staff are high with 9 staff (12%) having tertiary qualifications. Fifty-five staff (74%) have graduated from senior high school.

(4) Finance and Administration

PDAM Sumba Timur has substantial assets totaling Rp 4.9 billion. The financial performance is very poor from a number of perspectives including profit & loss results, accumulated losses, tariffs, and accounts receivable.

Key conclusions from a review of FY 1999 Financial Report (FY 2000 data was not generally available) are as follows:

- A loss of Rp 392 million (45% of annual business revenue) was incurred.
- Accumulated losses totaled Rp 1.2 billion (145% of annual business revenue).
- The base tariff was Rp 350/m³, following a 100% increase implemented in January 2001.
- The average tariff in FY 2000 was Rp 486/m³.
- The average monthly bill for FY 2000 was Rp 13,289/connection.
- Cash flow was negative with a deficit of Rp 41 million.
- The major expense items include salaries and allowances (48%), maintenance (6%), depreciation (34%), and general expenses (12%).
- Cash reserves totaled Rp 215 million at 31 December 1999.
- There is no long-term debt at 31 December 1999.
- Accounts receivable (debtors) total Rp 335 million, equivalent to 39% of annual business revenue (2.8 months). Note that in common with other PDAM, provisions for bad debts seem inadequate by prudent financial management standards with less than full provision for debtors aged beyond 6 months.
- In gross terms the cost of water production is estimated at Rp 793/m³ compared with the average selling price of Rp 520/m³.

A software package other than SISKKA is used for billing but accounting is done manually. This is extremely inefficient and resource intensive.

Tariffs were increased in FY 2001. PDAM Sumba Timur approved tariff increases in December 2000, effective January 2001. The previous increase was in 1998. A tariff increase of about 50% from FY 1999 is required to breakeven. The actual tariff increase was about 54%, which should facilitate considerably improved financial performance in FY2001.

(5) Technical (Operation and Maintenance) Issues

The PDAM Sumba Timur systems predominately serve the Waingapu urban area. Other IKK systems are small and also dispersed geographically. Service levels in Waingapu seem generally acceptable although there are areas that suffer from supply constraints during high demand periods. Some older AC pipes have known leakage problems, which are caused by tree-root ingress to rubber ring joints.

Official figures on UFW are reasonable at 15% (assessments are not accurate) but actual levels are probably much higher. Other documents from the PDAM indicate losses of 40%. About 14% of consumer meters are damaged. There are no bulk meters installed. While the direct cost of UFW is low in a system such as Waingapu, there is an opportunity cost (loss of sale sand an investment cost for premature augmentation). Attention should be paid to improved metering in an effort to properly assess and manage UFW.

A detailed design (by Arkonin) was prepared in 1997 but only limited works have been implemented. Design reports were not held by the PDAM but drawings were available. The designs included modifications to zoning to improve distribution as well as network expansion and augmentation.

There is no operation & maintenance plan. Most maintenance is reactive in response to reported problems. Spare parts inventory management could be improved based on limited review of current systems. Stocks of small diameter pipes and fittings are held including replacement meters.

Detailed as-built drawings are not available. There is no hydraulic model of the water supply systems to assist in network management and system augmentation planning.

20.4.10 Sumba Barat

(1) General

PDAM Sumba Barat notionally provides water supply services to the district town of Waikabubak and 4 IKK towns. However at the time of the field visit, the system serving Waikabubak was not functioning and the central office of the PDAM was under reconstruction. The central office was essentially not functioning. The PDAM currently has only 243 active connections although 600 active connections are still recorded for Waikabubak.

A transmission pipeline to Waikabubak was being rehabilitated at the time of our field inspection.

The following limited information is based on discussions with the PDAM Technical Director.

(2) Water Supply Systems

PDAM Sumba Barat manages 4 water supply systems. The system for Waikabubak has an inoperable gravity fed spring source. A previously installed transmission pipeline from a separate spring source (Waikelo Sawah) is being rehabilitated to

restore supply. This system uses a slow sand filtration plant for treatment and requires pumping. Gravity spring sources also serve the IKK systems except for Elopada which utilizes the Waikelo Sawah source (with pumping & treatment).

The IKK systems operate 24 hours/day.

Restoring the PDAM business in Waikabubak will be a significant challenge after an extended period of no supply. Customers will have adapted to alternative sources.

(3) Organization and Staffing

The formal organization is not functioning because of the fact that the system for Waikabubak is inoperative and the PDAM has no central office. There are nevertheless 31 staff of whom 12 are allocated to branch offices which continue to function.

The staffing level at 127 staff/1000 (active) connections is extraordinarily high. If the ratio is recalculated to include Waikabubak active connections the ratio is reduced to 37, which is still very high. Education levels are high with 9 out of 31 having tertiary qualifications.

(4) Finance and Administration

No analysis of financial data was possible. The current base tariff is Rp 150/m³ for both Waikabubak and the IKK systems.

(5) Technical (Operation and Maintenance) Issues

Very little data is available and no analysis is possible. It is noted however that the PDAM reports indicate UFW of 50 – 80% in the IKK systems.

Table A20-1 PDAM Summary Data (Technical Aspects)

Category/Item	Unit	Note	PDAM										Total	
			NTB					NTT						
			Lobar	Lotim	Sumbawa	Dompu	Bima	Kupang	Sikka	Flotim	Sumbar	Sumtim		
1. WATER SUPPLY SYSTEMS														
Number of water supply systems	No.	Operational systems only	14	11	9	3	8	8	6	3	5 [3]	4	66	
Water sources & capacity														
- River	L/s		10	5	120.0	75.0	60.0		9				279	
- River gallery	L/s				15.0	20.0				12			47	
- Spring	L/s		569	173	21.0	4.9	9.5	242	39	51	27	75	1,211	
- Dam	L/s						40.0						40	
- Well	L/s						10.0						10	
- Bore	L/s				25.0	13.5	50.5	107	63	3			261	
Total	L/s		579	178	181	113	170	349	110	66	27	75	1,847	
Gravity/pumped (capacity)														
- Gravity	L/s		579	155	16.0	99.9	109.5	149	48	59	7	75	1,297	
- Pumped	L/s			23	165.0	25.5	60.5	199	63	7	20	-	562	
Treatment systems														
- System types (excludes chlorination)	Conventional, SSF		SSF	SSF	Conventional	Conventional	C&F	SSF	-	-	SSF	-	NA	
- Capacity	L/s		10	5	120	75	100	[2]			20		330	
Storages/reservoirs														
- Quantity	Number		10		9	6	8	19	7	8	1	3	71	
- Capacity	m3		8,700		3,200	1,450	2,550	5,780	1,500	880	200	900	25,160	
Pipelines (transmission & distribution)	km	Total length (transmission & distribution)	1,162,447	NA	368,534	141,474	723,197	NA	NA	161,048	NA	105,118	NA	
Connections (active only)														
- Social	No.		427	286	171	134	269	354	34	71			108	
- Public Hydrant	No.		705	259	193	171	245	220	50	70			45	
- Domestic	No.		27,925	6,928	8,728	3,718	8,344	19,594	5,421	3,251			4,597	
- Government	No.		204	165	128	82	140	315	207	90			193	
- Commercial	No.		1,739	111	103	77	227	1,268	407	127			239	
- Industry	No.		0	0	3	1	0	5	12	1			5	
- Special	No.		4	1	0	0	1	0	1	1			2	
Total			31,004	7,750	9,326	4,183	9,226	21,756	6,132	3,611	844	5,189	99,021	
2. OPERATIONS														
Hours of operation	hours/day		24	12-24	7 - 24	8 - 24	16-24	9-24	5-17	4-17	24	24	NA	
Water produced	m3/year		14,108,944	5,124,356	2,162,789	1,927,207	2,970,670	9,372,181	1,986,645	NA	NA	2,790,000	NA	
Water sold	m3/year		10,209,637	2,555,712	1,407,624	958,659	1,902,419	7,497,745	1,397,156	846,129	NA	1,673,374	NA	
Water sold	m3/connection/month		27.4	27.5	12.6	19.1	17.2	28.7	19.0	19.5	NA	26.9	NA	
Unaccounted for water	m3/year		3,899,307	2,568,644	755,165	968,548	1,068,251	1,874,436	589,489	NA	NA	1,116,626	NA	
Unaccounted for water	%		28%	50%	35%	50%	36%	20%	30%	NA	NA	40%	NA	
Coverage	% of service area population		42%	27%	41%	40%	25%	54%	39%	NA	NA	58%	NA	
Metering	% defective meters		20%	26%	20%	17%	20%	20%	33%	50%	NA	14%	NA	

[1] Data not available.

[2] Not used all year. Capacity not significant.

[3] Includes water supply for Waikabubak which is currently inoperative.

Table A20-3 PDAM Summary Data (Institutional Aspects)

Category/Item	Unit	PDAM										Total
		NTB					NTT					
		Lobar	Lotim	Sumbawa	Dompu	Bima	Kupang	Sikka	Flotim	Sumbar	Sumtim	
1. ESTABLISHMENT												
- PDAM	Date	May-88	June-90	June-92	29-Mar-84	May-85	August-86	1983	April-94	October-00	1-Jun-91	
2. STAFFING												
Number of staff (by function & training)												
- Management	No.	3	2	2	2	3	4	3	3	2	3	27
- Technical	No.	62	28	74	14	52	119	45	30	21	20	465
- Finance & administration	No.	109	48	89	30	68	108	39	30	8	51	580
- Branch offices	No.											0
- Contract	No.		11									11
Total	No.	174	89	165	46	123	231	87	63	31	74	1,083
- University/College	No.	23	6	3	3	24	24	6	2	9	9	109
- Senior High School	No.	97	53	139	37	90	167	57	32	19	55	746
- Junior High School	No.	20	20	9	2	4	20	14	19	3	6	117
- Elementary School	No.	34	10	14	4	5	20	10	10		4	111
Total	No.	174	89	165	46	123	231	87	63	31	74	1,083
Staff ratio	Staff/1000 connections	5.61	11.48	17.69	11.00	13.33	10.62	14.19	17.45	36.73	14.26	10.94
3. OFFICES (Central & Branch)												
Number of offices [2]	No.	10	11	11	3	8	7	6	3	4	4	67
4. BUILDINGS												
Main Office	No.	1	1	1	1	1	1	1	1	1	1	10
Branch Offices	No.	9	10	1	2	7	6	5	2	4	3	49
Store	No.	1		1	1	1	1	1	1	1	1	17
Workshop	No.	1	1		1	1	1	1	1		1	
5. COMPUTERISATION												
Number of computers	No.	27	4	2	4	4	9	5	4	-	5	64
Use of SISKAs software (or alternative)		Billing & accounting [1]	Billing	Billing	Billing & accounting	Billing	Billing [1]	Billing & accounting	Billing & accounting	No	Billing [1]	
6. VEHICLES (Operating)												
Vehicles (Station wagon or pick-up)	No.	14	3	0	2	3	7	4	2		2	37
Motor cycles	No.	50	13	7	5	3	38	7	9	1		133
Special purpose vehicles (Tanker Truck)	No.	3	1	2	0	1	9	3	3	3	3	28
7. MAINTENANCE EQUIPMENT												
Hand tools	Yes/No	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Specialist equipment	Yes/No											
- Welder	Yes/No	N	N	N	N	N	Y	N	Y	Y	N	
- Threading maching (powered)	Yes/No	N	N	N	N	N	N	N	N	N	N	
- Pressure testing pumps & equipment	Yes/No	Y	N	N	N	N	N	N	N	N	N	
- Meter test bench	Yes/No	Y	Y	Y	Y	Y	Y	N	N	N	N	

[1] Alternative program to SISKAs used.

[2] Includes non functioning offices in Sumbawa.

