CHAPTER 4
FACILITY EXPANSION PLAN

CHAPTER 4 FACILITY EXPANSION PLAN

4-1 Switching Systems

4-1-1 Expansion Policies

(1) Local Switching System

1) In the urban areas, capacity will be expanded to reduce waiting applicants
2) In the rural area, new telephone exchanges will be constructed mainly for non-telephone Kabupatens and manual exchanges in IKK and principal Kecamatan capitals will be automated.
3) Old and obsolate electromagnetic systems will be replaced.

(2) Trunk Switching System

1) SLDD network expansion and facility extension to meet increasing traffic volume will be promoted.
2) Digitalization of switching systems together with digitalization of transmission systems will be promoted.

4-1-2 Expansion Plan

(1) Local Switching System

The expansion plan for REPELITA-V by WITEL is indicated in Table 4-1-1. The expansion plan for each Kotamadya and Kabupaten is shown in ANNEX-1.

To estimate the required number of line units to be installed in each exchange, it is necessary to make a further investigation on the following points; what is needed is capacity expansion of existing system or introduction of new switching systems, or automatization from manual systems, or replacement of old and obsolate systems.

Table 4-1-1 Expansion Plan for Local Exchanges (REPELITA-V)

WITEL	KABUPATEN New PCs	KABUPATEN Manual to Automatic	KABUPATEN New Ex. for No Ex. KAB	KABUPATEN Total L.U.	KOTAMADYA Total L.U.	GRAND TOTAL
I	4	16(11)	1	19,000	71,000	90,000
II	3	10(9)	1	11,000	18,000	29,000
III	4	18(9)	1	13,000	37,000	50,000
IV	0	0(0)	0	10,000	315,000	325,000
V	0	25(3)	0	33,000	77,000	110,000
VI	0	20(1)	0	26,000	63,000	89,000
VII	3	14(1)	0	28,000	122,000	150,000
VIII	3	14(11)	3	41,000	0	41,000
IX	8	22(14)	2	13,000	33,000	46,000
X	7	23(11)	2	17,000	38,000	55,000
XI	4	4(4)	0	3,000	5,000	8,000
XII	8	7(7)	0	7,000	0	7,000
TOTAL	44	173(81)	10	221,000	779,000	1,000,000

NOTE: Figures in ( ) show the number of existing primary centers (PC) to be automatized during REPELITA-V.

(2) Trunk Switching System

The number of trunk exchanges in this plan was specified to be 7 Tertiary centers and 33 Secondary centers which make the total number 40.

1) Calculation of the number of Trunk Circuits

The formula to be used is as follows;

$$CTOTAL_i = CMTX_i + CTRNS_i$$

where

$CTOTAL_i$: The number of total outgoing circuits in the i th exchange

$CMTX_i$: The number of outgoing circuits in the i th exchange obtained from the 40 x 40 matrix

$CTRNS_i$: The number of transit outgoing circuits in th i th exchange area

The number of transit circuits ($CTRNS_i$) in Secondary areas is taken from the "Development Strategy Plan (POSTEL)" as follows;

"Transit traffic at Secondary Center consists of 77% outside the Secondary area and 33% inside of the Secondary area"

Therefore,

$$CTOTAL_i = 1.3\ CMTX_i$$

2) Dimensioning of Trunk Switching System Capacity

For TCs and SCs, separate type switching systems from local switching are installed in accordance with the standard of PERUMTEL.

The capacity is calculated by the following formula;

$$CAP_i = \frac{CTOTAL_i}{0.95}$$

where,

CAP_i: The amount of transit circuit capacity of the i th exchange

0.95: Accommodation occupancy 95%

Calculated results are shown in Table 4-1-2.

Table 4-1-2 Expansion Plan of Trunk Switching Capacity (REPELITA-V)

No. of Lines (IC+OG)

Name of Exchanges (Area Code)	End of PELITA-IV	During REPELITA-V	End of REPELITA-V
JKT (21)	21,300	0	17,800
BD (22)	2,500	2,500	5,000
CBN (23)	2,100	0	1,200
SM (24)	2,500	700	3,200
YK (27)	1,500	700	2,200
PWT (28)	440	1,560	2,000
SB (31)	7,000	4,000	11,000
JR (33)	800	800	1,600
ML (34)	1,500	700	2,200
MN (35)	600	1,000	1,600
DPR (36)	1,400	200	1,600
SBW (37)	30	770	800
END (38)	0	400	400
KP (39)	500	500	1,000
UP (41)	1,500	1,900	3,400
PRE (42)	60	540	600
MO (43)	1,100	100	1,200
PAL (45)	500	100	600
KDI (40)	500	100	600
BJM (51)	1,500	1,100	2,600
SPT (53)	120	680	800
SMR (54)	800	600	1,400
TAR (55)	200	200	400
PTK (56)	500	500	1,000
MDN (61)	5,200	0	5,000
SBG (63)	50	350	400
LSM (64)	600	200	800
BNA (65)	600	200	800
PG (71)	3,400	1,800	5,200
TJK (72)	400	1,200	1,600
LT (73)	50	950	1,000
JB (74)	500	900	1,400
PD (75)	1,500	0	1,400
PBR (76)	600	400	1,000
SKN (77)	720	280	1,000
AB (91)	700	100	800
TT (92)	30	370	400
SON (95)	50	350	400
JAP (96)	500	100	600
MRK (97)	30	370	400
TOTAL	63,880	27,220	86,400

4-1-3 Replacement Plan for EMD Switching Systems

In order to reduce the number of waiting telephone applicants to a minimum level possible, the existing EMD switching systems that have more than 25 years of service life should be replaced by digital systems during the REPELITA-V period.

The proposed amount of EMD replacement is shown in Table 4-1-3.

All the existing switching systems and their service lives are shown in Figure 4-1-1.

Table 4-1-3 Replacement Plan of EMD Switching Systems (REPELITA-V)

WITEL	Name of Ex.	No. of L.U.	Date of Installation
IV	Gambir 1A	10,000	30-1-64
IV	Jatinegara	4,000	15-7-69
IV	Kebayoran Baru 1A	6,000	31-7-66
IV	Kota	10,000	27-7-66
V	Bandung Cent	7,000	27-5-67
VII	Darmo	5,400	30-5-61
VII	Mojokerto	2,000	27-5-60
Total		44,400	

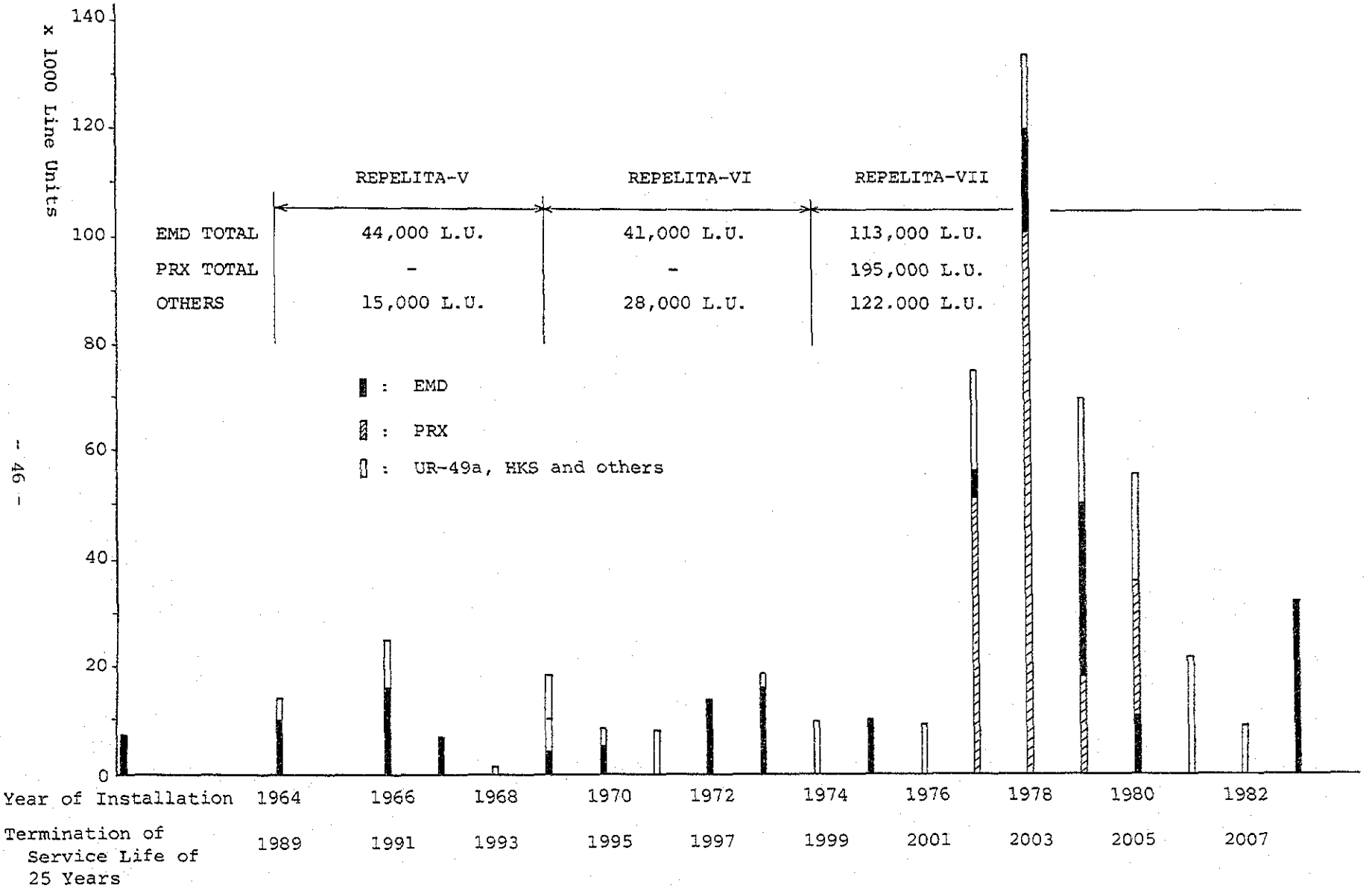


Figure 4-1-1 Switching Systems to be Replaced due to Termination of Service Life

4-2 Subscriber Line Facilities

(1) Expansion Policies

The proposed policies for REPELITA-V are as follows;

1) Subscribers who are located within 6-12 km from an exchange are served by local cable pairs.

2) Other subscribers are served by Radio Subscriber Link (TDMA system).

(2) Local Cable

The proposed number of cable pairs to be installed during the REPELITA-V period is 1,770,400 pairs as shown in Table 4-2-1 through Table 4-2-3.

