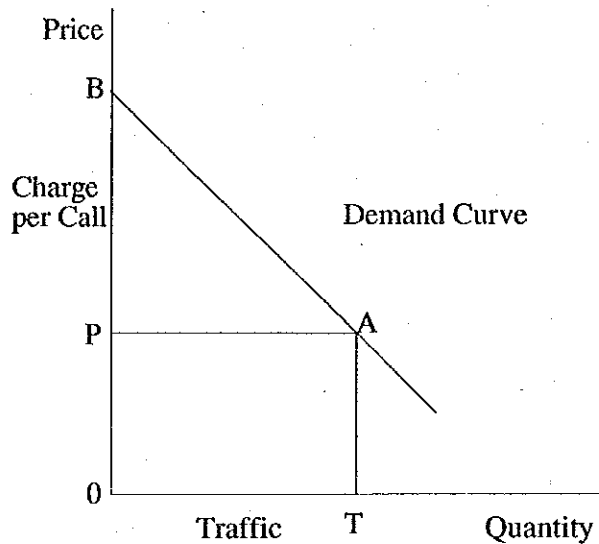


Figure 14.6-1 Consumer's Surplus



(2) Analysis Method

The idea of a consumer's surplus is convenient for explaining the user benefits. To quantify the benefits, they have to be clearly understood. However, it is impossible to measure all the benefits. Therefore, in general, the consumer's surplus is calculated from the demand function, which shows the relationship between the price and demand.

In the evaluation, which is based on present tariff and traffic, the demand function derived from multiple regression is used to calculate the consumers' surplus. Figure 14.6-1 shows the idea of consumer's surplus.

(3) Deviation of the demand function and consumer's surplus

The data for traffic, price of a toll call and population between the toll centers in the Philippines was used in the multiple regression to derive the demand function. From the multiple regression, following equation is derived.

$$\text{Log (Traffic)} = - 2.574 - 1.258 \text{ Log (Price)} + 1.049 \text{ Log (Population)}$$

$$(- 2.50183)(- 8.36209) \quad (11.13799) \quad (\text{t value})$$

$$R^2 = 0.895154$$

The number of samples was 19.

By substituting the average value for traffic and price for each toll center in the above equation, the demand curves for each city were obtained. Then, by calculating the area of the triangle between the demand curve and the horizontal line, which is drawn at the level of the actual price for the charge of the telephone use, the consumer's surplus was obtained. The amount of benefits which belongs the consumers is estimated to be 189% of the call charge. Therefore, the consumer's surplus is 89% of the call charge, because 189% minus 100% is equal to 89%.

14.6.3 Economic Internal Rate of Return

The economic benefit was estimated to be 189% of the financial benefit. Using this economic benefit instead of the financial benefit, the economic internal rate of return was calculated as 49%. The FIRR is excellent and shows high viability. This EIRR exceeds the 15% of NEDA hurdle rate for project and is higher than other infrastructure projects. Table 14.6-1 shows the cash flow table for the EIRR calculation.

Table 14.6-1 Cash Flow Table for EIRR Calculation

	(unit: million pesos)		
	Cash Inflow	Cash Outflow	Total Cash Flow
1992	0	16,172	-16,172
1993	14,761	24,911	-10,150
1994	28,691	29,599	-908
1995	41,800	33,103	8,697
1996	54,096	35,813	18,283
1997	65,589	37,965	27,624
1998	76,288	44,404	31,884
1999	88,321	47,872	40,449
2000	99,458	50,780	48,678
2001	109,710	53,468	56,242
2002	119,087	55,959	63,128
2003	127,600	58,274	69,326
2004	135,261	74,575	60,686
2005	148,606	79,272	69,334
2006	160,703	82,742	77,961
2007	171,566	85,978	85,588
2008	181,212	89,002	92,210
2009	189,658	91,833	97,825
2010	196,919	59,477	137,441
2011	189,185	55,711	133,474
2012	399,082	28,895	370,187