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Table A20-A1.1 General Data of PDAM - Menang Mataram

CONTACT:	Name:	Drs H. YUSWADI
	Position:	Direktur Bidang Umum
	Phone/Fax:	0370-632510

PROVINCE:		NTB		PDAM:			MENANG MATARAM			GENERAL DATA	
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT	
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.
5-Jan-88	Peraturan Daerah Kabupaten Lombok Barat No. 1/1988	Mataram	310,472	310,472	176,035	21,767	61	Management	3	Major towns	1
		Tanjung & Pemenang	117,482	76,541	8,850	1,020	114	Finance & admin	109	Small towns (IKK)	9
Effective establishment 1986		Bayan	45,250	23,103	8,640	918	147	Technical - staff	62	Villages [2]	1
		Lembar	20,028	20,028	6,105	531	2	Other - contract?			
		Gerung	61,137	31,883	12,680	916	17	Total	174		
		Kediri	70,803	59,862	11,635	977	14	Degree (S2)	2		
		Narmada	120,768	52,682	14,470	1,304	39	Degree (S1)	17		
		Gunung Sari	66,595	18,607	6,250	980	14	Diploma (D3)	3		
		Perampuan	46,329	12,933	9,460	1,382	5	Diploma (D1)	1		
		Senggigi	15,167	15,167	6,645	1,209	12	Snr High School	97		
		Total	874,031	621,278	260,770	Total	31,004	426	Jnr High School	20	
		Coverage			42%	Category	No		Elementary School	34	
						Social	427		Other		
						Public Hydrant	705		Total	174	
						Domestic	27,925				
						Government	204				
						Commercial	1,739				
						Industrial	0				
						Special (Port)	4				
						Total	31,004				
						Non active	1,128				

[1] Based on December 2000 reports

[2] Kecamatan Gerung BPAM - Desa Banya Urip, Dusun Gumisa - support provided by PDAM

Table A20-A1.2 Technical Data of PDAM - Menang Mataram

CONTACT:	Name:	Drs H Abdul Kadir
	Position:	Technical Director
	Phone/Fax:	0370-632510

PROVINCE:		PDAM MENANG MATARAM					TECHNICAL DATA																						
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS		STORAGES			PIPELINES		CONNECTIONS [2] [3]							PRODUCTION & SALES			MAINTENANCE FACILITIES				
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	I a	I b	II a	II b	III	IV	V	Total	Water produced	Water Sold		UFW (% of production)			
Ranget	Mataram	Spring	Gravity	No	320.0	NA			Mataram			Mataram	878,707	Mataram							10,584,432	7,638,175	28%	<p>Workshop & Store: Workshop used mostly for vehicle repairs. Meter test bench (AusAID) not used. Centralised workshop only.</p>					
	Lembar		Gravity	No	10.0				24	Chlorination	3			Concrete	5,400	248 448 19,429 185 1,456 1 21,767													
	Gerung		Gravity	No	10.0				24	Chlorination	1			Concrete	1,300	Tanjung & Pemenang													
	Kediri		Gravity	No	17.0				24	Chlorination	Tanjung & Pemenang			39 25 923 0 32 1 1,020															
	Gunung Sari		Gravity	No	15.0				24	Chlorination	2			Concrete	400	Bayan		8,931	18 27 871 0 2 918										
	Perampuan		Gravity	No	12.0				24	Chlorination	Lembar			7 23 457 9 33 2 531															
	Senggigi		Gravity	No	30.0				24	Chlorination	1			Concrete	500	Lembar		13,957	7 23 457 9 33 2 531										
Sarasuta	Mataram	Spring	Gravity	No	50.0	24	Chlorination	Narmada			Gerung	12,788	13 54 824 5 20 916																
Saraswaka	Mataram	Spring	Gravity	No	30.0	24	Chlorination	Gunung Sari					Kediri	22,049	16 45 912 0 4 977														
Selelos (Jongplangka)	Tanjung & Pemenang	Spring	Gravity	No	40.0	24	Chlorination	1	Concrete	200	Narmada	35,674			33 53 1,159 3 56 1,304														
Penimbangan	Narmada	River	Gravity	Yes	10.0	24	Slow sand filter & chlorination	Senggigi					Gunung Sari	36,626	28 9 938 1 4 980														
Montong	Narmada	Spring	Gravity	No	10.0	24	Chlorination	Concrete (Batu Bulong)			Perampuan	65,809			16 17 1,343 1 5 1,382														
Mandala	Bayan	Spring	Gravity	No	15.0	24	Chlorination						Senggigi	32,711	9 4 1,069 0 127 1,209														
Orong Petung	Golf Golong	Spring	Gravity	No	10.0	24	Chlorination				Total PDAM																		
Total:					579.0			10		8,700	Total	1,162,447	427	705	27,925	204	1,739	0	4	31,004	14,108,944	10,209,637	28%	Vehicles: 14 vehicles, 50 motorcycles, 3 tanker trucks.					

[1] Based on Technical Report December 2000

[2] I a Social
I b Public Hydrant
II a Domestic
II b Government office
III Commercial
IV Industry
V Special

Commercial and industry not distinguished in PDAM reports

[3] Metering

% connections with damaged meters (estimated only)

20%

Table A20-A1.3 Financial Data of PDAM - Menang Mataram

CONTACT:	Name:	Drs. H. Yuswadi
	Position:	Direktur Bidang Umum
	Phone/Fax:	0373-632510/623934

PROVINCE: NTB		PDAM MENANG MATARAM				FINANCIAL DATA					
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (Mil Rp)	Category/Item	Amount (Mil Rp)	Category/Item	Amount (Mil Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	345	5/09/2001 SK Bupati Lobar & Vailkota Kodya Mataram No. 879/2001, No. 44/KPTS/2001	20	Considering regular CPI type increases in future	
Salaries & allowances	2,072,991	Salaries & allowances	2,077,450	Current Assets	11,655,284	Domestic tariff					
Chemicals		Chemicals	143,513	Cash	7,182,503	0-10 m3	345				
Electricity		Utilities (electricity etc)	38,854	Accounts receivable	1,884,586	11-20 m3	480				
Inventory		Fuel		Provision for bad debts (293,796)		20-30 m3	625				
Maintenance		Maintenance		Inventory	2,361,660	>30 m3	925				
Buildings		Buildings		Other	520,331	Public tap	250				
Vehicles		Vehicles		Fixed Assets [2]	34,728,436						
Installations		Installations	566,134	Land		Average tariff	610				
Maintenance materials	366,790	Maintenance materials		Buildings/installations	53,097,445						
Loan redemption	1,345,588	Interest on loans	983,099	Vehicles		Average bill (Rp)	22,612				
Interest on loans		Loan redemption		Equipment (Machinery)							
Contribution to Govt.	1,453,650	Bad debts	61,922	Other		Charges					
Tax	346,525	Depreciation	3,254,747	Accumulated depreciation (18,369,009)		Meter Fees	3,500				
Other [2]	15,656,975	General Expenses	1,459,325	Other Assets	2,113,676	Administration fees	0				
		Tax	349,978	Work in progress	1,280,069						
				Assets not yet in use	833,608						
Total	21,242,519	Total	8,935,022	Total	48,497,397						
Receipts		Revenue		Liabilities							
Water sales	7,422,578	Water sales	7,632,053	Current Liabilities	2,102,434						
Connection charges	1,496,549	Connection charges	1,886,140	Accounts payable	2,102,434						
Interest on investments	821,961	Interest	832,355	Maturing debt							
Loan/Grant	6,957,250	Other		Long Term Liabilities	10,842,008						
Subsidies	1,805,054			Deposits	769,212						
Other	1,702,512			Long term debt	10,072,796						
Total	20,205,904	Total	10,350,547	Equity	35,552,955						
				Capital	33,001,416						
				Funds	749,959						
				Accumulated profit/loss							
				Operational surplus/deficit	1,801,580						
Net Cash Flow	(1,036,615)	Profit/Loss	1,415,525	Total	48,497,397						

[1] Based on FY 2000 to 31 December 2000.

[2] No breakdown available.

Table A20-A1.4 Historical Data and Trends of PDAM - Menang Mataram

PDAM: MENANG MATARAM		HISTORICAL DATA						
Item	Year							Annual Change (%)
	2001	2000	1999	1998	1997	1996	1995	
Connections (total)	NA	32,121	27,325	24,850	21,782	17,878	14,961	17%
Number of Staff	NA	165	159	149	137	134	118	7%
Staff/1000 connections		5.1	5.8	6.0	6.3	7.5	7.9	
Branches (including Pusat)	10	10	10	10	10	10	10	NA
Profit & Loss (,000 Rp)								
- Income	NA	10,350,547	9,650,386	7,918,165	5,594,496	3,811,828	3,589,475	24%
- Expense	NA	8,935,022	7,317,964	5,920,304	5,372,200	4,432,960	3,725,013	19%
Net (before tax)	NA	1,415,525	2,332,422	1,997,861	222,296	-621,133	-135,538	NA
Balance Sheet (,000 Rp)								
- Net assets	NA	48,497,397	40,380,839	38,848,969	28,653,676	28,789,757	21,681,849	17%
- Equity	NA	33,001,416	13,562,437	12,629,265	12,629,265	1,506,388	1,506,388	85%
- Accumulated profit (loss)	NA	1,801,580	2,373,853	2,238,854	516,031	335,634	956,767	13%
- Return on equity	NA	4.3%	17.2%	15.8%	1.8%	-41.2%	-9.0%	NA
Base Tariff (Rp/m3)	345	300	300	225	225	225	225	7%
Water Distributed (m3)	NA	14,108,944	11,521,894	10,890,584	9,469,149	7,836,166	6,498,941	17%
Water Sold (m3)	NA	10,209,637	8,348,149	7,945,636	6,850,925	5,466,086	4,594,423	17%
Water Losses (m3)	NA	3,899,307	3,173,745	2,944,948	2,618,224	2,370,080	1,904,518	15%
Water Losses (%)	NA	28%	28%	27%	28%	30%	29%	NA
INFLATION								
Average National increase								17.2%

Source: PDAM reports. Central Statistics Bureau.

Table A20-A1.5 Pipeline Assets of PDAM - Menang Mataram

PDAM: MATARAM		PIPELINE ASSETS														
Source: Technical Report December 2000		Length according to pipeline diameter (m)														Total length (m)
Type	Type	450	400	350	300	250	200	150	100	75	65	50	40	25		
Transmission	Mataram	12,600	12,326	2,576	35,063	31,948	61,932	55,696	78,385						290,526	
	Tanjung & Gurung					400	7,500	7,751	8,394						24,045	
	Bayan								4,184						4,184	
	Lembar								1,050						1,050	
	Gerung								7,432						7,432	
	Kediri								7,447						7,447	
	Narmada							6,000	8,850						14,850	
	Gunung Sari							4,644	5,721						10,365	
	Perampuan								4,692						4,692	
	Senggigi					2,220	3,100	17,914	1,000	2,132						26,366
	Subtotal	12,600	12,326	2,576	37,283	35,448	87,346	75,091	128,287	0	0	0	0	0	390,957	
Distribution	Mataram									85,493	60,104	148,483	201,466	92,635	588,181	
	Tanjung & Gurung											9,818	12,822	8,510	31,150	
	Bayan											1,832	2,254	661	4,747	
	Lembar									360		8,826	300	3,421	12,907	
	Gerung											3,434	1,250	672	5,356	
	Kediri									784		9,777	996	3,045	14,602	
	Narmada											11,751	5,621	3,452	20,824	
	Gunung Sari									3,330		9,939	7,254	5,738	26,261	
	Perampuan											43,426	12,371	5,320	61,117	
	Senggigi									2,548		2,947	850		6,345	
	Subtotal	0	0	0	0	0	0	0	0	92,515	60,104	250,233	245,184	123,454	771,490	
Total		12,600	12,326	2,576	37,283	35,448	87,346	75,091	128,287	92,515	60,104	250,233	245,184	123,454	1,162,447	
Transmission & Distribution	Mataram	12,600	12,326	2,576	35,063	31,948	61,932	55,696	78,385	85,493	60,104	148,483	201,466	92,635	878,707	
	Tanjung & Gurung	0	0	0	0	400	7,500	7,751	8,394	0	0	9,818	12,822	8,510	55,195	
	Bayan	0	0	0	0	0	0	0	4,184	0	0	1,832	2,254	661	8,931	
	Lembar	0	0	0	0	0	0	0	1,050	360	0	8,826	300	3,421	13,957	
	Gerung	0	0	0	0	0	0	0	7,432	0	0	3,434	1,250	672	12,788	
	Kediri	0	0	0	0	0	0	0	7,447	784	0	9,777	996	3,045	22,049	
	Narmada	0	0	0	0	0	0	6,000	8,850	0	0	11,751	5,621	3,452	35,674	
	Gunung Sari	0	0	0	0	0	0	4,644	5,721	3,330	0	9,939	7,254	5,738	36,626	
	Perampuan	0	0	0	0	0	0	0	4,692	0	0	43,426	12,371	5,320	65,809	
	Senggigi	0	0	0	2,220	3,100	17,914	1,000	2,132	2,548	0	2,947	850	0	32,711	
	Total	12,600	12,326	2,576	37,283	35,448	87,346	75,091	128,287	92,515	60,104	250,233	245,184	123,454	1,162,447	

Table A20-A2.1 General Data of PDAM - Lombok Timur

CONTACT:	Name:	M Sugiri
	Position:	President Director
	Phone/fax:	0376 21162

PROVINCE: NTB		PDAM: LOMBOK TIMUR				GENERAL DATA					
ESTABLISHMENT		CABANG/ SYSTEM	POPULATION			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT	
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.
June-90	Peraturan Daerah, Kabupaten Daerah Tk.II Lombok Timur No 2/1990, 9/6/90	Selong	157,602	44,760	22,100	2,372	81	Management	2	Major town	1
		Masbagik	150,325	42,821	14,275	1,277	167	Finance & admin	48	Small towns (IKK)	10
		Aikmel	73,530	2,835	2,820	284	354	Technical	28	Villages	
		Pringgabaya	96,172	60,051	16,240	425	251	Contract (Tech.)	11	Total	11
Efective establishment June 1991		Labuan Lombok	[2]	[2]	[2]	463	[2]	Total	89		
		Sakra	124,216	26,358	9,980	988	94	Degree (S1)	6		
		Keruak	83,751	55,087	13,755	646	183	Snr High School	53		
		Sulamulia	27,993	20,120	6,090	422	42	Jnr High School	20		
		Terara	95,224	80,657	4,805	497	67	Elementary School	10		
		Sambelia	25,894	14,369	3,610	272	288	Other			
		Sikur	[3]	[3]	[3]	104	[3]	Total	89		
		Total	834,707	347,058	93,675	Total	7,750	1,527			
						Category	No				
		Coverage			27%	Social	286				
						Public Hydrant	259				
						Domestic	6,928				
						Government	165				
						Commercial	111				
						Industry	0				
						Special (Port)	1				
						Total	7,750				
						Non Active	346				