Table 4-2-1 Local Cable Expansion Plan (REPELITA-V)
(Primary Cable Pairs)

WITEL	Kotamadya	Kabupaten	Total
I	140,000	34,800	174,800
II	22,800	17,400	40,200
III	62,200	24,600	86,800
IV	54,600	17,400	563,400
V	139,000	53,800	192,800
VI	99,000	41,800	140,800
VII	205,600	43,200	249,400
VIII	-	23,000	83,000
IX	82,600	23,800	106,400
X	72,400	28,600	101,000
XI	8,000	5,600	13,600
XII	-	18,200	18,200
Total	1,377,600	392,800	1,770,400

Table 4-2-2 Local Cable Expansion Plan in Kotamadya
(Primary Cable Pairs)

WITEL	Switch Capacity			Cable Capacity			Cable/SW	
	IV End	V Expansion	V End	IV End	V Expansion	V End	IV End	V End
I	109,000	71,000	180,000	150,140	140,000	290,140	1.37	1.61
II	30,400	18,000	48,400	54,200	22,800	77,000	1.78	1.59
III	61,000	37,000	98,000	90,227	62,200	152,427	1.47	1.55
IV	524,294	315,000	839,294	715,585	546,000	1,261,585	1.36	1.50
V	129,200	77,000	206,200	175,775	139,000	314,770	1.36	1.52
VI	104,840	63,000	167,840	200,030	99,000	299,030	1.90	1.78
VII	203,500	122,000	325,500	285,500	205,600	491,100	1.40	1.50
VIII								
IX	55,900	33,000	88,900	51,890	82,600	134,490	0.92	1.51
X	62,800	38,000	100,800	88,440	72,400	160,340	1.40	1.59
XI	7,600	5,000	12,600	10,960	8,000	18,960	1.44	1.50
XII								
Total	1,288,534	779,000	2,067,534	1,822,742	1,377,600	3,200,342	1.41	1.54

Table 4-2-3 Local Cable Expansion Plan in Kabupaten
(Primary Cable Pairs)

WITEL	Switch Capacity			Cable Capacity			Cable/SW	
	IV End	V Expansion	V End	IV End	V Expansion	V End	IV End	V End
I	12,800	19,000	31,300	18,240	34,800	53,040	1.42	1.66
II	7,056	11,000	18,056	13,560	17,400	30,960	1.92	1.71
III	6,413	13,000	19,413	9,088	24,600	33,688	1.41	1.73
IV	13,536	10,000	23,536	18,000	17,400	35,400	1.32	1.50
V	18,400	33,000	51,400	31,330	53,800	85130	1.70	1.65
VI	22,200	26,000	48,200	39,686	41,800	81,486	1.78	1.69
VII	21,400	28,000	49,400	38,882	43,800	82,682	1.31	1.67
VIII	52,026	41,000	93,026	60,690	83,000	143,690	1.16	1.54
IX	1,000	13,000	14,000	1,100	23,800	24,900	1.10	1.77
X	600	17,000	17,600	1,200	28,600	29,800	2.00	1.69
XI	3,200	3,000	6,200	6,540	5,600	12,140	2.04	1.95
XII	7,000	7,000	14,000	4,324	18,200	22,524	0.61	1.60
Total	165,631	221,000	386,631	238,176	385,400	623,576	1.43	1.61

(3) Radio Subscriber Link

The proposed number of new radio subscriber links during REPELITA-V is indicated in Table 4-2-4.

Table 4-2-4 New Installation of Radio Subscriber in REPELITA-V

WITEL	Expansion of L.U. in Kabupaten	Radio Sub. Share	New Installation of Radio Sub.(L.U.)
I	19,000	0.06	1,200
II	11,000	0.06	700
III	13,000	0.06	800
IV	10,000	-	-
V	33,000	0.03	1,000
VI	26,000	0.03	800
VII	28,000	0.03	900
VIII	41,000	0.05	2,100
IX	13,000	0.06	800
X	17,000	0.06	1,000
XI	3,000	0.06	200
XII	7,000	0.07	500
Total	221,000		10,000

4-3 Terrestrial Transmission Facilities

(1) Development Policies

The following Policies are proposed;

1) To establish digital transmission systems between all TCs, between TCs and principal SCs, and between principal SCs.

2) Enough capacity is supplied to meet the required number of circuits in 1994.

3) Terrestrial systems are to be installed to a maximum possible extent up to PCs and LEs where SBK already exists and the line units of the exchanges in 1994 are expected to be more than 650.

4) Effective uses of the existing analog systems are planned; however, extension of the circuits is not planned in principle.

5) To provide television programs transmission to all the province capitals by using stand-by systems.

(2) Backbone Transmission Systems

Expected backbone transmission routes and their circuit accommodations are indicated in Figure 4-3-1.

Proposed new backbone transmission routes are as follows:

1) Trans Sulawesi Digital Microwave System
2) Banjarmasin - Ujung Padang Submarine Cable System
3) Trans Kalimantan Digital Microwave System
4) East Indonesia Digital Microwave System
5) Medan - Banda Ache Digital Microwave System
6) Balikpapan - Samarinda Digital Microwave System
7) Ujung Pandang - Ambon Submarine Cable System

Existing backbone transmission routes to be expanded are as follows:

1) Jakarta-Denpasar Digital Microwave Link
2) Banjarmasin-Barikpapang Digital Microwave Link

(3) Spur Transmission Route

Expected spur transmission systems at the end of REPELITA-V are shown in ANNEX-5.

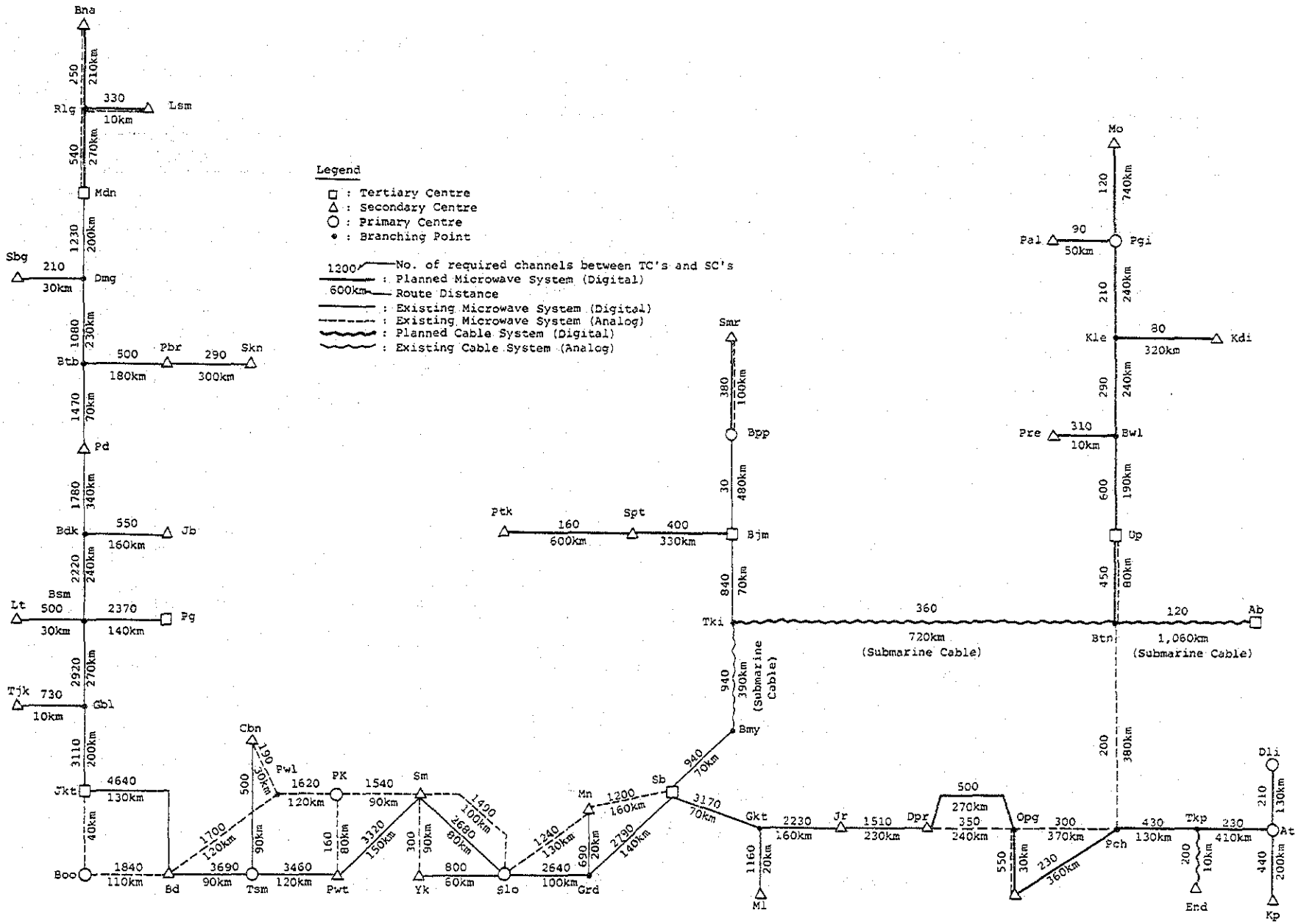


Figure 4-3-1 Configuration of Backbone Terrestrial Transmission System in REPELITA-V

4-4 Satellite Communication Facilities

(1) Development Policies

The development policies during REPELITA-V are as follows:

1) To launch PALAPA-C1 as a replacement of PALAPA-B1
2) To increase digital channels by TDMA
3) To install new SBK and transfer old SBK to improve communication services in the rural areas

(2) Plan for the use of Transponders

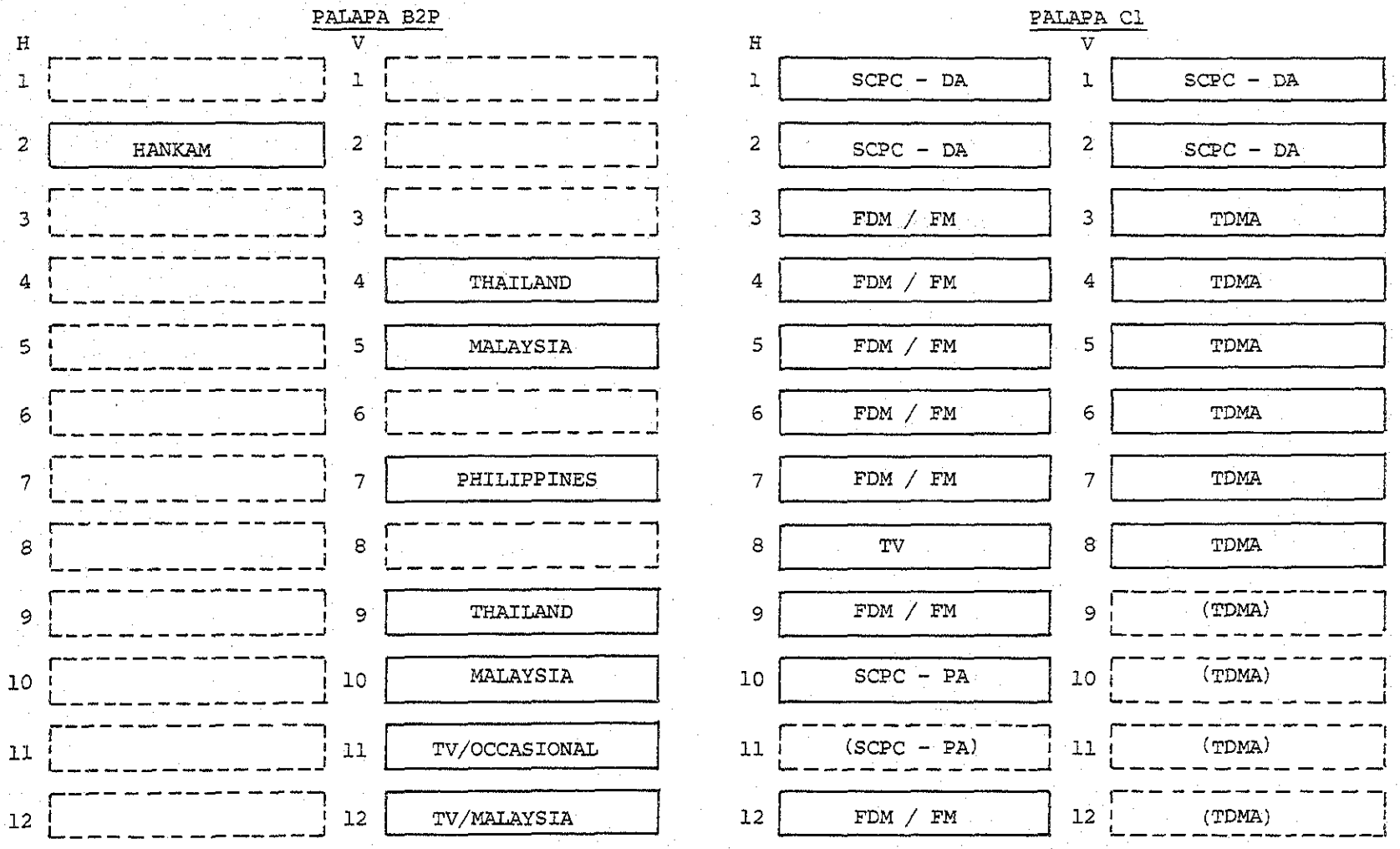
The plan is shown in Figure 4-4-1.