CHAPTER 15

IMPLEMENTATION PLAN

CHAPTER 15 IMPLEMENTATION PLAN

15.1 Background

The first Philippine National Telecommunication Development Plan was issued in 1982. A major feature of the plan was the expected major involvement of the government in investments in the telecommunications sector, primarily through the NTP and the RTDP. The major projects planned or implemented by the government up to now include the NTP, the establishment of a backbone network from Luzon to Mindanao, and the installation of 132,000 telephone lines in major urban centers and key development centers nationwide.

In 1989, DOTC established the NTDP covering the period 1991 to 2010 and updated it in 1993. The government, with major participation for the private sector, plans to increase a main telephone station density over the 20-year plan period from the present 1.4 stations per 100 inhabitants to a minimum target of 3.8 by 1998, 6.2 by 2004, and 10.0 by 2010.

The project packages proposed in this chapter are in line with the study on the improvement and optimization of telecommunications network (Master Plan) and the NTDP, to increase telephone density to at least 3.8 nationwide by 1998.

The Personal Handy Phone (PHP) is assumed to be installed in Makati district as a model case as one of the project package.

15.2 Project of Regional Telephone Service

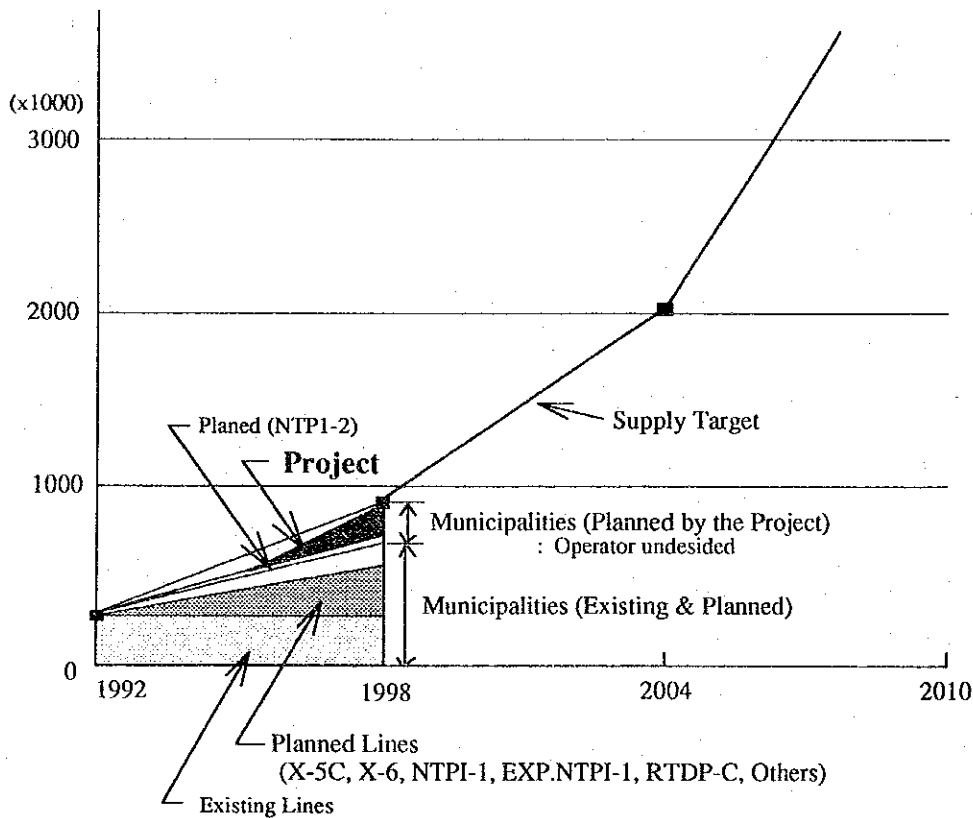
15.2.1 Relation to Master Plan

This proposed project packages primarily cover unserved provincial areas to supply telephone lines to meet the supply targets through 1998 (Phase A). According to the supply plan in Phase A, as shown in Table 15.2-1, 631,000 lines are planned to be supplied in provincial areas which are 45% of coverage ratio of the municipalities. Of these 631,000 lines, more than half are already planned in specific projects including X-5C, X-6, RTDP, NTP, and other Paptelco projects. Other unserved area's supply lines are mainly pick up by this project packages on Region by Region basis. The relationship between the Master Plan and this project packages is illustrated in Figure 15.2-1.

Table 15.2-1 Supply Plan in Phase A

Area	(Unit: 1,000 lines)		
	Year-end 1992	Supplied in Phase A	Year-end 1998
NCR	600	1,185	1,785
Provinces	287	631	918
Total	887	1,816	2,703

Figure 15.2-1 Relation between Master Plan and Project



15.2.2 Selection of Project Sites

Projects are formed on a regional basis. Projects would provide telephone lines in primarily unserved or inadequately served areas.

Selection guidelines of project sites are as follows:

- (1) Municipalities which are assigned to be served in Phase A and their adjacent areas are the main sites.

Areas with on-going or planned projects would not be included in this project.

- (2) Municipalities included in NTP Tranche 1 and their adjacent areas (Except in Regions 3 to 5) would be included in this project.

Region 1 would not be included in this project, because all the municipalities which are planned to be served in Phase A already have telephone service or a plan to be served, and the demand in unserved municipalities is small.

Expansion of PLDT, RTDP, and NTP 1-1 toll backbone network is not included in this project.

15.2.3 Selection Criteria

- (1) Regions 2-5

Municipalities that are already served by the government, PLDT, DIGITEL or other private companies or are planned to be served, would not be included in this project as local exchange sites.

The on-going and planned projects are:

- X-5C and X-6 of PLDT and RTDP-C, and
- NTP Tranche 1-1 and Expansion of NTP Tranche 1-1.

- (2) Regions 6-8

The government NTP Tranche 1-2 network is assumed to be completed by the construction stage of this project. The project packages include expansion of NTP Tranche 1-2 on a regional basis.

- (3) Regions 9-12

The installation of a regional telephone network, which replaces the NTP Tranche 1-3 program, and its expansion are included in this project on a regional basis.

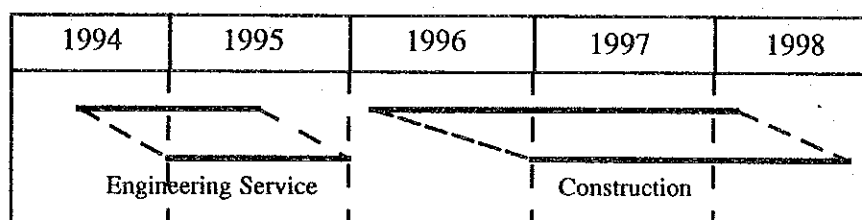
15.2.4 Provisioning Period

Telephone network plant must be augmented at regular intervals, known as provisional periods. In this project, switching and transmission plant are designed to meet the supply target by 2001 and outside plant to meet the supply target by 2003.

15.2.5 Implementation Schedule

The project will be implemented in the form of engineering stages and construction stages. Figure 15.2-2 presents the project implementation schedule including engineering services. All projects are scheduled to be completed by the end of 1998.

Figure 15.2-2 Project Implementation Schedule



(1) Engineering Service Stage

This covers the pre-design, the detailed design, and the preparation of tender documents.

- Pre-design includes field surveys, preparation of preliminary engineering designs, and estimating costs prior to actual design.
- Detailed Design includes preparation of detailed plans, designs, working drawing, and detailed cost estimation of the project.
- Preparation of Tender Documents is the preparation of the documents needed to invite bids for construction and equipment.