[1] Based on December 2000 PDAM Reports

[2] Included in Pringgabaya

[3] Included in Masbagik

Table A20-A2.2 Technical Data of PDAM - Lombok Timur

CONTACT:	Name:	Jarno
	Position:	Head of Technical Planning
	Phone/Fax:	0376 21162

PROVINCE:		NTB		PDAM:		LOMBOK TIMUR		TECHNICAL DATA																			
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS			STORAGES			PIPELINES			CONNECTIONS [3] [4]					PRODUCTION & SALES [2]			MAINTENANCE FACILITIES		
Location	Town/IKK	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Diameter	Length	Type	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced		Water Sold	UPF (% of production)
Mencrit	Selong	Spring	Gravity	No	60.0			2	Steel tank & bladder (1 No. 750 m3)/Concrete (1 No. 200 m3)	950					83	25	2,127	93	44	0	0	2,372	501,522	217,181	57%	<p>Workshop & Store: No proper workshop or store. Various equipment stored at branch offices and installations. No organised inventory records. Inadequate stocks of pipes and fittings. Small diameter parts purchased locally for maintenance. UPVC pipes store exposed to sunlight.</p> <p>Tools & equipment: Small tools evident but poorly stored. Meter Test Bench appears inoperable.</p> <p>Vehicles: Vehicles available for operation and maintenance include: Tanker trucks 2 No. (1 operating, 1 inoperable); Kijang minibus 2 No.; Pick-up utility 2 No. (1 operating, 1 inoperable); Motorcycles 17 No. (includes 4 inoperable units).</p>	
Tojang	Selong	Spring	Gravity	No	4.5			1	Concrete	500																	
	Masbagik	Spring	Gravity	No	26.5			10	Steel (Southern Cross) capacity 40 m3 - 120 m3	800																	
	Keruak	Spring	Gravity	No	7.5																						
	Suka Mulia	Spring	Gravity	No	2.5																						
	Sikur	Spring	Gravity	No	1.0																						
	Subtotal				102.0																						
	Gamang	Sakra	Spring	Gravity	No	15.0																					
	Keruak	Spring	Gravity	No	1.5																						
	Suka Mulia	Spring	Gravity	No	1.5																						
	Subtotal				18.0																						
	Aikambung	Suka Mulia	Spring	Gravity	No	5.0																					
	Mualan	Aikmel	Spring	Gravity & Pumped	No	10.0		1 No. electric (KLP)		10																	
	Benyer	Pringgabaya	Spring	Gravity	No	2.5																					
	Lemor	Pringgabaya	Spring	Gravity	No	7.0																					
	Brangtapan	Labuhan Lombok	Spring	Pumped	No	17.5		2 No. duty & standby; electric (KLP)		2	Concrete (200 m3 & 50 m3)																
	SPL	Sambelia	River	Gravity	Yes	5.0		Chlorination & slow sand filter		1	Concrete																
	Teminyak	Keruak	Spring	Gravity	No	2.0																					
	Otak Kokok	Tertara	Spring	Gravity	No	8.5																					
	Total				177.5					16																	

[1] Based on December 2000 PDAM Reports
 [2] Based on 3 months figures - Jan/Feb/Mar 2001
 [3] ia Social
 lb Public Hydrant
 Ila Domestic
 Ilb Government
 III Commercial
 IV Industry
 V Special

[4] Metering
 % connections with damaged meters

26%

ANNUALISED PRODUCTION & SALES FIGURES	5,124,356	2,555,712	50%
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Table A20-A2.3 Financial Data of PDAM - Lombok Timur

CONTACT:

Name:	M Sugiri
Position:	President Director
Phone/Fax:	0376 21162

PROVINCE: NTB

PDAM: LOMBOK TIMUR

FINANCIAL DATA

CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (Mil Rp)	Category/Item	Amount (Mil Rp)	Category/Item	Amount (Mil Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	300	1999	20%	2002	35%
Salaries & allowances		Salaries & allowances		Current Assets		Domestic tariff					
Chemicals		Chemicals		Cash		0-10 m3	300	(SK Bupati No.284/1998) 29/07/1998			
Electricity		Utilities (electricity etc)		Accounts receivable		11-20 m3	375				
Fuel		Fuel		Bad debts		20-30 m3	450				
Maintenance		Maintenance		Inventories		>30 m3	550				
Buildings		Buildings		Other		Public tap	250				
Vehicles		Vehicles		Fixed Assets							
Installations		Installations		Land		Average tariff	NA				
Maintenance materials		Maintenance materials		Buildings/Installations							
Loan redemption		Interest on loans		Vehicles		Average cost	NA				
Interest on loans		Loan redemption		Equipment (Machinery)							
Contribution to Govt.		Bad debts		Other		Charges					
Tax		Other		Accumulated depreciation		Meter Fees	NA				
Other				Other Assets		Administration fees	NA				
				Work in progress							
				Assets not yet in use							
Total		Total		Total	0						
Receipts		Revenue		Liabilities							
Water sales		Water sales		Current Liabilities							
Connection charges		Connection charges		Accounts payable							
Interest on loans		Interest on loans		Maturing debt							
Loan		Loans		Long Term Liabilities							
Subsidies		Subsidies		Deposits							
Other		Other		Long term debt							
Total	0	Total	0	Equity							
				Capital							
				Funds?							
				Operational surplus/deficit							
Net Cash Flow	0	Profit/Loss	0	Total	0						

Table A20-A3.1 General Data of PDAM - Sumbawa

CONTACT:	Name:	Drs. H. Mahmud Abdullah
	Position:	Direktur Utama
	Phone/Fax:	0371-21223

PROVINCE:		NTB		PDAM:		SUMBAWA		GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS (by branch and category)	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT [2]	
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.
06 June 1992	Perda Pemda Kab. Sumbawa No. 4/1992	Sumbawa	74,663	60,438	25,495	2,996	536	Management	2	Major towns	1
		Utan/Rhee	28,718	18,282	6,205	619	388	Finance & admin	74	Small towns (IKK)	10
		Alas	40,303	28,267	17,990	1,670	429	Technical - staff	89	Villages	0
27 August 1992	Handing Over - BPAM -> PDAM SK Men PU No. 614/KPTS/1992	Mapin	16,955	14,135	7,710	732	56	Other - contract?	0		
		Seteluk	18,046	10,895	1,780	204	240	Total	165		
		Taliwang	41,817	30,377	8,800	Not operating	729	University/college	3		
		Jereweh	9,040	7,236	3,278	337	880	Snr High School	139		
		Lape	25,110	12,481	3,640	438	360	Jnr High School	9		
		Plampang	26,742	22,264	9,615	1,150	937	Elementary School	14		
		Empang	28,981	13,492	7,445	1,180	892	Other	0		
		Lunyuk	15,266	4,943	260	Not operating	980	Total	165		
		Total	325,641	222,810	92,218	Total	9,326	6,427			
						Category	No				
		Coverage			41%	Social	171				
						Public Hydrant	193				
						Domestic	8,728				
						Government	128				
						Commercial	103				
						Industrial	3				
						Special (Port)					
						Total	9,326				
						Non-active	1,679				

[1] Based on December 2000 reports

[2] Two systems not operating - Taliwang & Lunyuk

Table A20-A3.2 Technical Data of PDAM - Sumbawa

CONTACT:	Name:	Drs. H. Mahmud Abdullah
	Position:	Direktur Utama
	Phone/Fax:	0371-21223

PROVINCE:		NTB		PDAM:		SUMBAWA		TECHNICAL DATA																					
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS			STORAGES		PIPELINES		CONNECTIONS [8]						PRODUCTION & SALES [7]			MAINTENANCE FACILITIES					
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	I a	I b	II a	II b	III	IV	V	Total	Water produced (m3/year)		Water Sold (m3/year)	UPW (% of production)			
Pungka [2]	Sumbawa	River	Pumped	Yes	80.0	2	Flocculation, clarification, filtration & chlorination	100	1	Steel with internal rubber bladder provided under ADB loan. 1000m3	1,000	Sumbawa	89,555	50	27	2,815	57	47	0	0	2,996	873,696	628,164	28%					
B. Bara		Spring	Pumped	No	5.0		No details	5	1	Concrete, new - not yet in use. 500 m3	500																		
K. Dima [3]		Gallery	Pumped	No	15.0		No details, not operating	0	1	Old system no longer in use. 400 m3	-																		
Subtotal:									2		1,500																		
Bina Marga	Utari/Rhee	Bore	Pumped	No	10.0	7	-	No details	10	1	Concrete, new - not yet in use. 500 m3	250	Utari/Rhee	29,989	9	4	598	5	3	0	0	619	93,744	75,456	20%				
Bendung Beringin Sila		River	Pumped	Yes	20.0		Flocculation, clarification, filtration & chlorination	No details	10																				
Subtotal:									1		250																		
Marente	Alas	River	Pumped	Yes	20.0	10	Flocculation, clarification, filtration & chlorination	No details	20	1	Concrete, new - not yet in use. 250 m3	250	Alas	44,857	35	57	1,526	23	29	0	0	1,670	367,500	207,924	43%				
Perenang		Bore	Pumped	No	5.0		-	No details	5	2	Old storages no longer in use. 400 m3 total	400																	
Subtotal:									25	1	250																		
Mapin Kebak	Mapin	Spring	Gravity	No	5.0	24	-	-	-	0	-	Mapin	43,435	9	33	678	6	3	3	0	0	732	103,680	57,144	45%				
Tiu Nisung [4]	Seteluk	Spring	Gravity	No	1.0	24	-	-	-	0	-	Seteluk	19,756	6	8	185	5	0	0	0	0	204	80,352	6,720	92%				
Brang Rea	Taliwang [5]	River	Pumped	Yes	15.0	0	Flocculation, clarification, filtration & chlorination	No details. Not operating.	-	1	Concrete, 400 m3	400	Taliwang	37,134	0	0	0	0	0	0	0	0	0	0	0	0			
Manala		Bore	Pumped	No	0.0		-	No details. Not operating.	-																				
Subtotal:									0	1	400																		
Jereweh	Jereweh	Bore	Pumped	No	2.5	14	-	-	-	0	-	Jereweh	15,950	10	7	314	4	2	0	0	0	337	77,664	55,020	29%				
DT Atas	Lape	Bore	Pumped	No	5.0	10	-	-	-	1	Southern Cross tank (ex ESWS)	100	Lape	8,033	13	13	406	5	1	0	0	438	95,904	70,092	27%				
Lagar		Bore	Pumped	No	2.5		-	-																					
Langkaya	Plampang	Spring	Gravity	No	5.0	24	-	-	-	1	Southern Cross tank (ex ESWS)	100	Plampang	51,074	19	37	1,073	9	12	0	0	1,150	306,432	116,856	62%				
Muer		Spring	Gravity	No	5.0		-	-																					
Buas	Empang	Spring	Gravity	No	5.0	24	-	-	-	1	Southern Cross tank (ex ESWS)	100	Empang	13,251	20	7	1,133	14	8	0	0	1,180	226,560	192,360	15%				
Lunyak Ode	Lunyak [6]	Gallery	Pumped	Yes	0.0	0	-	-	-	1	New concrete, 500 m3. Old no longer used concrete, 200m3.	500	Lunyak	15,500	0	0	0	0	0	0	0	0	0	0	0				
Total													368,534	171	193	8,728	128	103	3	0	9,326	2,225,532	1,409,736	37%					
													Diameter	Length															
													350	2,074															
													300	4,302															
													250	3,500															
													200	4,318															
													150	39,183															
													100	80,377															
													75	75,272															
													50	92,284															
													40	54,900															
													25	12,324															
Total:									9		3,200	Total	368,534	171	193	8,728	128	103	3	0	9,326	2,162,789	1,407,624	35%					

Workshop & Store: Large stocks of PVC pipe (20 mm - 100 mm dia), house connection pipe materials ans fittings, 300 new meters from ADB project. All stored under cover.

Tools & equipment: No evidence of hand tools - said to be at branch offices. Test Bench provided by AusAID never used. Pipe threading machine from AusAID not used because of high power requirements. Small hand threading tools available (not sighted). No drilling machine for tappings. No welder. No pressure testing equipment.

Vehicles: 2 Kjang (not operational), 3 Tanker trucks (1 not operational), and 7 motorcycles

[1] Based on December 2000 PDAM Reports and field discussions
 [2] Measured pump capacity. Nominal capacity is 100 L/s
 [3] Not in use.
 [4] Nominal capacity is 5 L/s. Problem with water allocation - competition with agricultural uses. Operating at 1 L/s currently.
 [5] System has not operated since February 1999.
 [6] System has not operated for 5 years. New system commissioned August 2001 from P3P funds.
 [7] Water production & sales by branch annualised from 12/2000 figures.