(3) Earth Station Facilities

Necessary extension of TDMA circuit capacity is planned by using existing SBB and SBS systems.

A new SBK installation plan is shown in Table 4-4-1. A relocation plan of SBK is shown below:

WITEL	No. of SBK
I	5
II	4
III	4
VIII	8
IX	5
X	5
Total	31



FDM/FM: 600CH/Tr.
TDMA : 900CH/Tr.
SCPC : 500CH/Tr.

Figure 4-4-1 Use of Satellite Transponders (REPELITA-V)

Table 4-4-1 New Installation of SBK (REPELITA-V)

WITEL	PC	LE	TOTAL	No. of MODEM
I	3	2	5	30
II	2	0	2	12
III	2	1	3	18
IV	0	0	0	0
V	0	0	0	0
VI	0	0	0	0
VII	1	1	2	12
VIII	1	0	1	6
IX	8	6	14	84
X	6	3	9	54
XI	5	0	5	30
XII	9	0	9	54
Total	37	13	50	290

CHAPTER 5
FINANCIAL EVALUATION

CHAPTER 5 FINANCIAL EVALUATION

5-1 Investment Cost Estimation

The construction costs of REPELITA-V were estimated by examining the past assets data of PERUMTEL.

The total amount of the investment costs of REPELITA-V will be about 7,430 billion Rupiahs (December 1986 price, 1,644 Rp. = 1 US$) for the construction of 1.2 million telephone L.U. including the estimated carry over volume of 0.2 million L.U.

The estimated investment costs include all the assets of PERUMTEL, that is, the assets of the head quarters facilities, land & building, switching system, telex & telegram system, transmission system, local cable system, electronic data processings system office equipments and motorized vehicles.

The required amount of the investment costs to carry out the project is estimated by the following procedure;

1) The fund requirement to cover the construction costs is estimated differently for the urban and rural areas. The urban areas are defined to be Kotamadyas and Ibu Kota Kabupaten (capital of Kabupaten). The rural areas are defined to be Kecamatans and Desas.

2) For the urban areas, the construction costs are estimated by using the past asset data of PERUMTEL. For the rural areas, the construction costs are estimated by using the regression equation reported in the Fundamental Study of Rural Telecommunications Network of JICA (1985).

3) The capacity share ratios between the urban and rural areas during the project periods are assumed to be the same as those of 1989. These are the target figures of PELITA-IV.

4) The construction costs per capacity for the rural areas are at first estimated for each Province; by the following regression model;

$$\log \frac{COSTS_i}{CAPACITY_i} = 2.5779 - 0.18403 \frac{CAPACITY_i}{AREA_i}$$

$$R^2 = 0.92$$

where,

$AREA_i$: The area size of the i-th Province

$CAPACITY_i$: The Switching Capacity size of the i-th Province

The rural area construction costs per capacity for each WITEL are then calculated by taking the average of all the rural area construction costs per capacity for the Province in the WITEL. The rural area construction costs per capacity for each WITEL are assumed to change in only 1989, 1994 and 1999, and not to change during those periods.

The estimated exchange rate and inflation rate of 1986 are used to transform the estimated costs figures in the 1986 price basis.

5) The construction costs for the urban areas are estimated by the assets data between 1975 and 1985. The assets data were obtained for the following nine assets;

A_1: Land

A_2: Buildings

A_3: Switching System

A_4: Telegraph and Telex Facilities

A_5: Transmission System

A_6: Local Cable Network

A_7: Electronic Data Processing System

A_8: Office Equipment

A_9: Motorized Vehicles

The unit construction costs for the urban areas are shown in Table 5-1-1.

Table 5-1-1 Construction Costs per Line Unit (December 1986 Price)

(Unit: Million Rp.)

WITEL	Land	Building	Switching	Telex-Telegram	Transmission	Local Cable	Data Processing	Office Equipment	Motor Vehicle	Total
I	0.11	0.70	1.15	0.16	1.50	2.00	0.05	0.04	0.02	5.73
II	0.18	1.07	1.48	0.24	1.50	3.00	0.05	0.07	0.03	7.62
III	0.12	0.62	1.32	0.11	1.50	2.00	0.05	0.06	0.02	5.80
IV	0.14	0.27	0.82	0.16	1.00	1.50	0.10	0.02	0.01	4.02
V	0.35	0.26	1.15	0.08	1.00	2.00	0.05	0.06	0.01	4.96
VI	0.12	0.25	1.15	0.10	1.00	2.00	0.05	0.05	0.01	4.73
VII	0.11	0.25	0.99	0.10	1.00	1.70	0.05	0.04	0.01	4.25
VIII	0.19	1.09	1.32	0.15	2.00	3.00	0.05	0.09	0.04	7.93
IX	0.20	1.44	1.32	0.31	2.00	3.00	0.05	0.12	0.03	8.47
X	0.42	0.88	1.32	0.20	3.00	4.00	0.05	0.12	0.06	10.05
XI	0.33	1.83	2.47	0.14	4.00	4.00	0.05	0.12	0.06	13.00
XII	0.61	2.54	2.47	0.17	5.00	5.00	0.05	0.12	0.06	16.02
Total	0.18	0.49	1.08	0.15	1.33	2.06	0.07	0.05	0.02	5.43

5-2 Expenditure and Revenue

5-2-1 Expenditure

(1) Method of Estimation

The operating costs of each WITEL were estimated in two categories by two regression models. They are the personnel costs and non-personnel costs. The estimated models are as follows;

The Personnel Costs (PC)

$$\log PC_{it} = -7.8904 + 0.5814 \log S_{it} + 0.46621 \log TLG_{it} + 0.4933 \log SX_{it} - 2.9141 DHQ + \text{Each WITEL Dummy}$$

$$R^2 = 0.96$$

The Non-Personnel Costs (NPC)

$$\log NPC_{it} = -12.1103 + 0.62486 \log S_{it} + 0.87236 \log TLG_{it} + 0.28314 \text{ Log } PC_{it} - 0.6705 DHQ + \text{Each WITEL Dummy}$$

$$R^2 = 0.98$$

where

PC_{it} : The personnel cost in the i-th WITEL in period t (Billion Rp.)

NPC_{it} : The non-personnel cost in the i-th WITEL in period (Billion Rp.)

S_{it} : The number of telephone service subscribers in the i-th WITEL in period t

TLG_{it} : The number of telegrams sent from the i-th WITEL in period t

SX_{it} : The number of telex service subscribers in the i-th WITEL in period t

DHQ : Dummy for the PERUMTEL Headquarters

The data used for the estimation are the pooled time-series and cross-section of 12 WITELs and four years between 1982 and 1985.

(2) Estimated Operating Expenditure

Based on the above assumptions, the following are the results of projections;

Year	Total OM (Bill. Rp.)	OM Cost Per Telephone Subscriber (Mill. Rp.)
1989	1,335	0.92
1994	2,730	1.03

The Operating and Maintenance (O&M) costs can be classified into Personnel Costs and Material Costs. The personnel cost are calculated by multiplying the number of the staff by an average wage rate. Thus, a measure should be taken either to reduce the number or to reduce the average wage rate to reduce the O&M costs.

The material costs are classified into office operation costs and maintenance costs. The office operation costs depend on the number of the staff, but the maintenance costs depend on the quality and kinds of the equipments and technological progress.

The policy on the O&M costs reduction in REPELITA-V is to achieve 41 staffs per telephone subscriber by 1994 and raising the wage rate by 3% per year in accordance with GDP per capita growth rate.

The estimated results are as follows;

Year	Total O&M (Bill. Rp.)	O&M Cost Per Telephone Subscriber (Mill. Rp.)
1989	960	0.66
1994	1,417	0.53

5-2-2 **Revenue**

(1) Revenue Estimation Method

Conditions assumed in revenue estimation are as follows;

- Revenue in this analysis is of three categories, i.e., telephone service revenue, telegram service revenue, telex service revenue.

Besides those three categories of revenue, there also is miscellaneous revenue, e.g., non-operating revenue, such as advertisement revenue. However, in this study, miscellaneous revenue is not taken into account because it is negligible small.

Demand and traffic forecasts are made every five years after the year 1990. Thus, annual average growth rates of demand and traffic for every five years are applied for annual revenue estimation.

The call fee is increased from Rp. 75 to Rp. 85 per pulse due to inflation occurred in 1986.

Annual revenue for the services and for the WITELs are calculated as follows;

1) Telephone Service Revenue

Installation Fee:

The number of new subscribers of the year x the installation fee of the WITELs

Monthly Rental Fee:

The number of subscribers of the year x the monthly rental fee of the WITELs

Call Fee:

The mean volume of busy-hour traffic by destination basis x Call fee (per minute) x 1/traffic concentration ratio into busy-hour x 60 minutes x 300 days.

2) Telegram Service Revenue

The number of total telegrams of the year x Rp. 800

3) Telex Service Revenue

Installation fee:

The number of new subscribers of the year x the installation fee of the WITELs

Message tariff:

Message revenue per year is calculated as follows;

The total number of pulses per year of the Province x the tariff per pulse (Rp. 85)

(2) Estimated Revenues

Based on the above calculations, annual revenue of the plan is as follows;

Year	Total Revenue (Bill. Rp.)	Revenue Per Telephone Subscriber (Mill. Rp.)
1989	1,981	1.37
1994	3,840	1.45

5-3 Financial Studies

(1) Analysis of the profit and loss statement

The operating ratio (Operation and maintenance cost/Total revenue) improves every year because of the efforts in reduction of the operation and maintenance costs. This ratio should be at least 50 - 60 (%). (Refer Table 5-3-1)

The results show the great differences among WITELs. The WITELs which have large cities seem to have better figures. Thus, a policy to increase the supply volume in the WITELs which have large cities can be attractive to obtain a good financial outcome for PERUMTEL as a whole.

The profit and loss statement is shown in Table 5-3-2. The operating ratios of the first several years are higher than those of the later years.

Some incentive measures must be introduced to reduce the burden of the corporate tax and the DPS system for the realization of an better management.

(2) Analysis of the cash flow statement

The cash flow statement shown in Table 5-3-3 are prepared on the basis of the following assumptions;

1) Revenue from subscribers up to 1989 is considered to come from using the existing facilities.

2) The concerned period of revenue calculation is 20 years from the initial year of each REPELITA.

The internal rate of return was estimated to be 17% (The value of I.R.R. is based on "Before Tax Revenue")

These estimated I.R.Rs exceed the interest rate charged by the Government (12%) and nearly equal to the interest rate charged by domestic banks (18%). It can be said that the plans are profitable.

(3) Analysis of the source and application statement

The source and application statement was prepared on the following assumptions;

1) The investment plan of PELITA-IV shall be carried over according to the supply volume. Thus, 20% of the total fund will not be procurred in PELITA-IV period.

2) The share of each fund source in REPELITA-V will be realized in the same way of PELITA-IV. That is, the share of equity is 10%, domestic loans 40%, and foreign loans 20%.

3) The interest rates of domestic loans and foreign loans are 18% and 12% respectively. The lending period and grace period are 10 years and 4 years, respectively.

4) No short-term loan is considered in this analysis.

5) The values of re-investment and working capital are assumed to increase according to the increment of the telephone supply volume.

The results of the fund plan are shown in the source and application statement in Table 5-3-4.

The debt-service ratio (General reserve + Depreciation/Repayment of loans) changes from 1.36 to 4.44. In general, the telecommunications sector requires at least the value of 1.3 in this ratio. Therefore, the plan proves to be financially satisfactory.

Table 5-3-1 Simulation Results (Profit/Loss Statement) GDP: 5%, Plan 2

SIMULATION RESULTS (PROFIT/LOSS STSTEMENT) GDP:5 %, PLAN 2 (Million Rp.)

WITEL	YEAR	TELEPHONE ACC.SUB	REVENNUE TELEPHONE	TELEX TLX SUB.	TELEGRAM NO.OF LETTER	REVENNU TLX&TLG	OM COST PERSONNEL	OM COST OTHER	OM COST TOTAL	PROFIT /LOSS	OPERATING RATIO
HEAD	1989	1,450,580	0	24,596	10,191,000	0	48,907	337,128	386,036	-386,036	
WITEL I		131,001	144,825	1,408	428,877	6,412	21,214	22,587	43,801	107,436	29%
WITEL II		42,337	49,700	1,100	621,957	3,727	16,461	13,586	30,047	23,380	56%
WITEL III		72,283	82,936	880	617,338	5,088	15,880	20,446	36,326	51,697	41%
WITEL IV		473,313	809,739	14,872	1,217,253	40,187	54,263	117,614	171,877	678,049	20%
WITEL V		154,462	153,962	616	662,184	3,369	22,454	28,767	51,221	106,110	33%
WITEL VI		129,073	145,983	880	1,475,851	5,235	25,868	20,936	46,804	104,415	31%
WITEL VII		218,003	232,212	1,760	1,693,240	7,257	33,287	30,128	63,414	176,055	26%
WITEL VIII		60,260	52,621	616	748,763	3,625	16,200	15,234	31,434	24,811	56%
WITEL IX		67,423	92,774	1,320	666,640	6,629	16,855	18,618	35,473	63,930	36%
WITEL X		80,125	89,508	704	1,162,068	5,305	16,504	20,706	37,211	57,603	39%
WITEL XI		11,810	16,590	176	427,711	1,611	5,614	6,634	12,247	5,953	67%
WITEL XII		10,490	18,906	264	469,118	2,578	6,448	7,237	13,685	7,798	64%
TOTAL		1,450,580	1,889,755	24,596	10,191,000	91,024	299,956	659,621	959,577	1,021,202	48%
HEAD	1994	2,650,580	0	34,919	13,097,000	0	77,641	492,512	570,153	-570,153	
WITEL I		239,001	284,629	1,999	532,208	8,583	33,102	31,868	64,970	228,242	22%
WITEL II		77,137	97,704	1,562	771,807	4,884	25,666	19,148	44,814	57,774	44%
WITEL III		132,283	163,386	1,249	766,075	6,612	24,824	28,918	53,742	116,256	32%
WITEL IV		863,313	1,592,614	21,114	1,510,530	54,051	84,660	165,911	250,571	1,396,094	15%
WITEL V		286,462	305,074	875	821,726	4,463	35,372	41,117	76,489	233,049	25%
WITEL VI		235,873	287,388	1,249	1,831,433	6,927	40,402	29,578	69,980	224,335	24%
WITEL VII		398,003	456,627	2,499	2,101,197	9,818	51,961	42,531	94,492	371,953	20%
WITEL VIII		109,460	103,205	875	929,165	4,852	25,215	21,419	46,634	61,422	43%
WITEL IX		122,623	182,189	1,874	827,255	8,627	26,253	26,203	52,456	138,360	27%
WITEL X		146,125	175,977	999	1,442,049	6,945	25,747	29,206	54,953	127,968	30%
WITEL XI		21,410	32,526	250	530,761	2,087	8,727	9,313	18,040	16,573	52%
WITEL XII		18,890	36,964	375	582,144	3,403	9,985	10,106	20,092	20,275	50%
TOTAL		2,650,580	3,718,282	34,919	12,646,351	121,252	469,555	947,831	1,417,386	2,422,148	37%

Table 5-3-2 SIMULATION RESULTS (PROFIT/LOSS STATEMENT OF PERUMTEL) (Million Rp.)

Description	1990	1991	1992	1993	1994	1995
1. Profit/Loss before Tax	1,200,490	1,424,387	1,707,931	2,042,133	2,422,148	2,641,853
2. Depreciation	746,094	869,423	992,751	1,116,080	1,239,408	1,362,737
3. Interest	410,722	515,164	611,427	694,629	659,258	647,831
4. Gross Profit	43,674	39,800	103,753	231,424	523,482	631,285
5. Corporate Tax (35 %)	15,286	13,930	36,314	80,999	183,219	220,950
6. Profit after Tax	28,388	25,870	67,440	150,426	340,263	410,335
7. DPS (55 %)	15,613	14,229	37,092	82,734	187,145	225,684
8. Social,Pension (20 %)	5,678	5,174	13,488	30,085	68,053	82,067
9. General Reserve(25 %)	7,097	6,468	16,860	37,606	85,066	102,584
10. Operating Ratio	0.98	0.98	0.96	0.93	0.86	0.85

GDP ? % : 1.05 KAB/KOTA: SAME
SUPPLY PLAN: 2 MAN-POWER : CHANGE
SUB/CAPA : 1 TARIFF : CHANGE

Table 5-3-3 SIMULATION RESULTS (CASH FLOW STATEMENTS)

(UNIT:MILLION Rp.)

		F.I.R.R.	1990	1991	1992	1993	1994	1995	1996
REPELITA V	HEAD		-19,200	-58,200	-85,386	-115,845	-161,539	-142,339	-142,339
	WITEL I	13%	-149,342	-129,275	-105,586	-77,814	-45,415	108,050	108,050
	WITEL II	5%	-72,628	-67,213	-60,487	-52,297	-42,465	30,999	30,999
	WITEL III	12%	-86,192	-75,719	-63,072	-47,991	-30,166	58,032	58,032
	WITEL IV	50%	-268,755	-148,154	-7,278	156,530	346,355	652,673	652,673
	WITEL V	13%	-158,505	-137,621	-112,751	-83,388	-48,940	113,961	113,961
	WITEL VI	18%	-116,405	-96,571	-73,069	-45,425	-13,090	106,876	106,876
	WITEL VII	21%	-168,614	-135,961	-97,550	-52,632	-332	175,146	175,146
	WITEL VIII	3%	-88,544	-82,760	-75,596	-66,896	-56,471	32,918	32,918
	WITEL IX	11%	-102,872	-90,659	-76,068	-58,804	-38,524	66,200	66,200
	WITEL X	6%	-138,454	-126,985	-113,197	-96,807	-77,485	62,542	62,542
	WITEL XI	3%	-25,388	-23,766	-21,690	-19,115	-15,980	9,729	9,729
	WITEL XII	4%	-27,023	-25,096	-22,656	-19,649	-16,009	11,216	11,216
	TOTAL	17%	-1,421,921	-1,197,979	-914,386	-580,132	-200,061	1,286,004	1,286,004

Table 5-3-4 SIMULATION RESULTS (SOURCE AND APPLICATION STATEMENT,PERUMUTEL) (Million Rp.)

Source of Fund	1990	1991	1992	1993	1994	1995
1. General Resreve	7,097	6,468	16,860	37,606	85,066	102,584
2. Depreciation	746,094	869,423	992,751	1,116,080	1,239,408	1,362,737
3. Installation	64,144	64,189	64,238	64,238	64,346	88,466
4. Procurement of Loan	891,639	891,639	891,639	891,639	891,639	919,503
5. Equity	148,606	148,606	148,606	148,606	148,606	204,334
Total	1,859,570	1,982,315	2,116,086	2,260,162	2,431,059	2,679,619
Application of Fund						
1. Repayment of Loan						
PELLITA II,III&IV	233,066	288,350	307,916	274,462	281,696	151,040
REPELITA V	0	0	0	0	743,032	743,032
REPELITA VI	0	0	0	0	0	0
REPELITA VII	0	0	0	0	0	0
2. Re-investment	40,000	45,120	50,895	57,410	64,758	71,364
3. Working Capital	43,000	48,504	54,713	61,716	69,615	76,716
4. Investment	1,486,065	1,486,065	1,486,065	1,486,065	1,486,065	2,043,339
Total	1,802,131	1,868,039	1,899,589	1,879,653	2,645,167	3,085,492
Net Surplus	57,439	114,276	216,497	380,510	-214,108	-405,873
Accumulated Surplus	57,439	171,715	388,213	768,722	554,614	148,741
Debt service Ratio	3.51	3.26	3.49	4.44	1.36	1.74

CHAPTER 6
PROJECT IMPLEMENTATION PLAN

CHAPTER 6 PROJECT IMPLEMENTATION PLAN

6-1 Project List

The projects for realizing REPELITA-V were formulated according to the following policies:

1) The package project system by area will be adopted for the local telephone networks in regions outside Jakarta, by integrating switching system, local cable network and junction network (between PC-LE and LE-LE) projects, instead of currently adopted separate project system by technical fields. By applying this package project system, well balanced total telephone network can be realized. However, in Jakarta the technically separate project system still will be adopted because of large expansion needed in each technical field.

2) The separate project system by technical fields will be adopted for the toll switching system, long distance transmission system and radio subscriber system projects, because each system employs different technologies and, besides, each system requires well coordinated interface condition which should not be dealt with separately by area.

3) Non-telephone service facilities will be provided by independent projects on a service category basis because the project size is small and the different technologies are to used.

The main projects in REPELITA-V are listed in Table 6-1-1.

6-2 Project Digest

The project digest for each project is shown in ANNEX-6.