[8] I a Social
 I b Social Public Hydrant
 II a Domestic
 II b Government
 III Non domestic - commercial
 IV Industry
 V Special

[8] Mating % connections with damaged meters 20%

Table A20-A3.3 Financial Data of PDAM - Sumbawa

CONTACT:	Name:	Drs. H. Mahmud Abdullah
	Position:	Direktur Utama
	Phone/Fax:	0371 21223

PROVINCE: NTB		PDAM		SUMBAWA		FINANCIAL DATA					
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	400			2002	NA
Salaries & allowances	337,453	Salaries & allowances	523,702	Current Assets	1,284,074	Domestic tariff		29-07-1998 (SK Bupati No.284/1998)	NA		
Chemicals		Chemicals	493,309	Cash	14,676	0-10 m3	400				
Electricity		Utilities (electricity etc)	82,819	Accounts receivable	967,302	11-20 m3	600				
Inventory	103,510	Fuel		Provision for bad debts	-196,725	20-30 m3	900				
Maintenance	387,307	Maintenance		Inventory	498,821	>30 m3					
Buildings		Buildings	40,167	Other	0	Public tap	300				
Vehicles		Vehicles		Fixed Assets	6,143,908						
Installations		Installations	196,954	Land	30,150	Average tariff [2]	543				
Maintenance materials	250,213	Maintenance materials		Buildings/installations	13,375,576	Average bill [2]	9,960				
Loan redemption		Interest on loans		Vehicles	168,516						
Interest on loans		Loan redemption		General & office equip.	62,806	Charges					
Contribution to Govt.		Bad debts	13,053	Other	4,693	Meter Fees	2,000				
Tax		Other/depreciation	968,482	Accumulated depreciation	-7,497,832	Administration fees	750				
Other	119,190			Other Assets	1,104,864						
				Work in progress	949,026						
				Assets not in use	155,839						
Total	1,197,673	Total	2,318,486	Total	8,532,846						
Receipts		Revenue		Liabilities							
Water sales	777,296	Water sales	1,039,071	Current Liabilities	563,173						
Connection charges	122,002	Connection charges	154,149	Accounts payable	563,173						
Interest on investments	132	Interest	152,475	Maturing debt							
Loan		Other		Long Term Liabilities	1,332,376						
Subsidies				Deposits	63,603						
Other	309,343			Long term debt	1,268,773						
Total	1,208,773	Total	1,345,695	Equity	13,910,823						
				Capital	13,910,823						
				Accumulated profit/loss	-7,273,526						
				Operational surplus/deficit	-7,273,526						
Net Cash Flow	11,100	Profit/Loss	-972,791	Total	8,532,846						

[1] Based on December 2000

[2] January - July 2001

Table A20-A3.4 Pipeline Assets of PDAM - Sumbawa

PDAM: SUMBAWA		PIPELINE ASSETS											
Source: Technical Report December 2000		Length according to pipeline diameter (m)											Total length (m)
Branch	Type	350	300	250	200	150	100	75	60	50	40	25	
Sumbawa	Transmission	2,074	4,302	3,500	0	15,565	10,675						36,116
	Distribution							21,738	0	24,956	6,745	0	53,439
	Subtotal	2,074	4,302	3,500	0	15,565	10,675	21,738	0	24,956	6,745	0	89,555
Utan/Rhee	Transmission					6,500	8,600						15,100
	Distribution							2,900	0	6,152	3,925	1,912	14,889
	Subtotal	0	0	0	0	6,500	8,600	2,900	0	6,152	3,925	1,912	29,989
Alas	Transmission					5,450	4,639						10,089
	Distribution							13,854	0	13,619	7,295	0	34,768
	Subtotal	0	0	0	0	5,450	4,639	13,854	0	13,619	7,295	0	44,857
Mapin	Transmission					5,288	10,232						15,520
	Distribution							9,200	0	6,625	9,120	2,970	27,915
	Subtotal	0	0	0	0	5,288	10,232	9,200	0	6,625	9,120	2,970	43,435
Seteluk	Transmission						7,000						7,000
	Distribution							3,756	0	3,125	4,425	1,450	12,756
	Subtotal	0	0	0	0	0	7,000	3,756	0	3,125	4,425	1,450	19,756
Taliwang	Transmission				4,318	790	8,191						13,299
	Distribution							6,481	0	12,354	5,000	0	23,835
	Subtotal	0	0	0	4,318	790	8,191	6,481	0	12,354	5,000	0	37,134
Jereweh	Transmission						4,000						4,000
	Distribution							3,932	0	3,566	2,500	1,952	11,950
	Subtotal	0	0	0	0	0	4,000	3,932	0	3,566	2,500	1,952	15,950
Lape	Transmission						4,465						4,465
	Distribution							1,265	0	735	788	780	3,568
	Subtotal	0	0	0	0	0	4,465	1,265	0	735	788	780	8,033
Plampang	Transmission						16,775						16,775
	Distribution							6,506	0	16,339	8,539	2,915	34,299
	Subtotal	0	0	0	0	0	16,775	6,506	0	16,339	8,539	2,915	51,074
Empang	Transmission					590	800						1,390
	Distribution							1,640	0	3,313	6,563	345	11,861
	Subtotal	0	0	0	0	590	800	1,640	0	3,313	6,563	345	13,251
Lunyuk	Transmission					5,000	5,000						10,000
	Distribution							4,000	0	1,500	0	0	5,500
	Subtotal	0	0	0	0	5,000	5,000	4,000	0	1,500	0	0	15,500
PDAM	Sumbawa	2,074	4,302	3,500	0	15,565	10,675	21,738	0	24,956	6,745	0	89,555
	Utan/Rhee	0	0	0	0	6,500	8,600	2,900	0	6,152	3,925	1,912	29,989
	Alas	0	0	0	0	5,450	4,639	13,854	0	13,619	7,295	0	44,857
	Mapin	0	0	0	0	5,288	10,232	9,200	0	6,625	9,120	2,970	43,435
	Seteluk	0	0	0	0	0	7,000	3,756	0	3,125	4,425	1,450	19,756
	Taliwang	0	0	0	4,318	790	8,191	6,481	0	12,354	5,000	0	37,134
	Jereweh	0	0	0	0	0	4,000	3,932	0	3,566	2,500	1,952	15,950
	Lape	0	0	0	0	0	4,465	1,265	0	735	788	780	8,033
	Plampang	0	0	0	0	0	16,775	6,506	0	16,339	8,539	2,915	51,074
	Empang	0	0	0	0	590	800	1,640	0	3,313	6,563	345	13,251
	Lunyuk	0	0	0	0	5,000	5,000	4,000	0	1,500	0	0	15,500
Total	2,074	4,302	3,500	4,318	39,183	80,377	75,272	0	92,284	54,900	12,324	368,534	

Table A20-A4.1 General Data of PDAM - Dompu

Position:	President Director
Phone/Fax:	0373-21274

PROVINCE:		NTB		PDAM:		DOMPU		GENERAL DATA				
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS		AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT	
Date	Document		Total Population	Service Area Popn.	Population Served				Level/ Function	Number	Category	No.
BPAM		Dompu	84,327	72,545	32,125		3,773	549	<u>Level :</u>		Major towns	1
16-Feb-82	SK Menteri PU No.020/KPTS/CK/II/1982	Kempo	40,391	18,199	5,010		308	368	University/College	2	Small towns (IKK)	2
		Hu'u	24,261	12,848	4,670		102	297	Diploma	1	Villages	0
PDAM		Totals	148,979	103,592	41,805	Total:	4,183	1,214	Senior High School	37		
29-Mar-84	Peraturan Daerah Kab. Dati II Dompu No. 4/1983	Coverage			40%				Junior High School	2		
Handing Over - BPAM > PDAM									Elementary School	4		
24-Aug-92	SK Menteri PU No.608/KPTS/1992								Total	46		
PDAM - Structure									<u>Function :</u>			
28-Jan-93	SK Bupati 061.1/20/ORTAL						Category	No	Management	2		
							Social	134	Technical	14		
							Public Hydrant	171	Administration	30		
							Domestic	3,718	Total	46		
							Government	82				
							Commercial	77				
							Industrial	1				
							Special (Port)	0				
							Total:	4,183				
							Non-active	421				

[1] Based on December 2000 PDAM Reports

Table A20-A4.2 Technical Data of PDAM - Dompu

CONTACT:	Name:	Muhammad H Emo BIE
	Position:	President Director
	Phone/Fax:	0373-21274

PROVINCE: NTB		PDAM: DOMPU		TECHNICAL DATA																						
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity [3] (L/s)	HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS			STORAGES		PIPELINES [7]		CONNECTIONS [4]							PRODUCTION & SALES [5]			MAINTENANCE FACILITIES	
								Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Type	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced	Water Sold		UFW (% of production)
Rora	Dompu	River	Gravity	Yes	75.0	24	Slow sand filter & chlorination	-	-	1	Steel Tank (ESWS) - 250m3 each. Only one in use.	250	Dompu	137,548	116	110	3,408	72	66	1	-	3,773	2,266,135	1,107,600	57%	<p>Workshop & Store: Workshop and store within PDAM complex. Basic facilities only available. Adequate space for expansion if required. Noted 12 different types of meter. Linflow is the best with life of 5 years.</p> <p>Tools & equipment: Basic small tools available. Meter test bench provide by AusAID - little evidence of recent use. Large equipment such as welders, powered threading machines etc not available.</p> <p>Vehicles: 1 Kijang station, 1 Kijang pick-up, 5 motor cycles. (1 motorcycle is kept at Kempo.)</p>
Jado I	Dompu	Bore	Pumped	No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18,144	-	-		
Jado II [2]	Dompu	Bore	Pumped	No	12.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	311,028	-	-		
Raba baka	Dompu	River Gallery	Gravity	No	20.0	24	-	-	-	1	Steel Tank (ESWS) - left over and provided by PDAM	250	-	-	-	-	-	-	-	-	-	-	-	-		
Subtotal:					107.0																	2,597,307	1,107,600	57%		
Sori Ulu	Kempo	Bore	Pumped	No	7.5	8 - 12	-	1	7.5	1	Concrete [8]	200	Kempo	11,171	15	11	266	6	10	-	-	308	77,436	63,591	54%	
Sanggopa Sante I	Kempo	Bore	Pumped	No	4.5	8 - 12	-	1	4.5	-	-	-	-	-	-	-	-	-	-	-	-	46,461	-	-		
Sanggopa Sante II	Kempo	Bore	Pumped	No	-	8 - 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,486	-	-		
Kwangko	Kempo	Bore	Pumped	No	1.5	8 - 12	-	1	1.5	1	Steel tank (ESWS)	250	-	-	-	-	-	-	-	-	-	-	-	-		
Subtotal:					13.5																	139,383	63,591	54%		
Ncoha - Hu'u	Hu'u	Spring	Gravity	No	1.5	24	-	-	-	1	Steel tank (ESWS) [8]	250	Hu'u	18,250	3	50	44	4	1	-	-	102	22,746	41,787	44%	
Ompu rasi - Hu'u	Hu'u	Spring	Gravity	No	1.5	24	-	-	-	1	Steel tank (ESWS) [8]	250	-	-	-	-	-	-	-	-	-	-	22,746	-	-	
Keha jangka - Adu	Hu'u	Spring	Gravity	No	1.2	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18,195	-	-		
Oi wada sawe - Lodo	Hu'u	Spring	Gravity	No	0.7	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,614	-	-		
Subtotal:					4.9																	74,301	41,787	44%		
Total:					125.4					6		1,450	Total	141,474	134	171	3,718	82	77	1	0	4,183	1,927,207	958,659	50%	
													Diameter	Length												
													350	524												
													300	800												
													250	400												
													200	13,240												
													150	9,212												
													100	20,164												
													75	35,214												
													50	53,520												
													40	8,400												
													25	0												

[1] Based on December 2000 from PDAM Reports and field discussions.

[2] Field advice was that Jado II is not in use.

[3] Production capacity rather than source capacity.

[4]

- I a Social
- I b Social - Public Hydrant
- II a Domestic
- II b Government
- III Commercial
- IV Industry
- V Special

[5] Figures for branches based on annualised data from April Technical Report. Total for analysis based on December Financial Report.

[6] Metering

- Number of defective meters 724
- % connections with damaged meters 17%

[7] Inconsistency between Technical Report (Jan 2001) and Report on Condition of PDAM.