Table 6-1-1(1/2) Main Project in REPELITA-V (1/2)

Code	Project Title	Project Size	Work Period	Priority
Greater Jakarta Local Network				
V- 1	Local Switching System Project (Phase 1)	150,000 L.U.	3 years	1
V- 2	Local Switching System Project (Phase 2)	175,000 L.U.	"	2
V- 3	Local Cable Network Project (Phase 1)	150,000 L.U.	"	1
V- 4	Local Cable Network Project (Phase 2)	175,000 L.U.	"	2
V- 5	Junction Network Project		"	1
Local Telephone Network outside Jakarta				
V- 6	Sumatera Kotamadya Project I (WITEL I)	71,000 L.U.	5 years	1
V- 7	Sumatera Kotamadya Project II (WITEL II,III)	55,000 L.U.	"	2
V- 8	Sumatera Kabupaten Project (WITEL I - III)	43,000 L.U.	"	3
V- 9	Jawa Kotamadya Project I (WITEL V)	77,000 L.U.	"	1
V-10	Jawa Kotamadya Project II (WITEL VI)	63,000 L.U.	"	2
V-11	Jawa Kotamadya Project III (WITEL VII)	122,000 L.U.	"	1
V-12	Jawa Kabupaten Project (WITEL V - VII)	87,000 L.U.	"	2
V-13	Bali/Nusa Tenggara/Timor Timur Project (WITEL VIII)	41,000 L.U.	"	3
V-14	Kalimantan/Sulawesi Kotamadya Project (WITEL IX, X)	71,000 L.U.	"	2
V-15	Kalimantan/Sulawesi Kabupaten Project (WITEL IX, X)	30,000 L.U.	"	3
V-16	Maluku/Irian Jaya Project (WITEL XI, XII)	15,000 L.U.	"	3
Toll Switching System				
V-17	Expansion of Digital Toll Switching System	30,000 CCT	5 years	1
Terrestrial Transmission				
V-18	Trans Sulawesi Digital M/W System	2,300 km	5 years	1
V-19	Bjm-UP Optical Fiber Submarine Cable	700 km (+M/W150 km)	3 years	1
V-20	Trans Kalimantan Digital M/W System	1,050 km	4 years	2
V-21	East Indonesia Digital M/W System	1,900 km	"	2
V-22	Mdn-Bna Digital M/W System	550 km	3 years	2
V-23	Bpp-Smr Digital M/W System	200 km	2 years	3
V-24	Up-Ab Optical Fiber Submarine Cable	1,100 km (+M/W200 km)	3 years	3
V-25	Jawa Digital Spur M/W System	750 km	4 years	1
V-26	Sumatera Digital Spur M/W System	350 km	"	2
V-27	Subscriber Radio System (Phase 1)	5,000 L.U.	"	2
V-28	Subscriber Radio System (Phase 2)	5,000 L.U.	"	3

Table 6-1-1(2/2) Main Project in REPELITA-V (2/2)

Code	Project Title	Project Size	Work Period	Priority
Satellite Transmission System				
V-29	PALAPA C1 Launching	1 Sat.	5 years	1
V-30	TDMA Satellite Link Expansion	up to 4,800 ch	"	2
V-31	50 Small Earth Stations (SBK)	50 SBK	"	3
V-32	Relocation of 31 Smaller Earth Stations	31 SBK	"	3
Others				
V-33	Expansion of Packet Data Communication System	up to 2,100 terminals	3 years	1
V-34	Expansion of Radio Paging System	up to 45,000 L.U.	5 years	2
V-35	Expansion of Land-Mobile Telephone System	up to 14,500 L.U.	3 years	3
V-36	ISDN Pilot Project	1 system	"	2
V-37	Provision of Coin Telephone Sets	47,000 sets	"	1
V-38	Local Cable Maintenance Center Project	5 centers	4 years	1
V-39	Network Management Center Project (Cable)	12 centers	"	1
V-40	Education & Training Center Project	expansion	3 years	1

6-3 Kalimantan - Sulawesi Submarine Cable Project

One of the important terrestrial transmission project to be planned during REPELITA-V for which the feasibility study was already requested to Japan, is outlined below.

(1) Significances of the Project

This project should be implemented in the early stage of REPELITA-V because of the following reasons:

1) Shortage of circuit capacity in the existing eastern analog microwave systems (Ujungpandang - Nusatenggara - Denpasar)

2) Digitalization of long distance transmission system in line with the digitalization of switching system

(2) Shortage of circuit capacity in the existing system

At present, long distance links from Sulawesi island to Jawa and Sumatera islands are established by both eastern microwave system and satellite system, while to other islands only by satellite system.

During REPELITA-V, new microwave system will be installed within Sulawesi island to promote telephone service automatization by adding new exchanges. On the other hand, during the same period, terrestrial transmission system is to be extended up to Ambon in Maluku Province. As a result, the required number of circuits (by Terrestrial system) from Sulawesi island to Jawa, Sumatera and Kalimantan islands reached the values below.

Existing eastern microwave system	200ch
No. of required circuits at the end of REPELITA-V	560ch
	(shortage of 360ch)

(3) Digitalization of Long Distance Transmission Systems

Digitalization of switching systems within Sulawesi island is planned as follows;

Digitalization rate at the end of REPELITA-IV	72%
Digitalization rate at the end of REPELITA-V	83%

Consequently, long distance transmission system shall also be digitalized.

(4) Project Planning

To meet the requirement stated earlier, three plans are possible, they are as follows;

Plan 1 Capacity expansion of the existing eastern microwave system (analog)
Plan 2 Digitalization of the above microwave system
Plan 3 New submarine cable construction

Plan 1 and 2 are considered not appropriate because of the reasons below.

1) Expansion of analog system is not favorable in view of the expected high rate of switching system digitalization.

2) Termination of the 20-year service life of the existing microwave system comes in 1997. Remaining service life of the existing system will be only 5 years after implementation of the proposed project.

3) There are 2 hops of more than 140 km included in the existing eastern microwave route, currently, proven digital technology does not exist yet to overcome these long hops.

Therefore, Plan 3 is considered appropriate. To realize the Plan 3 there are 4 possibilities on its route.

Plan a. Ujungpandang - Banjarmasin
Plan b. Palu - Balikpapang
Plan c. Ujungpandang - Nusatenggara
Plan d. Ujungpandang - Surabaya

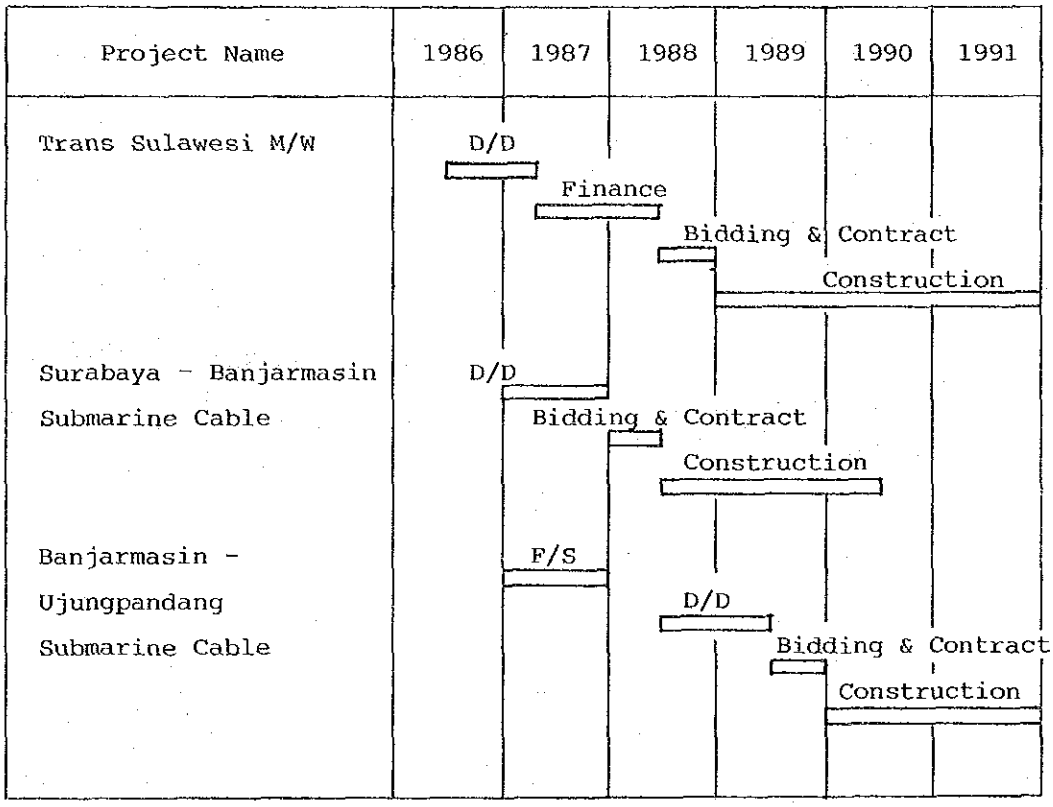
Plans b, c, d are not favorable compared with the Plan a, because of the reasons below:

Plan b: At present, microwave system is under construction financed by French loan between Balikpapang - Banjarmasin, but the capacity of which is rather small at 480ch, therefore, suppose the traffic from Sulawesi is to be routed through this system, it will need a substantial expansion.

Plan c and d:
The route distance is longer and higher cost compared with the Plan a.

Therefore, Banjarmasin - Ujungpandang route is most favorable.

(5) Project Implementation Schedule



CHAPTER 7
REVIEW OF PELITA-IV

CHAPTER 7 REVIEW OF PELITA-IV

7-1 Progress of PELITA-IV up to 1986

The progress of the PELITA-IV programs as of March 1986 is roughly estimated as follows;

Category	Progress
Telephone Switching System	30%
Telex/Telegraph/Data Comm. System	50%
Outside Plant	20%
Terrestrial Transmission System	30%
Satellite Transmission System	30%
Supporting Facilities	50%

In most of the categories, the planned schedules have not been followed. A large amount of carry over is expected at the end of PELITA-IV.

To avoid this situation, PERUMTEL is currently taking many effective actions in each administrative section. However, especially in the outside plant and terrestrial transmission sector, manpower for project studies and investment fund for project execution seem to be not sufficient.

To solve this problem, aides for the project study and execution are expected from foreign countries.

The Trans Sumatera Digital Microwave Project and the Second Jawa-Bali Digital Microwave Project have top priorities to promote the PELITA-IV programs. Feasibility studies of these projects are already initiated. The outlines of the projects are described in the next sections.

7-2 Trans Sumatera Digital Microwave Project

(1) Significance of the Project

This project has to be urgently implemented due to the following reasons;

1) The available number of long distance circuits in the existing analog Trans Sumatera Microwave System is too small.

2) Service life of the existing analog microwave system will come to the end only in a few years.

3) Digitalization of transmission systems is required to interface with digital switching systems.

(2) Shortage of Available Long Distance Circuits

Circuits requirements for the Jakarta-Medan Trans Sumatera Microwave Link in 1989 and 1994 are shown in Table 7-2-1. For Jakarta - Gn. Balau, the highest number of requirements in the system is;

Existing capacity	1,140 ch
Requirement in 1989	1,440 ch (shortage of 300 ch)
Requirement in 1994	3,110 ch (shortage of 1,970 ch)

Therefore, one radio frequency bearer must be expanded as soon as possible in relation to the existing system capacity (1260 ch).

At the beginning of PELITA-IV, PERUMTEL planned to expand the existing analog system. However, this original plan was changed to a new construction of digital systems because of its digitalization policy.

Table 7-2-1 Circuit Configuration for Trans Sumatera Microwave System

NAME OF STATIONS (exchange hierarchy)	Mdn (TC)	Dmg	Pd (SC)	Bdk	Bsm	Gbl	Jkt (TC)
EXISTING CIRCUIT CONFIGURATION	540	540	540	540	540	540	
	120	Sbg(SC)	180	180	180	180	
	60	60	Jb(SC)	60	60	60	
	60	60	60	60	Pg(TC)		
			120	120	Pg(TC)		
			Jb(SC)	120	Pg(TC)		
				Pg(TC)	180	180	
				Pg(TC)	60	Tjk(SC)	
					Tjk(SC)	180	
NUMBER OF EXISTING CIRCUITS	780	640	900	1080	1020	1140	
NUMBER OF CIRCUITS REQ/LACK (end of IV)	1056 / 276	936 / 296	1080 / 180	1200 / 120	1176 / 156	1440 / 300	
NUMBER OF CIRCUITS REQ/LACK (end of V)	1230 / 450	1470 / 830	1780 / 880	2220 / 1140	2920 / 1900	3110 / 1970	
REMARKS	a. Above circuits are only for sections among TCs and SCs excluding for PCs. b. Existing microwave system is of 4 GHz (1260, 1+1 system).						

(3) Termination of Service Life

As stated in VOLUME-I, the existing system was constructed in 1975. This system must be replaced before 1994 because of 20 years of its service life.