[8] Location of storage uncertain

Table A20-A4.3 Financial Data of PDAM - Dompu

CONTACT:	Name:	Muhammad H.Emo, BIE.
	Position:	Direktur Utama
	Phone/Fax:	0373-21274

PROVINCE: NTB		PDAM D O M P U				FINANCIAL DATA					
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	300				
Salaries & allowances		Salaries & allowances	307,270	Current Assets	278,489	Domestic tariff		25-06-2001 SK Bupati Dompu No.500/155/EKON/2 001	45%		
Chemicals		Chemicals	19,930	Cash	44,011	0-10 m3	300				
Electricity		Utilities (electricity etc)	37,762	Accounts receivable	677,278	11-20 m3	400				
Inventory	4,720	Fuel		Provision for bad debts	-490,048	20-30 m3	500				
Maintenance		Maintenance		Inventory	47,248	>30 m3	500				
Buildings		Buildings	22,893	Other	0	Public tap	225				
Vehicles		Vehicles		Fixed Assets	3,121,756						
Installations		Installations	21,452	Land	8,066	Average tariff	NA				
Maintenance materials		Maintenance materials		Buildings/installations	7,306,080						
Loan redemption		Interest on loans	3,625	Vehicles	169,117	Average bill	NA				
Interest on loans		Loan redemption		General & office equip.	52,154						
Contribution to Govt.		Bad debts	39,753	Other		Charges					
Tax	1,466	Other/depreciation	415,452	Accumulated depreciation	-4,413,661	Meter Fees	2,500				
Other [2]	496,960	General Expenses	67,940	Other Assets	146,933	Administration fees	1,500				
				Work in progress	8,424						
				Assets not in use	138,509	Water tax (based on volumetric charge)	11.55%				
Total	503,146	Total	936,077	Total	3,547,178						
Receipts		Revenue		Liabilities							
Water sales	444,077	Water sales	514,356	Current Liabilities	87,795						
Connection charges	85,518	Connection charges	103,990	Accounts payable	87,795						
Interest on investments		Interest	9,856	Maturing debt							
Loan		Other		Long Term Liabilities	1,312,899						
Subsidies	10,000			Deposits	26,953						
Other				Long term debt	1,285,946						
Total	539,595	Total	628,202	Equity	6,670,814						
				Capital	6,670,814						
				Accumulated profit/loss	-4,524,330						
				Operational surplus/deficit	-4,524,330						
Net Cash Flow	36,449	Profit/Loss	-307,875	Total	3,547,178						

[1] Based on PDAM Reports for FY 2000

[2] Breakdown not available

Table A20-A4.4 Pipeline Assets of PDAM - Dompu

PDAM: DOMPU

PIPELINE ASSETS

Source: Report on Condition of PDAM Kabupaten Dompu, January 2001

Branch	Type	Length according to pipeline diameter (m)									Total length (m)	
		350	300	250	200	150	100	75	50	40		25
Total	HDPE											0
	GI					150	3,964	7,848	7,612			19,574
	PVC				7,040	8,114	16,200	27,366	45,908	8,400		113,028
	ACP	524	800	400	6,200	948						8,872
	Total	524	800	400	13,240	9,212	20,164	35,214	53,520	8,400	0	141,474

Dompu		525	800	400	13,240	6,948	20,164	35,218	53,532	8,450		139,277
Kempo						1,450	4,585	950	2,876	1,310		11,171
Hu'u							2,100	1,300	7,000	7,850		18,250
Total		525	800	400	13,240	8,398	26,849	37,468	63,408	17,610	0	

Note: Data broken down by pipe type seems to be based on Dompu only but there remain some discrepancies particularly for 150 mm diameter.

Table A20-A5.1 General Data of PDAM - Bima

CONTACT:	Name:	Ir Ramli H I
	Position:	President Director
	Phone/Fax:	0374 43722

PROVINCE:		NTB		PDAM:		BIMA		GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION [2]			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT	
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.
13 May 1985	Perda Pemda Kab. Bima No. 6/1985	Raba-Bima	111,489	78,331	35,250	4,432	222	Management	3	Major towns	1
		Sape	77,784	56,487	8,435	858	600	Finance & admin	68	Small towns (IKK)	7
Effective implementation 1991		Wawo	89,132	14,189	5,430	773	478	Technical - staff	52	Villages	0
		Woha	37,993	24,929	10,665	1,644	153	Other - contract (9 No.)	Included		
		Belo	50,628	17,030	1,600	201	183	Total	123		
		Monta	37,911	19,773	1,750	291	451	Degree (S1)	21		
		Wera	43,013	29,435	3,975	433	648	Diploma (D3)	3		
		Bolo	65,251	52,888	5,355	594	291	Snr High School	90		
			513,201	293,062	72,460	Total	9,226	3,024	Jnr High School	4	
						Category	No	Elementary School	5		
					25%	Social	269	Other			
						Public Hydrant	245	Total	123		
						Domestic	8,344				
						Government	140				
						Commercial	227				
						Industrial	0				
						Special (Port)	1				
		Total	1,026,402	586,124	72,460	Total	9,226				

[1] Based on December 2000 reports

[2] Proposal Perluasan Pelayanan PDAM Bima

Table A20-A5.2 Technical Data of PDAM - Bima

CONTACT:	Name:	Ir Ramli
	Position:	President Director
	Phone/Fax:	0374-43722

PROVINCE:		PDAM		BIMA		TECHNICAL DATA																					
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS			STORAGES		PIPELINES		CONNECTIONS [2] [3]						PRODUCTION & SALES			MAINTENANCE FACILITIES			
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced (m3)		Water Sold (m3)	UFW (% of production)	
Nunga	Raba-Bima	River	Gravity	Yes	60.0	24	Full treatment (clarification, filtration, chlorination)	-		2	Southern Cross Tank (750 m3) + concrete reservoir (200 m3)	950	Raba-Bima	199,000		127	4,277					4,404	1,943,003	1,096,431	44%	<p>Workshop & Store: Workshop and store contained within PDAM office complex. Meter test bench reported to be operational but not used for at least 2 years. Large pipe stocks including PVC and small diameter GI pipe. Large stocks of house connection materials including meters (3000). Substantial "project" supplied PVC pipe stocks stored in direct sunlight and subject to damage. Storage poorly organised and no evidence of detailed inventories.</p>	
Peneraga	Raba-Bima	Bore	Pumped	No	10.0	?	-	1	10.0	-																	
Jatiwangi	Raba-Bima	Bore	Pumped	No	4.0	?	-	1	4.0	-																	
Sadia	Raba-Bima	Bore	Pumped	No	2.5	?	-	1	2.5	-																	
Sumi	Sape	Dam	Gravity	Yes	40.0	24	Full treatment (clarification, filtration, chlorination)	-		1	Concrete	700	Sape	40,000		31	826					857	158,879	119,000	25%		
Wawo	Wawo	Well	Pumped	No	10.0	16	-	1	10.0	1	Concrete (300 m3) plus Southern Cross Tank(200	300	Wawo	114,997		16	752					768	169,140	122,584	28%		
Raba Kodo	Woha	Bore	Pumped	No	15.0	16	-	1	15.0	-																	
Sakuru	Woha	Bore	Pumped	No	10.0		-	1	10.0	1	Southern Cross Tank	200	Woha	178,200		25	1,611					1,636	407,784	328,813	19%		
Kalampak	Woha	Bore	Pumped	No	4.0		-	1	4.0	1	Southern Cross Tank	200															
Raba Kodo	Belo	Include in Woha				16	-	Part of Woha system				Belo	34,000		1	200						201	Included in Woha				
Monta	Monta	Bore	Pumped	No	5.0	16	-	1	5.0	1	Southern Cross Tank	200	Monta	45,500		3	288					291	72,348	48,244	33%		
Wera	Wera	Spring	Gravity	No	4.0	24	-			-			Wera	70,000		19	412					431	93,334	67,109	28%		
Bolo	Bolo	Spring	Gravity	No	5.5	24	-			-			Bolo	41,500		25	566					591	126,182	120,238	5%		
Totals:												Total	723,197	0	247	8,932	0	0	0	0	0	9,179	2,970,670	1,902,419	36%	<p>Tools & equipment: Limited workshop equipment. No heavy equipment such as powered pipe threading machines or electric welders. No evidence of detailed inventories or proper storage and care of equipment. Some shortage of small tools reported in branch offices.</p>	
												Diameter	Length														
												350	9,725														
												300	0														
												250	12,150														
												200	10,000														
												100	131,222														
												75	152,900														
												50	275,500														
												40	84,000														
												25	9,000														

[1] Based on Technical Report December 2000
 [2] Data by branch is inconsistent with consolidated figures
 [3] Metering % connections with damaged meters 20%

I a Social
 I b Public Hydrant
 II a Domestic
 II b Government
 III Commercial
 IV Industry
 V Special

Table A20-A5.3 Financial Data of PDAM - Bima

CONTACT:	Name:	Ir. Ramli
	Position:	Direktur Utama
	Phone/Fax:	0374-43722

PROVINCE: NTB		PDAM B I M A				FINANCIAL DATA					
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3 or Rp/mth	Date	%	Date	%
Payments		Expenses [2]		Assets		Base Tariff	450	25-01-1999 (SK Bupati No. 5/1999)	NA	In planning - no specific date	25%
Salaries & allowances	622,873	Salaries & allowances		Current Assets	1,389,487	Domestic tariff					
Chemicals		Chemicals		Cash	71,469	0-10 m3	450				
Electricity		Utilities (electricity etc)		Accounts receivable	1,173,540	11-20 m3	675				
Inventory	600,535	Fuel		Provision for bad debts	-519,664	20-30 m3	1,012				
Maintenance		Maintenance		Inventory	624,142	>30 m3	1,520				
Buildings		Buildings		Other	40,000	Public tap	270				
Vehicles		Vehicles		Fixed Assets	1,985,596	Average tariff [3]	688				
Installations	234,739	Installations		Land	38,689	Average bill (Rp) [3]	13,833				
Maintenance materials		Maintenance materials		Buildings/installations	7,922,605						
Loan redemption		Interest on loans		Vehicles & machinery	241,682	Charges					
Interest on loans		Loan redemption		General & office equip.	191,422	Meter Fees	1,700				
Contribution to Govt.		Bad debts		Other	598	Administration fees	1,000				
Tax		Depreciation	511,989	Accumulated depreciation	-6,409,400						
Other	290,397	General Expenses	1,580,023	Other Assets	34,277						
				Work in progress	34,277						
				Assets not in use	0						
Total	1,748,544	Total	2,092,012	Total	3,409,360						
Receipts		Revenue		Liabilities							
Water sales	1,504,654	Water sales	1,361,014	Current Liabilities	187,223						
Connection charges	188,935	Connection charges	170,602	Accounts payable	187,223						
Interest on investments	1,222	Interest		Maturing debt							
Loan		Other	24,357	Long Term Liabilities	1,036,785						
Subsidies				Deposits	29,297						
Other	33,661			Long term debt	1,007,488						
Total	1,728,472	Total	1,555,973	Equity	7,471,800						
				Capital	7,471,800						
				Accumulated profit/loss	-5,286,448						
				Operational surplus/deficit	-5,286,448						
Net Cash Flow	-20,072	Profit/Loss	-536,039	Total	3,409,360						

[1] Based on PDAM Reports for FY 2000

[2] Breakdown not available

[3] 2001 Jan - May

Table A20-A5.4 Pipeline Assets of PDAM - Bima

PDAM:		BIMA										PIPELINE ASSETS	
Source:		PDAM Records 1980 - 1998											
Branch	Type	Length according to pipeline diameter (m)										Total length (m)	
		350	300	250	200	150	100	75	50	40	25		
Raba Bima	HDPE								2,000	2,000	1,000	5,000	
	GI					2,500	6,000	2,000	12,000			22,500	
	PVC					11,500	21,000	36,500	80,000	11,500	3,500	164,000	
	ACP			3,500	1,500	2,500						7,500	
	Subtotal	0	0	3,500	1,500	16,500	27,000	38,500	94,000	13,500	4,500	199,000	
Wawo	HDPE									8,500	2,500	11,000	
	GI						2,000					2,000	
	PVC							12,000	15,000			27,000	
	ACP											0	
	Subtotal	0	0	0	0	0	2,000	12,000	15,000	8,500	2,500	40,000	
Sape	HDPE											0	
	GI	725										725	
	PVC	9,000		8,650	3,500	5,500	14,722	17,400	41,000	12,500		112,272	
	ACP					2,000						2,000	
	Subtotal	9,725	0	8,650	3,500	7,500	14,722	17,400	41,000	12,500	0	114,997	
Woha	HDPE								26,000	14,000		40,000	
	GI									12,500		12,500	
	PVC					3,700	49,500	39,000	33,500			125,700	
	ACP											0	
	Subtotal	0	0	0	0	3,700	49,500	39,000	59,500	26,500	0	178,200	
Belo	HDPE									6,000	2,000	8,000	
	GI											0	
	PVC						2,000	12,000	12,000			26,000	
	ACP											0	
	Subtotal	0	0	0	0	0	2,000	12,000	12,000	6,000	2,000	34,000	
Monta	HDPE								15,000	10,500		25,500	
	GI						3,500					3,500	
	PVC						8,000	8,500				16,500	
	ACP											0	
	Subtotal	0	0	0	0	0	11,500	8,500	15,000	10,500	0	45,500	
Bola	HDPE											0	
	GI											0	
	PVC				5,000	11,000	17,000	6,500	24,000	6,500		70,000	
	ACP											0	
	Subtotal	0	0	0	5,000	11,000	17,000	6,500	24,000	6,500	0	70,000	
Wera	HDPE							19,000	15,000			34,000	
	GI						4,000					4,000	
	PVC						3,500					3,500	
	ACP											0	
	Subtotal	0	0	0	0	0	7,500	19,000	15,000	0	0	41,500	
PDAM	HDPE	0	0	0	0	0	0	19,000	58,000	41,000	5,500	123,500	
	GI	725	0	0	0	2,500	15,500	2,000	12,000	12,500	0	45,225	
	PVC	9,000	0	8,650	8,500	31,700	115,722	131,900	205,500	30,500	3,500	544,972	
	ACP	0	0	3,500	1,500	4,500	0	0	0	0	0	9,500	
	TOTAL	9,725	0	12,150	10,000	38,700	131,222	152,900	275,500	84,000	9,000	723,197	
PDAM	Raba Bima	0	0	3,500	1,500	16,500	27,000	38,500	94,000	13,500	4,500	199,000	
	Wawo	0	0	0	0	0	2,000	12,000	15,000	8,500	2,500	40,000	
	Sape	9,725	0	8,650	3,500	7,500	14,722	17,400	41,000	12,500	0	114,997	
	Woha	0	0	0	0	3,700	49,500	39,000	59,500	26,500	0	178,200	
	Belo	0	0	0	0	0	2,000	12,000	12,000	6,000	2,000	34,000	
	Monta	0	0	0	0	0	11,500	8,500	15,000	10,500	0	45,500	
	Bola	0	0	0	5,000	11,000	17,000	6,500	24,000	6,500	0	70,000	
	Wera	0	0	0	0	0	7,500	19,000	15,000	0	0	41,500	
	Subtotal	9,725	0	12,150	10,000	38,700	131,222	152,900	275,500	84,000	9,000	723,197	

Includes pipelines under construction in 1998

Table A20-A6.1 General Data of PDAM - Sikka

CONTACT:	Name:	Maximus Parera
	Position:	Direktur Utama
	Phone/Fax:	0382-21300

PROVINCE:		NTT		PDAM:			SIKKA			GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT			
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.		
1983	Peraturan Daerah Kabupaten Sikka No. 17/1983	Maumere	114,430	114,430	44,414	4,294	170	University (S1)	3	Major towns	1		
		Nita	NA			783		College (D3)	3	Small towns (IKK)	5		
Effective Establishment 1991		Lela				493		Senior High School	57	Villages	0		
		Paga				120		Junior High School	14				
		Bola				215		Elementary School	10				
		Kewapante				359		Total	87				
		Coverage			39%			Management	3				
								Technical Staff	45				
								Finance & Adm. Staff	39				
						Total (incl. NA)	6,264	170	Total	87			
						Category	No						
						Social	34						
						Public Hydrant	50						
						Domestic	5,421						
						Government	207						
						Commercial	407						
						Industrial	12						
						Special (Port)	1						
						Total	6,132						
						Non Active	132						

[1] Based on December 2000 reports

[2] Data on connections numbers is inconsistent at "Branch" level.