(4) Digitalization of Transmission Systems

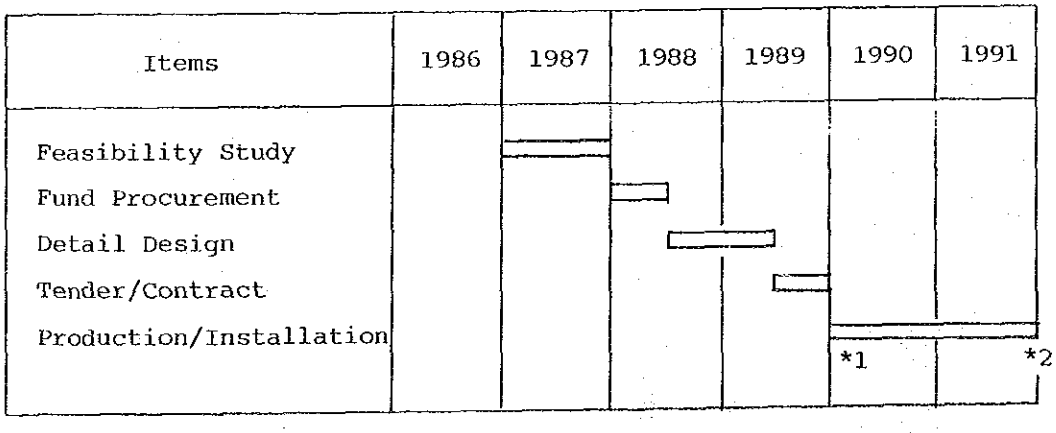
In Indonesia, digitalization of telecommunication network is in a rapid progress. The share of digital switching systems in Sumatera will reach to the following figure at the end of PELITA-IV;

Digital Switching Systems	328,000 L.U. (75%)
Analog Switching Systems	110,000 L.U. (25%)

To interface with such a large capacity of digital switching systems, the backbone terrestrial transmission links must be digitalized at the same time.

(5) Project Implementation Schedule

The implementation time schedule of this project is planned shown as follows;



* 1 Shortage of existing capacity

*2 In-service

Even if the project is progressed smoothly, the projected will be completed one an a half years later than if should be completed to handle traffic at that time.

Therefore, this project must be started as soon as possible.

7-3 Second Jawa-Bali Digital Microwave Project

(1) Significance of the project

Urgent implementation of the project is required due to the following reasons;

1) Shortage of the number of channels in the existing system
2) Short service life left for the existing system between Surabaya and Denpasar
3) Purwokerto, an important secondary switching center, is not connected to the existing backbone system
4) Digital transmission systems to interface with digital switching systems are expected in the near future

(2) Shortage of the existing channels

The number of channels is expected as follows;

Year	Section JKT-BD	BD-SM	SM-SB	SB-DPR
Existing (1986)	2300	2100	1900	500
At the end of PELITA-IV (1989)	4900	3600	2800	900
At the end of REPELITA-V (1994)	6500	5400	4500	3200

The average number of the shortage channels will be about 1000 and 2500, at the end of the PELITA-IV and REPELITA-V, respectively.

(3) Termination of Service Line

The service life of the existing system between Surabaya and Denpasar will come to the end in 1992. Hence the existing system must be replaced before 1992. The implementation has to be initiated during the PELITA-IV period.

(4) Digitalization of Transmission System

See Section 7-2 (4).

ANNEX 1

TELEPHONE SERVICE FACILITIES IN EACH KABUPATEN FOR REPELITA-V

ANNEX 1 TELEPHONE SERVICE FACILITIES IN EACH KABUPATEN FOR REPELITA-V

The abbreviations are shown as follows.

SERIAL NO.	:	The serial number for exchange in WITEL
WITEL NO.	:	The number for WITEL
KAB/KOTA	:	Classification between KABUPATEN and KOTAMADYA
CODE NO.	:	Code number of KABUPATEN and KOTAMADYA
END OF PELITA-IV	:	The total number of line units at the end of PELITA-IV
REMOVE	:	The number of removed line units in PELITA-V
SUPPLY	:	The number of added line units in REPELITA-V
TOTAL	:	The total number of line units at the end of REPELITA-V
DEMAND (1994)	:	The estimated telephone demand in the year of 1994

Table A-1-1 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (1/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	I	KAB	1101	ACEH SELATAN	580	-580	1,600	1,600	1,992
2	I	KAB	1102	ACEH TEHGGRA	500	-300	600	800	1,620
3	I	KAB	1103	ACEH TIMUR	1,700	0	2,400	4,100	4,682
4	I	KAB	1104	ACEH TENGAH	300	0	600	900	1,125
5	I	KAB	1105	ACEH BARAT	650	-500	1,400	1,550	2,174
6	I	KAB	1106	ACEH BESAR	430	0	0	430	2,305
7	I	KAB	1107	PIDIE	920	-20	1,000	1,900	2,581
8	I	KAB	1108	ACEH UTARA	6,460	0	3,000	9,460	9,935
9	I	KAB	1201	NIAS	600	-600	800	800	3,514
10	I	KAB	1202	TAPANULI SELATAN	1,600	0	1,800	3,400	4,190
11	I	KAB	1203	TAPANULI TENGAH	0	0	400	400	1,222
12	I	KAB	1204	TAPANULI UTARA	950	-250	1,000	1,700	3,175
13	I	KAB	1205	LABUHAN BATU	3,700	-100	1,200	4,800	4,860
14	I	KAB	1206	ASAHAN	2,460	0	0	2,460	3,156
15	I	KAB	1207	SIMALUNGUN	1,850	0	0	1,850	3,144
16	I	KAB	1208	DAIRI	500	-500	800	800	1,884
17	I	KAB	1209	KARO	830	-30	1,000	1,800	2,061
18	I	KAB	1210	DELI SERDANG	4,100	0	1,000	5,100	5,794
19	I	KAB	1211	LANGKAT	650	-200	400	850	1,739
20				KAB TOTAL	28,780	-3,080	19,000	44,700	61,153
21									
22									
24	I	KODYA	1171	BAND ACEH (A)	9,000	0	5,000	14,000	23,135
25	I	KODYA	1172	SABANG (B)	2,400	0	1,000	3,400	4,539
26	I	KODYA	1271	SIBOLGA (A)	2,050	0	1,000	3,050	5,359
27	I	KODYA	1272	TANJUNG BALAI (B)	1,000	0	1,000	2,000	3,083
28	I	KODYA	1273	KOTA SIANTAR (C)	10,000	0	4,000	14,000	22,073
29	I	KODYA	1274	TEBING TINGGI (D)	1,000	0	1,000	2,000	5,190
30	I	KODYA	1275	MEDAN (E)	93,000	0	56,000	149,000	253,515
31	I	KODYA	1276	BINJAI (F)	3,000	0	2,000	5,000	7,106
				KODYA TOTAL	121,450	0	71,000	192,450	324,000
				WITEL TOTAL	150,230	-3,080	90,000	237,150	385,153

Table A-1-2 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (2/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	II	KAB	1301	PESISIR SELATAN	350	-150	400	600	1,723
2	II	KAB	1302	SOLOK	400	0	0	400	1,890
3	II	KAB	1303	SAWAH LUNTO/SIJUNJUNG	400	0	0	400	1,272
4	II	KAB	1304	TANAH DATAR	230	-230	400	400	1,586
5	II	KAB	1305	PADANG PARIAMAN	1,050	-50	400	1,400	2,183
6	II	KAB	1306	AGAM	200	0	0	200	1,972
7	II	KAB	1307	LIMAPULUH KOTA	0	0	400	400	1,254
8	II	KAB	1308	PASAMAN	680	0	0	680	1,084
9	II	KAB	1401	INDRAGIRI HULU	900	-300	600	1,200	1,588
10	II	KAB	1402	INDRAGIRI HILIR	400	-400	600	600	3,455
11	II	KAB	1403	KEPULAUAN RIAU	9,776	-320	5,400	14,856	15,078
12	II	KAB	1404	KAMPAR	200	0	400	600	1,810
13	II	KAB	1405	BENGKALIS	3,286	-750	2,400	4,936	5,286
14				KAB TOTAL	17,872	-2,200	11,000	26,672	40,181
15									
16									
17	II	KODYA	1371	PADANG (A)	14,240	0	7,000	21,240	39,022
18	II	KODYA	1372	SOLOK (B)	1,000	0	1,000	2,000	3,570
19	II	KODYA	1373	SAWAH LUNTO (C)	400	0	1,000	1,400	1,640
20	II	KODYA	1374	PADANG PANJANG (D)	1,000	0	1,000	2,000	2,434
21	II	KODYA	1375	BUKIT TINGGI (E)	2,040	0	1,000	3,040	8,300
22	II	KODYA	1376	PAYA KUMBUH (F)	1,000	0	1,000	2,000	3,510
23	II	KODYA	1471	PEKAN BARU (A)	11,000	0	6,000	17,000	24,524
24				KODYA TOTAL	30,680	0	18,000	48,680	83,000
				WITEL TOTAL	48,552	-2,200	29,000	75,352	123,181

Table A-1-3 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (3/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	SUPPLY	TOTAL	DEMAND (1994)
1	III	KAB	1501	KERINCI	800	-800	1,000	1,000	1,417
2	III	KAB	1502	SARKO	1,200	0	200	1,400	1,648
3	III	KAB	1503	BATANG HARI	0	0	400	400	1,408
4	III	KAB	1504	TANJUNG JABUNG	1,000	0	0	1,000	1,976
5	III	KAB	1505	BUNGO TEBO	200	-200	800	800	1,799
6	III	KAB	1601	OGAN KOMERING ULU	1,600	-200	800	2,200	3,597
7	III	KAB	1602	OGAN KOMERING ILIR	300	-300	600	600	2,493
8	III	KAB	1603	LEMATANG ILIR OGAN TENGAH	2,000	-400	400	2,000	2,452
9	III	KAB	1604	LAHAT	2,373	-700	2,800	4,473	5,244
10	III	KAB	1605	MUSIRAWAS	2,200	-200	1,600	3,600	4,189
11	III	KAB	1606	MUSI BANYU ASIN	120	-100	400	420	2,315
12	III	KAB	1607	BANGKA	1,000	0	200	1,200	2,495
13	III	KAB	1608	BELITUNG	400	-400	600	600	1,450
14	III	KAB	1701	BENGKULU SELATAN	250	-250	800	800	1,444
15	III	KAB	1702	REJANG LEBONG	1,300	-100	200	1,400	1,824
16	III	KAB	1703	BENGKULU UTARA	200	-200	400	400	1,298
17	III	KAB	1801	LAMPUNG SELATAN	3,450	-200	600	3,850	6,079
18	III	KAB	1802	LAMPUNG TENGAH	2,200	0	1,000	3,200	5,895
19	III	KAB	1803	LAMPUNG UTARA	1,300	-100	200	1,400	4,056
20				KAB TOTAL	21,893	-4,150	13,000	30,743	53,079
21									
22									
24	III	KODYA	1571	JAMBI (A)	11,000	0	6,000	17,000	28,669
25	III	KODYA	1671	PALEMBANG (A)	29,000	0	17,000	46,000	78,155
26	III	KODYA	1672	PANGKAL PINANG (B)	2,000	0	1,000	3,000	9,468
27	III	KODYA	1771	BENGKULU (A)	4,000	0	3,000	7,000	10,072
28	III	KODYA	1871	TANJUNG KARANG (A)	15,000	0	10,000	25,000	53,636
29				KODYA TOTAL	61,000	0	37,000	98,000	180,000
				WITEL TOTAL	82,893	-4,150	50,000	128,743	233,079