Table A20-A6.2 Technical Data of PDAM - Sikka

CONTACT:	Name:	Maximus Parera
	Position:	Direktur Utama
	Phone/Fax:	0382-21300

PROVINCE:		PDAM:		SIKKA		TECHNICAL DATA																				
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS		STORAGES			PIPELINES			CONNECTIONS [2] [3] [4]						PRODUCTION & SALES			MAINTENANCE FACILITIES	
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Diameter	Length	Type	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced		Water Sold
Wair Puang	Maumere	River	Gravity		8.8																		1,986,645	1,397,156	30%	Workshop & Store: Small workshop at rear of main office. PDAM do fabrication for own installation of house connections. Storage facilities limited.
Wolomarang	Maumere	Bore	Pumped		10.0																					
Susteran	Maumere	Bore	Pumped		10.0																					
Teka Iku	Maumere	Bore	Pumped		10.0			6	100 - 400 m3 capacity. Construction unknown.	1,400					23	32	3,615	204	411	8	1	4,294				
Ill Getang	Maumere	Bore	Pumped		5.0																					
Perkebunan	Maumere	Bore	Pumped		10.0																					
Kolam renang	Maumere	Bore	Pumped		2.5																					Tools & equipment: Small tools available for basic maintenance and installation. No meter test bench, no pressure testing equipment, no welder.
Waliti	Maumere	Bore	Pumped		7.5																					
Wair Puang	Nita	Spring	Gravity		20.0			1	Not in use. Construction unknown.	100					33		728	1	21			783				
Wair Kibung	Nita	Spring	Gravity		1.2										9		464	3	16	1		493				
Batik Wair	Lela	Spring	Gravity		6.5										6		205	2	1	1		215				
Loka Poo	Paga	Spring	Gravity		5.0																					
Wair Terang	Bola	Spring	Gravity		3.5										1		117		1	1		120				
Wair Terang	Bola	Spring	Gravity		2.5																					Vehicles: 2 Kijang, 2 Pick-up, 3 tanker trucks, and 7 motor cycles.
Klong Logot	Kewa Pante	Bore	Pumped		7.5										2		354	1	2			359				
Total:					110.0										74	32	5,483	211	452	11	1	6,264	1,986,645	1,397,156	30%	

[1] Based on PDAM Reports December 2000

[2] Ia Social
Ib Public Hydrant
Ila Domestic
Ilb Government
III Commercial
IV Industry
V Special

[3] Metering

% connections with damaged meters
[4] Includes non-active connections

33%

Table A20-A6.3 Financial Data of PDAM - Sikka

CONTACT:	Name:	Maximus Parera
	Position:	Direktur Utama
	Phone/Fax:	0382 21300

PROVINCE: NTT		PDAM: SIKKA		FINANCIAL DATA							
CASHFLOW [2]		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	200	21-07-1999 (SK Bupati No.768/1999)	100	-	
Salaries & allowances		Salaries & allowances	385,053	Current Assets	421,188	Domestic tariff					
Chemicals		Chemicals		Cash	80,550	0-10 m3	200	Implementation halted by Bupati			
Electricity		Utilities (electricity etc)	163,710	Accounts receivable	259,639	11-20 m3	300				
Inventory		Fuel	17,498	Provision for bad debts	-65,007	20-30 m3	400				
Maintenance		Maintenance		Inventory	85,181	>30 m3	600				
Buildings		Buildings	47,676	Other	60,825	Public tap	160				
Vehicles		Vehicles		Fixed Assets	2,157,273	Average tariff	320				
Installations		Installations	35,054	Land	142,173	Average bill (Rp)	8,848				
Maintenance materials		Maintenance materials		Buildings/installations	3,771,149	Charges					
Loan redemption		Interest on loans	261	Vehicles	184,783	Meter Fees	2,000				
Interest on loans	261	Loan redemption		General & office equip.	151,684	Administration fees	1,000				
Contribution to Govt.		Bad debts	32,733	Other	191,549						
Tax		Other/depreciation	312,775	Accumulated depreciation	-2,284,066						
Other	801,104			Other Assets	21,848						
				Work in progress		Proposed Tariff					
				Assets not yet in use		Base Tariff	400				
Total	801,365	Total	994,760	Total	2,600,308	Domestic tariff					
Receipts		Revenue		Liabilities		0-10 m3	400				
Water sales	610,431	Water sales	663,452	Current Liabilities	47,258	11-20 m3	600				
Connection charges	182,615	Connection charges	162,294	Accounts payable	47,258	20-30 m3	900				
Interest on investments	2,325	Interest	2,324	Maturing debt		>30 m3	900				
Loan		Other		Long Term Liabilities	59,843	Public tap	400				
Subsidies				Deposits	59,843						
Other	6,058			Long term debt							
Total	801,428	Total	828,070	Equity	3,787,681						
				Capital	3,787,681						
				Funds							
				Accumulated profit/loss	-1,294,473						
				Operational surplus/deficit	-1,294,473						
Net Cash Flow	63	Profit/Loss	-166,690	Total	2,600,308						

[1] Based on FY 2000 to 31 December 2000.

[2] No breakdown available.

[3] Different tariff for IKK

Table A20-A7.1 General Data of PDAM - Flores Timur

CONTACT:	Name:	Bapak Stephanus Suban Tukan
	Position:	President Director
	Phone/Fax:	0383 - 21738

PROVINCE:		NTT		PDAM:		FLORES TIMUR		GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS (by branch and category) [2]	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT	
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.
14 April 1994	Peraturan Daerah Kab. Flores Timur No. 4/1993	Larantuka	31,119	NA	NA	2,881	NA	Management	3	Major towns	1
		Waiwerang	11,921			617		Finance & admin	30	Small towns (IKK)	2
		Waiklibang	1,736			33		Technical - staff	30	Villages	0
Effective establishment 11 July 2000								Other - contract	0		
								Total	63		
								University/College (S1)	2		
								Snr High School	32		
								Jnr High School	19		
								Elementary School	10		
								Other			
								Total	63		
						Total:	3,531	0			
						Category	No				
						Social	71				
						Public Hydrant	70				
						Domestic	3,251				
						Government	90				
						Commercial	127				
						Industrial	1				
						Special (Port)	1				
						Total:	3,611				
						Non active	NA				

[1] Based on December 2000 reports

[2] Data on connections numbers is inconsistent at "Branch" level.

Table A20-A7.2 Technical Data of PDAM - Flores Timur

CONTACT:	Name:	Bapak Stephanus Suban Tukan
	Position:	President Director
	Phone/Fax:	0383 - 21738

PROVINCE:		NTT		PDAM		FLORES TIMUR		TECHNICAL DATA																	
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)	HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS		STORAGES			PIPELINES		CONNECTIONS [2] [3] [4]							PRODUCTION & SALES			MAINTENANCE FACILITIES
								Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	I a	I b	II a	II b	III	IV	V	Total	Water produced	Water Sold	
Letomatan	Larantuka	Spring	Gravity	No	12.0	17				2		400	Larantuka	115,303	48	3	2,558	79	75	1	2	2,766	NA	Workshop & Store: No dedicated workshop but space within complex. Stores include internal storage for small pipes and fittings. External storage used for large pipes and fittings. Note electrical equipment for village electricity supply from PDAM gensets.	
Gere	Larantuka	Spring	Gravity	No	6.0					2		200													
Waibao	Larantuka	Spring	Gravity	No	3.0					1		80													
Waiokin	Larantuka	Spring	Gravity	No	2.5					1		50													
Galeri Bama	Larantuka	River Gallery	Gravity	No	12.0																				
Suban Poar	Larantuka	Spring	Pumped	No	4.0																				
Waidoko	Larantuka	Spring	Gravity	No	15.0																				
Subtotal					54.5				6	Subtotal	730														
Waiwoka	Waiwerang	Spring	Gravity		1.5	12				1		100	Waiwerang	36,461	19	55	486	4	45			609	NA	Tools & equipment: Basic small tools available. Recent purchases of Disk Cutter for pipes. Welder in store. No meter test bench. No pressure testing equipment.	
Waiburak	Waiwerang	Spring	Gravity		1.0					1		50													
Waiknawe	Waiwerang	Spring	Gravity		5.0																				
Waikita	Waiwerang	Spring	Gravity		1.0																				
Subtotal					8.5				2	Subtotal	150														
Sumur bore	Waiklibang	Bore	Pumped		2.5	4							Waiklibang	9,284	2	12	12	1				27	NA	Vehicles: 2 Vehicles (pick-up), 2 tanker trucks, 9 motorcycles.	
Subtotal					2.5					0	Subtotal	0													
Total					65.5					8	Total	880	Total	161,048	69	70	3,056	84	120	1	2	3,402	NA	846,129	NA
													Diameter	Length											
													250	17,472											
													150	7,986											
													100	58,833											
													75	20,622											
													65	9,470											
													50	20,862											
													40	13,490											
													25	12,313											

[1] Based on PDAM Reports December 2000

[2] I a Social
 I b Public Hydrant
 II a Domestic
 II b Government offices
 III Commercial
 IV Industry
 V Special

[3] Metering

% connections with damaged meters (estimated) 50%

[4] Connections by branch are inconsistent with consolidated billing data

Table A20-A7.3 Financial Data of PDAM - Flores Timur

CONTACT:	Name:	Drs. Stephanus Suban Tukan
	Position:	Direktur Utama
	Phone/Fax:	0383 21247

PROVINCE: NTT		PDAM: FLORES TIMUR		FINANCIAL DATA							
CASHFLOW [2]		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	160	01/12/1992 - SK. Kepala BPAM Kab. Flotim No. 04/KPTS/1992	NA	01/04/2001 (proposal)	>100%
Salaries & allowances		Salaries & allowances	204,625	Current Assets	506,414	Domestic tariff					
Chemicals		Chemicals		Cash	14,388	0-10 m3	160				
Electricity		Utilities (electricity etc)		Accounts receivable	210,133	11-20 m3	240				
Inventory		Fuel		Provision for bad debts	-33,170	20-30 m3	320				
Maintenance		Maintenance		Inventory	305,205	>30 m3	480				
Buildings		Buildings }	26,992	Other	9,859	Public tap	128				
Vehicles		Vehicles }		Fixed Assets	7,614,881						
Installations		Installations	36,973	Land	19,056	Average tariff	367				
Maintenance materials		Maintenance materials		Buildings/installations	7,068,704	Average bill (Rp)	8,042				
Loan redemption		Interest on loans	280	Vehicles & machinery	523,106						
Interest on loans		Loan redemption		General & office equip.	111,271						
Operational	365,273	Bad debts		Other	-	Charges					
Non Operational	35,775	Depreciation	107,256	Accumulated depreciation	-107,257	Meter Fees	1,000				
Other		Other	83,013	Other Assets	0	Administration fees	500				
				Work in progress	0						
				Assets not yet in use	0	Proposed Tariff					
Total	401,048	Total	459,139	Total	8,121,294	Base Tariff	550				
Receipts		Revenue		Liabilities		Domestic tariff					
Water sales		Water sales	262,531	Current Liabilities	42,789	0-10 m3	550				
Connection charges		Connection charges	149,314	Accounts payable	42,789	11-20 m3	1,100				
Interest on investments		Interest		Maturing debt		20-30 m3	2,200				
Loan		Other	2,315	Long Term Liabilities	45,511	>30 m3	2,200				
Operational	335,269			Deposits	45,511	Public tap	460				
Non Operational	61,014			Long term debt							
Total	396,283	Total	414,160	Equity	8,077,972						
				Capital	8,077,972						
				Accumulated profit/loss	-44,977						
				Operational surplus/deficit	-44,977						
Net Cash Flow	-4,765	Profit/Loss	-44,979	Total	8,121,294						

[1] Based on FY 2000 to 31 December 2000.