Table A-1-4 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (4/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	IV	KAB	3203	BOGOR	6,536	0	3,000	9,536	16,732
2	IV	KAB	3218	BEKASI	4,000	0	3,000	7,000	9,610
3	IV	KAB	3219	TANGERANG	7,000	0	4,000	11,000	14,924
4				KAB TOTAL	17,536	0	10,000	27,536	41,266
5									
6									
7	IV	KODYA	3171	JAKARTA SELATAN	116,420	0	70,000	186,420	306,264
8	IV	KODYA	3172	JAKARTA TIMUR	75,124	0	45,000	120,124	171,210
9	IV	KODYA	3173	JAKARTA PUSAT	201,504	0	121,000	322,504	446,123
10	IV	KODYA	3174	JAKARTA BARAT	54,798	0	33,000	87,798	164,186
11	IV	KODYA	3175	JAKARTA UTARA	77,408	0	46,000	123,408	157,217
12				KODYA TOTAL	525,254	0	315,000	840,254	1,245,000
				WITEL TOTAL	542,790	0	325,000	867,790	1,286,266

Table A-1-5 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (5/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	V	KAB	3201	PANDEGLANG	460	-400	1,000	1,060	3,461
2	V	KAB	3202	LEBAK	1,130	0	1,000	2,130	3,242
3	V	KAB	3203	BOGOR	1,250	0	2,000	3,250	7,643
4	V	KAB	3204	SUKABUMI	810	0	0	810	3,339
5	V	KAB	3205	CIANJUR	5,420	0	3,000	8,420	10,852
6	V	KAB	3206	BANDUNG	5,215	-430	4,400	9,185	13,568
7	V	KAB	3207	GARUT	4,830	0	2,000	6,830	9,221
8	V	KAB	3208	TASIK MALAYA	10,550	-550	4,200	14,200	15,877
9	V	KAB	3209	CIAMIS	3,650	-1650	3,000	5,000	9,152
10	V	KAB	3210	KUNINGAN	480	0	1,000	1,480	5,146
11	V	KAB	3211	CIREBON	220	-220	400	400	3,031
12	V	KAB	3212	MAJALENGKA	840	-840	2,000	2,000	5,942
13	V	KAB	3213	SUMEDANG	1,290	-50	2,000	3,240	4,980
14	V	KAB	3214	INDRAMAYU	1,220	-640	1,000	1,580	7,092
15	V	KAB	3215	SUBANG	1,380	-380	1,000	2,000	4,968
16	V	KAB	3216	PURWAKARTA	1,230	-30	2,000	3,200	4,275
17	V	KAB	3217	KARAWANG	2,430	-30	2,000	4,400	6,732
18	V	KAB	3220	SERANG	5,530	0	1,000	6,530	9,145
19				KAB TOTAL	47,935	-5,220	33,000	75,715	127,666
20									
21									
22	V	KODYA	3271	BOGOR (A)	14,000	0	8,000	22,000	78,342
23	V	KODYA	3272	SUKABUMI (B)	7,000	0	4,000	11,000	17,973
24	V	KODYA	3273	BANDUNG (C)	90,100	0	54,000	144,100	296,984
25	V	KODYA	3274	CIREBON (D)	18,100	0	11,000	29,100	44,701
26				KODYA TOTAL	129,200	0	77,000	206,200	438,000
				WITEL TOTAL	177,135	-5,220	110,000	281,915	565,666

Table A-1-6 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (6/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	SUPPLY	TOTAL	DEMAND (1994)
1	VI	KAB	3301	CILACAP	2,700	-650	3,800	5,850	8,053
2	VI	KAB	3302	BANYUMAS	6,200	-100	3,200	9,300	10,101
3	VI	KAB	3303	PURBALINGGA	380	-380	600	600	3,087
4	VI	KAB	3304	BANJAR NEGARA	380	-380	600	600	3,235
5	VI	KAB	3305	KEBUMEN	2,140	-40	1,000	3,100	5,258
6	VI	KAB	3306	PURWOREJO	1,250	0	1,000	2,250	3,278
7	VI	KAB	3307	WONOSOBO	2,000	0	0	2,000	2,923
8	VI	KAB	3308	MAGELANG	400	0	0	400	4,560
9	VI	KAB	3309	BOYOLALI	200	-200	600	600	3,876
10	VI	KAB	3310	KLATEN	2,000	-200	2,000	3,800	5,589
11	VI	KAB	3311	SUKOHARJO	200	-200	600	600	2,853
12	VI	KAB	3312	WONOGIRI	1,100	0	0	1,100	4,189
13	VI	KAB	3313	KARANG ANYAR	400	-200	800	1,000	2,974
14	VI	KAB	3314	SRAGEN	1,000	0	0	1,000	3,606
15	VI	KAB	3315	GROBOGAN	600	-400	600	800	3,313
16	VI	KAB	3316	BLORA	3,850	0	0	3,850	6,676
17	VI	KAB	3317	REMBANG	840	-640	1,000	1,200	2,112
18	VI	KAB	3318	PATI	2,270	0	1,000	3,270	5,359
19	VI	KAB	3319	KUDUS	5,000	0	2,000	7,000	7,707
20	VI	KAB	3320	JEPARA	1,170	0	0	1,170	3,516
21	VI	KAB	3321	DEMAK	1,000	0	0	1,000	3,370
22	VI	KAB	3322	SEMARANG	1,000	0	1,000	2,000	3,267
23	VI	KAB	3323	TEMANGGUN	1,000	0	1,000	2,000	2,722
24	VI	KAB	3324	KENDEL	1,120	-70	1,600	2,650	3,394
25	VI	KAB	3325	BATANG	270	-180	400	490	2,483
26	VI	KAB	3326	PEKALONGAN	100	0	0	100	3,298
27	VI	KAB	3327	PEMALANG	1,260	0	1,000	2,260	4,938
28	VI	KAB	3328	TENGAL	700	-400	400	700	2,901
29	VI	KAB	3329	BREBES	800	-400	600	1,000	4,213
30	VI	KAB	3401	KULON PROGO	200	-200	400	400	1,697
31	VI	KAB	3402	BANTUL	600	0	0	600	3,260
32	VI	KAB	3403	GUNUNG KIDUL	300	-300	400	400	3,573
33	VI	KAB	3404	SLEMAN	750	-200	400	950	3,566
34				KAB TOTAL	43,180	-5,140	26,000	64,040	134,947
35									
36									
38	VI	KODYA	3371	MAGELANG (A)	4,500	0	3,000	7,500	11,471
39	VI	KODYA	3372	SURAKARTA (B)	17,000	0	10,000	27,000	53,221
40	VI	KODYA	3373	SALATIGA (C)	1,040	0	1,000	2,040	8,812
41	VI	KODYA	3374	SEMARANG (D)	44,300	0	26,000	70,300	136,244
42	VI	KODYA	3375	PEKALONGAN (E)	7,000	0	4,000	11,000	18,720
43	VI	KODYA	3376	TENGAL (F)	8,000	0	5,000	13,000	18,397
44	VI	KODYA	3471	YOGYAKARTA (A)	23,000	0	14,000	37,000	63,135
				KODYA TOTAL	104,840	0	63,000	167,840	310,000
				WITEL TOTAL	148,020	-5,140	89,000	231,880	444,947

Table A-1-7 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (7/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	CODE NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	VII	KAB	3501	PACITAN	600	0	0	600	2,521
2	VII	KAB	3502	PONOROGO	1,060	-60	1,000	2,000	4,657
3	VII	KAB	3503	TRENGGALEK	270	-270	1,000	1,000	3,447
4	VII	KAB	3504	TULUNG AGUNG	1,250	0	1,000	2,250	5,183
5	VII	KAB	3505	BLITAR	480	0	0	480	4,711
6	VII	KAB	3506	KEDIRI	690	-400	600	890	6,184
7	VII	KAB	3507	MALANG	2,590	-640	1,000	2,950	21,170
8	VII	KAB	3508	LUMAJANG	1,440	0	1,000	2,440	6,225
9	VII	KAB	3509	JEMBER	10,050	0	6,000	16,050	17,571
10	VII	KAB	3510	BANYUWANGI	4,130	0	2,000	6,130	12,382
11	VII	KAB	3511	BONDOWOSO	3,000	0	0	3,000	5,431
12	VII	KAB	3512	SITUBONDO	1,570	-50	1,000	2,520	3,106
13	VII	KAB	3513	PROBOLINGGO	250	-250	600	600	3,872
14	VII	KAB	3514	PASURUAN	1,740	0	0	1,740	8,158
15	VII	KAB	3515	SIDOARJO	2,200	0	3,000	5,200	6,479
16	VII	KAB	3516	MOJOKERTO	200	0	0	200	4,751
17	VII	KAB	3517	JOMBANG	1,300	0	1,000	2,300	6,923
18	VII	KAB	3518	NGANJUK	730	-480	1,000	1,250	6,211
19	VII	KAB	3519	MADIUN	150	-150	600	600	3,977
20	VII	KAB	3520	MAGETAN	430	-330	1,000	1,100	3,642
21	VII	KAB	3521	NGAWI	320	-270	1,000	1,050	5,172
22	VII	KAB	3522	BOJONEGORO	3,190	0	0	3,190	7,769
23	VII	KAB	3523	TUBAN	800	0	600	1,400	6,295
24	VII	KAB	3524	LAMONGAN	465	-270	1,000	1,195	8,024
25	VII	KAB	3525	GRESIK (SURABAYA)	4,200	0	0	4,200	7,280
26	VII	KAB	3526	BANGKALAN	650	0	1,200	1,850	4,237
27	VII	KAB	3527	SAMPAN	100	-100	1,000	1,000	3,688
28	VII	KAB	3528	PAMEKASAN	1,110	-110	1,000	2,000	3,338
29	VII	KAB	3529	SUMENEP	1,000	0	400	1,400	5,693
30				KAB TOTAL	45,965	-3,380	28,000	70,585	188,097
31									
32									
34	VII	KODYA	3571	KEDIRI (A)	4,800	0	3,000	7,800	15,300
35	VII	KODYA	3572	BLITAR (B)	4,000	0	2,000	6,000	6,491
36	VII	KODYA	3573	MALANG (C)	27,478	0	16,000	43,478	65,584
37	VII	KODYA	3574	PROBOLINGGO (D)	4,200	0	3,000	7,200	7,337
38	VII	KODYA	3575	PASURUAN (E)	2,720	0	2,000	4,720	12,222
39	VII	KODYA	3576	MOJOKERTO (F)	2,000	0	1,000	3,000	9,386
40	VII	KODYA	3577	MADIUN (G)	5,200	0	3,000	8,200	14,190
41	VII	KODYA	3578	SURABAYA (H)	153,640	-640	92,000	245,000	397,490
42				KODYA TOTAL	204,038	-640	122,000	325,398	528,000
				WITEL TOTAL	250,003	-4,020	150,000	395,983	716,097