[2] No breakdown available.

Table A20-A7.4 Pipeline Assets of PDAM - Flores Timur

PDAM:	FLORES TIMUR
Source:	Technical Report December 2000

PIPELINE ASSETS

Type	Type	Length according to pipeline diameter (m)									Total length (m)
		250	200	150	100	75	65	50	40	25	
Transmission	Larantuka	17,395	0	6,942	36,371						60,708
	Waiwerang				11,382	5,226					16,608
	Waiklabang				3,500	1,218					4,718
	Subtotal	17,395	0	6,942	51,253	6,444	0	0	0	0	82,034
Distribution	Larantuka	77		1,044	7,580	10,946	1,054	17,329	4,252	12,313	54,595
	Waiwerang					3,232	8,416	1,855	6,350		19,853
	Waiklabang							1,678	2,888		4,566
	Subtotal	77	0	1,044	7,580	14,178	9,470	20,862	13,490	12,313	79,014
Total	Larantuka	17,472	0	7,986	43,951	10,946	1,054	17,329	4,252	12,313	115,303
	Waiwerang	0	0	0	11,382	8,458	8,416	1,855	6,350	0	36,461
	Waiklabang	0	0	0	3,500	1,218	0	1,678	2,888	0	9,284
Total		17,472	0	7,986	58,833	20,622	9,470	20,862	13,490	12,313	161,048

Table A20-A8.1 General Data of PDAM - Kupang

CONTACT:	Name:	Drs. MASYA DJONU
	Position:	Direktur Utama
	Phone/Fax:	0380 821015

PROVINCE: NTT		PDAM: KUPANG				GENERAL DATA							
ESTABLISHMENT		CABANG/SYSTEM	POPULATION [2]			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT			
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.		
16/08/1986	Peraturan Daerah Kabupaten Kupang, No. 1/1986	Kupang (incl. Tarus)	200,465	200,465	108,652	19,996	NA	Degree (S1)	16	Major towns	1		
		Camplong	NA			315		Diploma (D3)	8	Small towns (IKK)	6		
		Takari				335		Snr High School	167	Villages (Tarus)	1		
		Ba'a				563		Jnr High School	20				
		Papela				182		Elementary School	20				
		Seba				168							
		Bolou				197							
		Coverage (Kota only)						54%			Management	4	
								Technical Staff	119				
								Finance & Adm. Staff	108				
									231				
						Total:	21,756	0					
						Category	No						
						Social	354						
						Social Public Hydrant	220						
						Domestic	19,594						
						Government	315						
						Commercial	1,268						
						Industrial	5						
						Special (Port)	0						
						Total:	21,756						
						Non active	738						

[1] Based on December 2000 reports

[2] Memori PDAM Kabupaten Kupang Sep 95 - Sep 99

Table A20-A8.2 Technical Data of PDAM - Kupang

CONTACT:	Name:	Drs. MASYA DJONU
	Position:	Direktur Utama
	Phone/Fax:	0380 821015

PROVINCE:		PDAM				KUPANG		TECHNICAL DATA																	
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS		STORAGES			PIPELINES		CONNECTIONS [2] [3]						PRODUCTION & SALES			MAINTENANCE FACILITIES	
Location/Description	Town/KK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s) [4]			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced		Water Sold
Oepura	Kupang	Spring	Gravity	--	49.5										Kupang & Tarus									Workshop & Store: No workshop as such but extensive work areas. House connection programs are implemented by contract. Good stocks of pipes & fittings and meters (>1000). Too many meter types. Bulk meters to 200mm. 2 separate store rooms in Central Office complex. Tools & equipment: Usual small tools etc. Welder (need another), pipe cutters, no drill, no pressure testing pumps. Meter test bench not used but apparently being set up for use. Vehicles: 4 Station Wagon, 3 Pick-ups, 38 motorcycles, 9 tanker trucks.	
Haukolo	Kupang	Spring	Gravity	--	12.1									292	182	18,114	273	1,131	4	0	19,996				
Baumata	Kupang	Spring	Gravity	--	49.3									Camplong											
Oeleu	Kupang	Spring	Gravity	--	9.0									6	0	286	5	18			315				
Sagu	Kupang	Spring	Pump	--	68.5									Takari											
Amnesi	Kupang	Spring	Gravity	--	8.5									13	13	294	3	12			335				
Dendeng	Kupang	Spring	Gravity	--	10.0									Ba'a											
Kolhua	Kupang	Spring	Gravity	--	11.1									19	12	460	17	55			563				
Kelapa Lima	Kupang	Bore	Pump	--	8.0									Papela											
RSS Liliba	Kupang	Bore	Pump	--	5.0									8	5	140	3	25	1		182				
Oeba	Kupang	Spring	Pump	--	15.0									Seba											
Namosain	Kupang	Bore	Pump	--	10.8									7	3	128	9	21			168				
Alak	Kupang	Bore	Pump	--	15.0									Bolou											
Oetona	Kupang	Bore	Pump	--	15.0									9	5	172	5	6			197				
Sikumana	Kupang	Bore	Pump	--	8.3																				
Tarus	Kupang	Spring	Pump	--	9.0																				
Bonem		Bore	Pump	--	30.8																				
Nasipanaf		Bore	Pump	--	13.7																				
Total:					348.5						19		5,780		354	220	19,594	315	1,268	5	0	21,756	9,372,181	7,497,745	20%

[1] Based on Technical Report December 2000 & discussions

[2] I a Social
I b Public Hydrant
II a Domestic
II b Government
III Commercial
IV Industry
V Special

[3] Metering

% connections with damaged meters (estimated only) 10%
[4] List is incomplete. Dry season capacity may be only 50%.

Table A20-A8.3 Financial Data of PDAM - Kupang

CONTACT:	Name:	Drs. MASYA DJONU
	Position:	Direktur Utama
	Phone/Fax:	0380 821015

PROVINCE: NTT		PDAM KUPANG		FINANCIAL DATA							
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3	Date	%	Date	%
Payments		Expenses		Assets		Base Tariff	210				
Salaries & allowances	4,077,253	Salaries & allowances	2,466,929	Current Assets	3,492,684	Domestic tariff		29/03/2000	100		
Chemicals		Chemicals	2,568	Cash	1,148,605	0-10 m3	210	Implementation deferred after SK prepared			
Electricity		Utilities (electricity etc)	212,358	Accounts receivable	1,287,646	11-20 m3	315				
Inventory		Fuel	79,135	Provision for bad debts	-34,068	20-30 m3	525				
Maintenance		Maintenance		Inventory	792,621	>30 m3	672				
Buildings		Buildings	174,440	Other	297,881	Public tap	168				
Vehicles		Vehicles		Fixed Assets	11,772,610						
Installations		Installations	300,672	Land	107,875	Average tariff	599				
Maintenance materials		Maintenance materials	271,720	Buildings/installations	22,057,805						
Loan redemption	66,666	Interest on loans	6,242	Vehicles	794,430	Average bill (Rp)	18,942				
Interest on loans		Loan redemption		Equipment (Machinery)	672,996						
Contribution to Govt.	50,000	Bad debts		Other		Charges					
Tax		Depreciation	1,419,838	Accumulated depreciation	-11,860,496	Meter Fees	1,000				
Other	1,144,503	Other	1,576,946	Other Assets	3,512,322	Administration fees	500				
				Work in progress	9,889						
				Assets not yet in use	3,502,433	Proposed Tariff					
Total	5,338,422	Total	6,510,848	Total	18,777,617	Base Tariff	420				
Receipts		Revenue		Liabilities		Domestic tariff					
Water sales }	4,740,661	Water sales	4,923,353	Current Liabilities	3,716,529	0-10 m3	420				
Connection charges }		Connection charges	489,672	Accounts payable	3,716,529	11-20 m3	630				
Interest on investments	38,851	Interest	38,850	Maturing debt		20-30 m3	840				
Loan		Other	96,515	Long Term Liabilities	3,835,952	>30 m3	840				
Subsidies				Deposits	283,791	Public tap	336				
Other	1,074,199			Long term debt	3,552,160						
Total	5,853,711	Total	5,548,390	Equity	16,255,922						
				Capital	16,255,922						
				Accumulated profit/loss	-5,030,787						
				Operational surplus/deficit	-5,030,787						
Net Cash Flow	515,289	Profit/Loss	-962,458	Total	18,777,617						

[1] Based on FY 2000 to 31 December 2000 (Audited results)

Table A20-A8.4 Historical Data and Trends of PDAM - Kupang

PDAM: KUPANG		HISTORICAL DATA					
Item	Year						
	2000	1999 [1]	1998	1997	1996	1995	Annual Change (%)
Connections	22,494	19,782	18,151	16,120	14,604	12,685	12%
Profit & Loss (,000 Rp)							
- Income	5,534,911	4,065,734	3,838,827	3,659,715	3,271,233	2,932,877	14%
- Expense	5,605,746	4,441,394	4,524,170	4,094,293	3,125,235	2,536,848	17%
Net (before tax)	-70,835	-375,660	-685,343	-434,578	145,998	396,029	NA
Balance Sheet							
- Net Assets	18,777,617	18,724,041	23,647,071	18,264,361	14,553,367	10,399,992	13%
- Equity	16,255,921	16,255,921	19,732,620	15,719,606	13,344,198	10,101,435	10%
- Profit (loss)	-962,457	-1,382,448	-685,342	-434,578	80,334	289,863	NA
- Return on equity	-6%	-9%	-3%	-3%	1%	3%	NA
Base Tariff (Rp/m3)	210	210	210	210	210	210	0%
Water Sold (m3) [1]	7,497,745	6,832,048	6,304,635	6,680,000	5,239,646	4,980,981	9%
INFLATION							
Average National increase							17.2%

[1] 1999 annualised from Jan - Nov data.

Source: PDAM reports. Central Statistics Bureau.

Table A20-A9.1 General Data of PDAM - Sumba Timur

CONTACT:	Name:	Dra. Erna Aljufrie
	Position:	Admin & Finance Director
	Phone/Fax:	21164, 21165

PROVINCE:		NTT		PDAM:			SUMBA TIMUR			GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION [2]			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT			
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category	No.		
1 Juni 1991	Peraturan Daerah Pendirian PDAM No.8/1991	Waingapu	54,721	50,652	32,562	4,590	NA	Management	3	Major towns	1		
		Lewa	26,671	4,000	1,506	186		Finance & admin	51	Small towns (IKK)	3		
		Melolo	21,812	5,514	1,728	288		Technical - staff	20	Villages	0		
		Mangili	17,026	3,734	1,290	125		Other					
		Total	120,230	63,900	37,086			Total	74				
		Coverage			58%			University (S1)	7				
								College (D3)	2				
								Snr High School	55				
						Total	5,189	0	Jnr High School	6			
						Category	No						
						Social	108		Elementary School	4			
						Public Hydrant	45		Other				
						Total	74						
						Domestic	4,597						
						Government	193						
						Commercial	239						
						Industrial	5						
						Special (Port)	2						
						Total	5,189						

[1] Based on December 2000 data when available.

[2] Laporan PDAM Matawai Amahu Kab. Sumba Timur Pada Rapat Badan Pengawas PDAM.

Table A20-A9.2 Technical Data of PDAM - Sumba Timur

CONTACT:	Name:	Dra. Erna Aljufrie
	Position:	Admin & Finance Director
	Phone/Fax:	21164, 21165

PROVINCE:		NTT		PDAM:		SUMBA TIMUR		TECHNICAL DATA																	
WATER SOURCES						HOURS OF OPERATION (Hrs/day)	WATER TREATMENT	PUMP STATIONS		STORAGES			PIPELINES		CONNECTIONS [2] [3]						PRODUCTION & SALES			MAINTENANCE FACILITIES	
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m3)	Branch	Length	Ia	Ib	Ila	Ilb	III	IV	V	Total	Water produced (m3)		Water Sold (m3)
Payeri (Km. 10)	Waingapu	Spring	Gravity	-	45.0	-	-	3	Concrete (1 No. 100 m3, 1 No. 300 m3, 1 No. 500 m3)	900	Waingapu	80,018	95	32	4,096	159	204	2	2	2	4,590	1,683,938	1,528,679	9%	Workshop & Store: Basic facilities for storage of pipes and fittings etc for basic repairs and house connections. Reasonable stocks of small diameter pipes, fittings as well as consumer meters. New meters (PAM Meterindo not yet tested. Linflo regarded as best meter).
Lakulu	Waingapu	Spring	Gravity	-	20.0	-	-																		
Kambahapang	Lewa	Spring	Gravity	-	3.0	-	-				Lewa	4,000	0	13	148	15	10	0	0	186	93,304	44,254	53%		
Watuwula	Melolo	Spring	Gravity	-	5.0	-	-				Melolo	13,600	9	0	247	6	23	3	0	288	104,294	54,410	48%		
Kopa	Mangili	Spring	Gravity	-	2.0	-	-				Mangili	7,500	4	0	106	13	2	0	0	125	65,977	34,130	48%		
												Total	105,118	108	45	4,597	193	239	5	2	5,189	1,947,513	1,661,473	15%	Tools & equipment: Basis small tools available. No special equipment such as welder, test bench etc.
												Diameter	Length												
												250	5,928												
												200	7,180												
												150	7,510												
												100	9,730												
												75	19,960												
												50	50,810												
												40	2,000												
												25	2,000												
Totals:					75.0			0	3	900	Total	105,118	108	45	4,597	193	239	5	2	5,189	1,947,513	1,661,473	15%	Vehicles: 1 Pick-up, 1 Station Wagon, 4 Tanker Trucks (1 not operational).	