Table A-1-8 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (8/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	KAB NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	SUPPLY	TOTAL	DEMAND (1994)
1	VIII	KAB	5101	JEMBRANA	400	-400	600	600	1,239
2	VIII	KAB	5102	TABANAN	1,600	0	0	1,600	2,008
3	VIII	KAB	5103	BADUNG	25,800	0	10,000	35,800	52,201
4	VIII	KAB	5104	GIANJAR	200	-200	400	400	1,764
5	VIII	KAB	5105	KLUNGKUNG	600	0	0	600	1,376
6	VIII	KAB	5106	BANGLI	400	0	0	400	1,329
7	VIII	KAB	5107	KARANG ASEM	200	-200	400	400	1,720
8	VIII	KAB	5108	BULELENG	2,260	0	1,000	3,260	6,965
9	VIII	KAB	5201	LOMBOK BARAT	6,050	0	5,000	11,050	15,717
10	VIII	KAB	5202	LOMBOK TENGAH	400	-400	600	600	2,315
11	VIII	KAB	5203	LOMBOK TIMUR	400	-400	600	600	2,973
12	VIII	KAB	5204	SUMBAWA	2,466	-140	2,400	4,726	7,048
13	VIII	KAB	5205	DOMPU	300	-300	1,000	1,000	2,013
14	VIII	KAB	5206	BIMA	2,250	0	2,000	4,250	6,329
15	VIII	KAB	5301	SUMBAWA BARAT	150	-150	400	400	1,014
16	VIII	KAB	5302	SUMBA TIMUR	0	0	400	400	1,128
17	VIII	KAB	5303	KUPANG	10,750	0	6,200	16,950	24,343
18	VIII	KAB	5304	TIMOR TENGAH SELATAN	180	-150	600	630	1,221
19	VIII	KAB	5305	TIMOR TENGAH UTARA	230	0	0	230	1,102
20	VIII	KAB	5306	BELU	220	-220	600	600	765
21	VIII	KAB	5307	ALOR	200	-200	600	600	1,487
22	VIII	KAB	5308	FLORES TIMUR	150	-150	800	800	1,053
23	VIII	KAB	5309	SIKKA	550	-550	1,000	1,000	1,642
24	VIII	KAB	5310	ENDEH	1,050	0	2,000	3,050	4,190
25	VIII	KAB	5311	NGADA	400	0	0	400	1,266
26	VIII	KAB	5312	MANGGARAI	1,100	0	0	1,100	4,211
27	VIII	KAB	5401	COVALIMA	400	0	0	400	1,286
28	VIII	KAB	5402	AINARO	400	0	0	400	1,269
29	VIII	KAB	5403	SAME (MANUFAHI)	600	0	0	600	1,389
30	VIII	KAB	5404	VIQUE QUE	0	0	400	400	1,144
31	VIII	KAB	5405	LAUTEM	0	0	600	600	1,106
32	VIII	KAB	5406	BAUCAU	200	-200	400	400	1,231
33	VIII	KAB	5407	MANA TUTU	400	0	0	400	1,119
34	VIII	KAB	5408	DILI	6,800	0	3,000	9,800	14,524
35	VIII	KAB	5409	AILEU	400	0	0	400	1,099
36	VIII	KAB	5410	LIKUICA	400	0	0	400	1,076
37	VIII	KAB	5411	ERMERA	400	0	0	400	1,187
38	VIII	KAB	5412	BOBONARO	400	0	0	400	1,159
39	VIII	KAB	5413	AMBENO	400	0	0	400	1,101
40				KAB TOTAL	69,106	-3,660	41,000	106,446	177,109
				KODYA TOTAL	0	0	0	0	0
				WITEL TOTAL	69,106	-3,660	41,000	106,446	177,109

Table A-1-9 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (9/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	KAB NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	IX	KAB	6101	SAMBAS	1,550	-1150	800	1,200	3,803
2	IX	KAB	6102	PONTIANAK	1,000	-400	600	1,200	3,093
3	IX	KAB	6103	SANGGAU	250	-200	400	450	1,549
4	IX	KAB	6104	KETAPANG	560	-560	1,200	1,200	1,867
5	IX	KAB	6105	SINTANG	400	-200	400	600	1,917
6	IX	KAB	6106	KAPUAS HULU	200	-200	400	400	886
7	IX	KAB	6201	KOTAWARINGIN BARAT	2,000	0	0	2,000	2,835
8	IX	KAB	6202	KOTAWARINGIN TIMUR	2,300	-250	600	2,650	3,281
9	IX	KAB	6203	KOTINGAN	0	0	400	400	619
10	IX	KAB	6204	KAPUAS	1,000	0	0	1,000	2,441
11	IX	KAB	6205	BARITO SELATAN	1,000	0	0	1,000	1,598
12	IX	KAB	6206	BARITO TIMUR	200	0	0	200	458
13	IX	KAB	6207	BARITO UTARA	300	-300	600	600	1,006
14	IX	KAB	6208	KAHAYAN HULU/G.MAS	50	-50	200	200	673
15	IX	KAB	6209	MURUNG RAYA	0	0	200	200	638
16	IX	KAB	6301	TANAH LAUT	200	0	0	200	983
17	IX	KAB	6302	KOTA BARU	200	-200	400	400	1,368
18	IX	KAB	6303	BANJAR	3,200	-600	1,000	3,600	3,738
19	IX	KAB	6304	BARITO KUALA	600	0	0	600	767
20	IX	KAB	6305	TAPIN	200	0	600	800	1,240
21	IX	KAB	6306	HULU SEI SELATAN	560	-560	600	600	1,071
22	IX	KAB	6307	JULU SEI TENGAH	400	-400	600	600	1,356
23	IX	KAB	6308	JULU SEIUTARA	350	-350	600	600	743
24	IX	KAB	6309	TABALONG	200	-200	600	600	1,775
25	IX	KAB	6401	PASIR	600	0	0	600	1,135
26	IX	KAB	6402	KUTAI	2,400	-400	1,200	3,200	3,532
27	IX	KAB	6403	BERAU	50	-50	200	200	598
28	IX	KAB	6404	BULONGAN	1,650	-200	1,400	2,850	3,098
29				KAB TOTAL	21,420	-6,270	13,000	28,150	48,068
30									
31									
32	IX	KODYA	6171	PONTIANAK (A)	11,400	0	7,000	18,400	30,348
33	IX	KODYA	6271	PALANGKA RAYA (A)	1,000	0	1,000	2,000	12,074
34	IX	KODYA	6371	BANJAR MASIN (A)	20,000	0	12,000	32,000	44,761
35	IX	KODYA	6471	BALIK PAPAN (A)	11,500	0	6,000	17,500	32,057
36	IX	KODYA	6472	SAMARINDA (B)	12,000	0	7,000	19,000	30,760
37				KODYA TOTAL	55,900	0	33,000	88,900	150,000
				WITEL TOTAL	77,320	-6,270	46,000	117,050	198,068

Table A-1-10 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (10/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	KAB NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	SUPPLY	TOTAL	DEMAND (1994)
1	X	KAB	7101	GORONTALO	400	0	0	400	2,153
2	X	KAB	7102	BALANG MANGONDOW	400	-400	1,000	1,000	2,331
3	X	KAB	7103	MINAHASA	4,290	-400	400	4,290	5,932
4	X	KAB	7104	SANGIHE TALAUT	200	-200	400	400	1,408
5	X	KAB	7201	LUWUK/BANGGAI	1,000	0	200	1,200	2,291
6	X	KAB	7202	POSO	896	0	200	1,096	1,517
7	X	KAB	7203	DONGGALA	6,500	0	0	6,500	6,692
8	X	KAB	7204	BUAL TOLI TOLI	1,240	-640	1,200	1,800	3,004
9	X	KAB	7301	SELAYAR	0	0	400	400	504
10	X	KAB	7302	BULUKUMBA	400	-400	600	600	1,806
11	X	KAB	7303	BANTAENG	200	0	0	200	570
12	X	KAB	7304	JENEPONTO	200	0	0	200	1,167
13	X	KAB	7305	TAKALAR	250	0	0	250	919
14	X	KAB	7306	GOWA	450	-400	1,000	1,050	2,004
15	X	KAB	7307	SINJAI	150	-150	600	600	1,005
16	X	KAB	7308	BONE	460	-460	600	600	1,903
17	X	KAB	7309	MAROS	400	-400	1,000	1,000	1,100
18	X	KAB	7310	PANGKAJENE KEP	400	-400	600	600	1,210
19	X	KAB	7311	BARRU	0	0	600	600	677
20	X	KAB	7312	SOPPENG	450	-400	400	450	1,243
21	X	KAB	7313	WAJO	400	-400	600	600	1,950
22	X	KAB	7314	SINDERENG RAPPANG	600	-200	400	800	1,235
23	X	KAB	7315	PINRANG	400	-400	600	600	1,516
24	X	KAB	7316	ENREKANG	100	-100	600	600	1,676
25	X	KAB	7317	LUWU	400	-400	1,000	1,000	2,704
26	X	KAB	7318	TANA TORAJA	600	-600	1,400	1,400	1,859
27	X	KAB	7319	POLEWALI MAMASA	200	-200	600	600	1,497
28	X	KAB	7320	MAJENE	200	-200	600	600	830
29	X	KAB	7321	MAMUJU	400	0	0	400	649
30	X	KAB	7401	BUTON	820	-820	800	800	1,805
31	X	KAB	7402	MUNA	200	-200	600	600	1,061
32	X	KAB	7403	KENDARI	6,000	0	0	6,000	7,819
33	X	KAB	7404	KOLAKA	280	-280	600	600	1,080
34				KAB TOTAL	28,886	-8,050	17,000	37,836	65,217
35									
36									
37	X	KODYA	7171	GORONTALO (A)	7,000	0	4,000	11,000	11,679
38	X	KODYA	7172	MANADO (B)	13,600	0	8,000	21,600	36,585
39	X	KODYA	7371	UJUNG PANDANG (A)	39,200	0	24,000	63,200	117,572
40	X	KODYA	7372	PARE-PARE (B)	3,200	0	2,000	5,200	9,164
41				KODYA TOTAL	63,000	0	38,000	101,000	175,000
				WITEL TOTAL	91,886	-8,050	55,000	138,836	240,217

Table A-1-11 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (11/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	KAB NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	XI	KAB	8101	MALUKU TENGGARA	850	-50	200	1,000	1,175
2	XI	KAB	8102	MALUKU TENGAH	1,500	-100	800	2,200	2,500
3	XI	KAB	8103	HALMAHERA TENGAH	394	-54	800	1,140	1,724
4	XI	KAB	8104	MALUKU UTARA	3,200	-200	1,200	4,200	4,761
5				KAB TOTAL	5,944	-404	3,000	8,540	10,160
6									
7									
8	XI	KODYA	8171	AMBON (A)	7,600	0	5,000	12,600	22,000
				KODYA TOTAL	7,600	0	5,000	12,600	22,000
				WITEL TOTAL	13,544	-404	8,000	21,140	32,160

Table A-1-12 Expansion Plan of Telephone Exchange Capacity for Each Kabupaten (12/12)

SERIAL NO.	WITEL NO.	KAB/ KOTA	KAB NO.	NAME OF KAB/KOTA	END OF PELITA-IV	DURING REPELITA-V REMOVE	DURING REPELITA-V SUPPLY	TOTAL	DEMAND (1994)
1	XII	KAB	8201	MERAUKE	1,050	-50	800	1,800	2,418
2	XII	KAB	8202	PEG-JAYA WIJAYA	200	-200	200	200	1,032
3	XII	KAB	8203	JAYAPURA	6,700	-50	2,200	8,850	13,795
4	XII	KAB	8204	PANIAI	50	-50	200	200	924
5	XII	KAB	8205	FAK FAK	530	-450	1,400	1,480	2,878
6	XII	KAB	8206	SORONG	1,100	0	1,600	2,700	4,135
7	XII	KAB	8207	MANOKWARI	1,000	0	200	1,200	2,295
8	XII	KAB	8208	YAPEN WAROPEN	1,000	-400	400	1,000	1,380
9	XII	KAB	8209	TELUK CENDERAWASIH	400	0	0	400	843
10				KAB TOTAL	12,030	-1200	7,000	17,830	29,700
				KODYA TOTAL	0	0	0	0	0
				WITEL TOTAL	12,030	-1,200	7,000	17,830	29,700