[1] Based on Technical Report December 2000

[2] I a Social
I b Public Hydrant
II a Domestic
II b Government
III Commercial
IV Industry
V Special

[3] Metering

% connections with damaged meters

14%

[4] Laporan PDAM Matawai Amahu Kab. Sumba Timur Pada Rapat Badan Pengawas PDAM.

Actual [4]		
2,790,000	1,673,374	40.02%

Table A20-A9.3 Financial Data of PDAM - Sumba Timur

CONTACT: Name: Dra. Erna Aljufrie
 Position: Admin & Finance Director
 Phone/Fax: 21164, 21165

PROVINCE: NTT		PDAM SUMBA TIMUR				FINANCIAL DATA					
CASHFLOW		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3 or Rp/mth	Date	%	Date	%
Payments [2]		Expenses [2]		Assets		Base Tariff	350				
Operational	831,143	Salaries & allowances	644,421	Current Assets	839,950	Domestic tariff		January-01	NA	In planning	NA
Production	12,943	Chemicals		Cash	215,020	0-10 m3	350				
Transm. & Distribution	145,061	Utilities (electricity etc)		Accounts receivable	335,746	11-20 m3	450				
Administration	673,140	Fuel		Provision for bad debts	-13,515	20-30 m3	575				
Non Operational	166,496	Maintenance		Inventory	44,110	>30 m3	725				
Investment	93,228	Buildings	39,308	Other	258,590	Public tap	225				
Other	73,268	Vehicles		Fixed Assets	4,098,490	Average tariff [3]	486				
		Installations	43,287	Land	61,451						
		Maintenance materials		Buildings/installations	6,261,880	Average bill [3]	13,289				
		Interest on loans		Vehicles & machinery	281,370						
		Loan redemption	511	General & office equip.	89,548	Charges					
		Bad debts		Other	3,605	Meter Fees	1,500				
		Depreciation	447,937	Accumulated depreciation	-2,599,363	Administration fees	1,500				
		General Expenses	153,279	Other Assets	0						
				Work in progress							
				Assets not in use							
Total	997,639	Total	1,328,743	Total	4,938,440						
Receipts		Revenue		Liabilities							
Water sales	698,885	Water sales	759,907	Current Liabilities	2,627						
Connection charges	93,213	Connection charges	110,298	Accounts payable	2,627						
Interest on investments	41,101	Interest	41,081	Maturing debt							
Loan		Other	25,670	Long Term Liabilities	20,327						
Subsidies				Deposits	20,327						
Other	122,638			Long term debt							
Total	955,837	Total	936,956	Equity	6,148,009						
				Capital	6,148,009						
				Accumulated profit/loss	-1,232,524						
				Operational surplus/deficit	-1,232,524						
Net Cash Flow	-41,802	Profit/Loss	-391,787	Total	4,938,440						

[1] Based on FY 2000 to 31 December 1999.

[2] No breakdown available.

[3] Based on Financial Report for December 2000.

Table A20-A9.4 Historical Data and Trends of PDAM - Sumba Timur

PDAM: SUMBA TIMUR		HISTORICAL DATA					
Item	Year						
	2001	2000	1999	1998	1997	1996	Annual Change (%)
Connections	NA	5,520	4,898	4,522	4,399	4,695	4%
Number of Staff	74	73	73	75	74	73	0%
Branches (including Pusat)	4	4	4	4	4	4	NA
Profit & Loss (,000 Rp)							
- Income	NA	977,617	936,956	806,844	602,186	558,084	15%
- Expense	NA	1,209,464	1,328,743	829,140	700,885	747,340	13%
Net (before tax)	NA	-231,847	-391,787	-22,296	-98,699	-189,256	NA
Balance Sheet (,000 Rp)							
- Net assets	NA	NA	4,938,440	NA	NA	NA	NA
- Equity	NA	NA	6,148,009	NA	NA	NA	NA
- Accumulated profit (loss)	NA	NA	1,232,524	NA	NA	NA	NA
- Return on equity	NA	NA	-6%	NA	NA	NA	NA
Base Tariff (Rp/m3)	350	225	225	225	150	150	18%
Water Distributed (m3)	NA	1,947,513	1,732,673	1,664,024	1,696,813	1,663,701	4%
Water Sold (m3)	NA	1,661,473	1,661,473	1,661,473	1,661,473	1,661,473	0%
Water Losses (m3)	NA	286,040	164,376	256,223	274,370	322,358	-3%
Water Losses (%)	NA	15%	9%	15%	16%	19%	NA

Table A20-A9.5 Pipeline Assets of PDAM - Sumba Timur

PDAM: SUMBA TIMUR

PIPELINE ASSETS

Source:

Branch	Type	Length according to pipeline diameter (m)										Total length (m)
		350	300	250	200	150	100	75	50	40	25	
Waingapu	MS			2,400								2,400
	GI			2,677		60	5,440	9,660	20,460			38,297
	PVC				500	3,450	1,000	5,700	15,850			26,500
	ACP			851	6,680	3,000	2,290					12,821
	Subtotal		0	0	5,928	7,180	6,510	8,730	15,360	36,310	0	0
Lewa	MS											0
	GI						1,000		1,000			2,000
	PVC					1,000				1,000		2,000
	ACP											0
	Subtotal		0		0	1,000	1,000	0	1,000	1,000	0	0
Melolo	MS											0
	GI							1,600	8,000	1,000	1,000	11,600
	PVC								2,000			2,000
	ACP											0
	Subtotal		0	0	0	0	0	0	1,600	10,000	1,000	1,000
Mangili	MS											0
	GI							3,000	3,500		1,000	7,500
	PVC											0
	ACP											0
	Subtotal		0	0	0	0	0	0	3,000	3,500	0	1,000
PDAM Total by Pipe Type	MS	0	0	2,400	0	0	0	0	0	0	0	2,400
	GI	0	0	2,677	0	60	6,440	14,260	32,960	1,000	2,000	59,397
	PVC	0	0	0	500	4,450	1,000	5,700	17,850	1,000	0	30,500
	ACP	0	0	851	6,680	3,000	2,290	0	0	0	0	12,821
	TOTAL	0	0	5,928	7,180	7,510	9,730	19,960	50,810	2,000	2,000	105,118
PDAM Total by Branch	Waingapu	0	0	5,928	7,180	6,510	8,730	15,360	36,310	0	0	80,018
	Lewa	0	0	0	0	1,000	1,000	0	1,000	1,000	0	4,000
	Melolo	0	0	0	0	0	0	1,600	10,000	1,000	1,000	13,600
	Mangili	0	0	0	0	0	0	3,000	3,500	0	1,000	7,500
	Subtotal	0	0	5,928	7,180	7,510	9,730	19,960	50,810	2,000	2,000	105,118

Table A20-A10.1 General Data of PDAM - Sumba Barat

CONTACT:	Name:	Ir Zakarias Natara
	Position:	Technical Director
	Phone/Fax:	0387 21206 (House)/21549 (Office)

PROVINCE:		NTT		PDAM:			SUMBA BARAT			GENERAL DATA			
ESTABLISHMENT		CABANG/SYSTEM	POPULATION			CONNECTIONS	AREA (km2)	STAFFING		SYSTEMS UNDER MANAGEMENT			
Date	Document		Total Population	Service Area Popn.	Population Served			Level/ Function	Number	Category [3]	No.		
October-00	SK/PerDa details not available	Waikabubak [2]	22,072	NA		600	NA	Management	2	Major towns	1		
		Kodi	84,770			77		Finance & admin	21	Small towns (IKK)	4		
		Loura (Waitabula)	49,907			102		Technical - staff	8	Villages	0		
		Elopada	53,584			20		Other					
		Kabunduk	38,354			45		Total	31				
							University (S1)	2					
							College (D3)	7					
							Snr High School	19					
						Total	844	0					
							Category	No					
							Social	844					
							Public Hydrant						
							Domestic						
							Government						
							Commercial						
							Industrial						
							Special (Port)						
							Non active	969					
		Total	248,687	NA	NA	Total	1,813						

[1] Based on discussions with Technical Director
 [2] Waikabubak not currently operating
 [3] Two systems in Kecamatan Loura

Table A20-A10.2 Technical Data of PDAM - Sumba Barat

CONTACT:
Name: Ir Zakarias Natara
Position: Technical Director
Phone/Fax: 0387 21206 (House)/21549 (Office)

PROVINCE: NTT		PDAM SUMBA BARAT		TECHNICAL DATA																						
WATER SOURCES						HOURS OF OPERATION (Hrs/day) [3]	WATER TREATMENT	PUMP STATIONS			STORAGES		PIPELINES		CONNECTIONS						PRODUCTION & SALES [1]			MAINTENANCE FACILITIES		
Location/Description	Town/IKK (Branch)	Type	Gravity/Pumped	Treatment	Capacity (L/s)			Pumps	Capacity (L/s)	Number	Type	Capacity (m ³)	Branch	Length	Ia	Ib	IIa	IIb	III	IV	V	Total	Water produced (m ³)		Water Sold (m ³)	UFW (% of production)
Pogobina [2]	Waikabubak	Spring	Gravity	-	1.5	24	-	-	-	-	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available		
Waikelo Sawah	Waikabubak	Spring	Pumped	SSF	20.0	[4]	Slow sand filter, no chlorination	3	20.0	1															Concrete (at headworks). Addition reservoir in City non functioning	200
Wee Ke	Kodi	Spring	Gravity	-	1.0	24	-	-	-	-															-	
Mataliku	Loura	Spring	Gravity	-	1.0	24	-	-	-	-															-	
Wee Kamburu	Loura	Spring	Gravity	-	3.0	24	-	-	-	-															-	
Wee Mema	Elopada	Spring	Gravity	-	0.0	[5]	-	-	-	-															-	
Waikelo Sawah	Elopada	Spring	Pumped	SSF (incl. Above)	20.0	24	Incl. Above	Incl. Above	-	-															Incl. Above	-
Sotu	Kabunduk	Spring	Gravity	-	2.0	24	-	-	-	-															-	
Totals:					48.5					1			200	Total	0	0	0	0	0	0	0	0	0	0	0	0%

[1] Based on discussions with Technical Director

[2] Source basically unproductive and capacity very limited

[3] I a Social
 I b Social - Public Hydrant
 II a Domestic
 II b Government
 III Commercial
 IV Industry
 V Special

[4] Metering
 % connections with damaged meters

NA

Workshop & Store: Small store for accessories at office. Additional store for larger items in separate location.

Tools & equipment: Very limited stocks of small tools and equipment. Threading machine to 50 mm capacity only.

Vehicles: Three (3) tanker trucks (an additional one is not serviceable), one (1) pick-up is not serviceable, four (4) motorcycle, 3 not operational.

Table A20-A10.3 Financial Data of PDAM - Sumba Barat

CONTACT:	Name:	Ir Zakarias Natara
	Position:	Technical Director
	Phone/Fax:	0387 21206 (House)/21549 (Office)

PROVINCE: NTT		PDAM SUMBA BARAT		FINANCIAL DATA							
Cash-flow		PROFIT & LOSS		BALANCE SHEET		TARIFF		LAST TARIFF INCREASE		PLANNED TARIFF INCREASE	
Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category/Item	Amount (,000 Rp)	Category	Rp/m3 or Rp/mth	Date	%	Date	%
Payments		Expenses [2]		Assets		Base Tariff	150				
Salaries & allowances		Salaries & allowances		Current Assets	0	Domestic tariff		January-91	NA	Planned after system re-established.	NA
Chemicals		Chemicals		Cash		0-10 m3	150				
Electricity		Utilities (electricity etc)		Accounts receivable		11-20 m3	225				
Inventory		Fuel		Provision for bad debts		20-30 m3	300				
Maintenance		Maintenance		Inventory		>30 m3	450				
Buildings		Buildings		Other		Public tap					
Vehicles		Vehicles		Fixed Assets	0	Average tariff	NA				
Installations		Installations		Land							
Maintenance materials		Maintenance materials		Buildings & installations		Average bill (Rp) [3]	NA				
Loan redemption		Interest on loans		Ships & machinery							
Interest on loans		Loan redemption		General & office equip.							
Contribution to Govt.		Bad debts		Other		Charges					
Tax		Depreciation		Accumulated depreciation		Meter Fees	500				
Other		General Expenses		Other Assets	0	Administration fees	500				
				Work in progress							
				Assets not in use							
Total	0	Total	0	Total	0						
Receipts		Revenue		Liabilities							
Water sales		Water sales		Current Liabilities	0						
Connection charges		Connection charges		Accounts payable							
Interest on investments		Interest		Maturing debt							
Loan		Other		Long Term Liabilities	0						
Subsidies				Deposits							
Other				Long term debt							
Total	0	Total	0	Equity	0						
				Capital							
				Accumulated profit/loss	0						
				Operational surplus/deficit							
Net Cash Flow	0	Profit/Loss	0	Total	0						