(2) Construction Stage

This stage covers the following:

- Constructing and expanding facilities on a turn-key basis,
- Providing training and maintenance services, and
- Providing the consultancy services to ensure smooth progress and completion of the project.

15.2.6 Financial Evaluation

The approach to projecting the revenue and expenditures is same as described in Chapter 14, but modified to fit the local expansion plans as follows.

(1) Revenue Sharing

The project packages are for local expansion plan and exclude toll line, so toll call revenues are to be shared with the toll carriers based on current revenue sharing ratio for both domestic toll call and international toll call. Because the project packages in Region 4, and 6 to 12 cover regional toll network in addition to the local network, the share of toll calls was set at 50%. The traffic of incoming calls was assumed to be same as for outgoing calls, and the estimated revenue contains the revenue for both outgoing and incoming calls.

(2) Rate of Residential Telephone

The project packages are for the expansion of services to unserved areas. The first demand for telephone in unserved area are assumed to be business users and the ratio of residential users is smaller than served area. So we used the ratio for residential telephone use of 30%, which is about half the ratio for the existing telephone users.

(3) Cross Subsidies

Because the local expansion projects are less profitable, they require cross subsidies from profitable services such as toll call service and CMTS. We calculated required cross subsidies to maintain FIRR between 11% and 12%, this is the FIRR of Master Plan. The figure is given for both total amount and the unit price per main line per year in financial projection.

As summary of financial analysis of the project packages is shown in Table 15.2-2.

Table 15.2-2 Financial Analysis

Project Name	FIRR	Share of domestic toll revenue (%)	Cross subsidy per sub. (peso)	Total cross subsidy (M. peso)
Region 2	1.01	30	9,000	1,051
Region 3	3.06	30	6,000	540
Region 4	5.27	50	5,000	3,416
Region 5	1.08	30	8,000	1,621
Region 6	8.34	50	2,000	1,152
Region 7	8.74	50	2,000	1,517
Region 8	5.86	50	5,000	773
Region 9	6.00	50	4,000	1,109
Region 10	10.64	50	500	376
Region 11	10.55	50	500	645
Region 12	7.78	50	3,000	911

Note: Cross subsidy required to maintain IRR between 11% and 12% per subscriber/year

15.2.7 Summary of Project Package

The projects establish fully digital telephone systems, digital microwave/optical fiber cable links and interconnection toll facilities to provide 286,200 telephone switching lines to 224 cities and municipalities.

The number of local exchange sites and their switching capacity, and estimated cost by project package are shown in Tables 15.2-3 and Table 15.2-4, respectively.

Table 15.2-3 Number of Sites and Switching Capacities

Project Name	Number of Sites	Switching Capacity (Lines)
Region 2	18	7,000
Region 3	6	5,000
Region 4	25	37,300
Region 5	28	11,800
Region 6	26	31,600
Region 7	32	41,400
Region 8	19	9,300
Region 9	17	15,500
Region 10	13	41,100
Region 11	25	69,800
Region 12	15	16,400
Total	224	286,200

Table 15.2-4 Estimated Cost

Project Name	(Unit: US\$ Million)		
	Total	Foreign	Local
Region 2	22.6	14.5	8.1
Region 3	13.9	8.9	5.0
Region 4	120.6	84.1	36.5
Region 5	39.1	25.2	13.9
Region 6	77.2	48.9	28.3
Region 7	97.9	62.0	35.9
Region 8	25.7	16.5	9.2
Region 9	45.7	29.4	16.3
Region 10	81.5	51.4	30.1
Region 11	143.1	90.6	52.5
Region 12	43.2	27.4	15.8
Total	710.5	458.9	251.6

15.3 Project Region 2

There are 118 municipalities in Region 2; 52 of them are already served or planned to be served. The RTDP-C project is one on-going project; 18 municipalities have been selected for this project.

15.3.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.3-1.

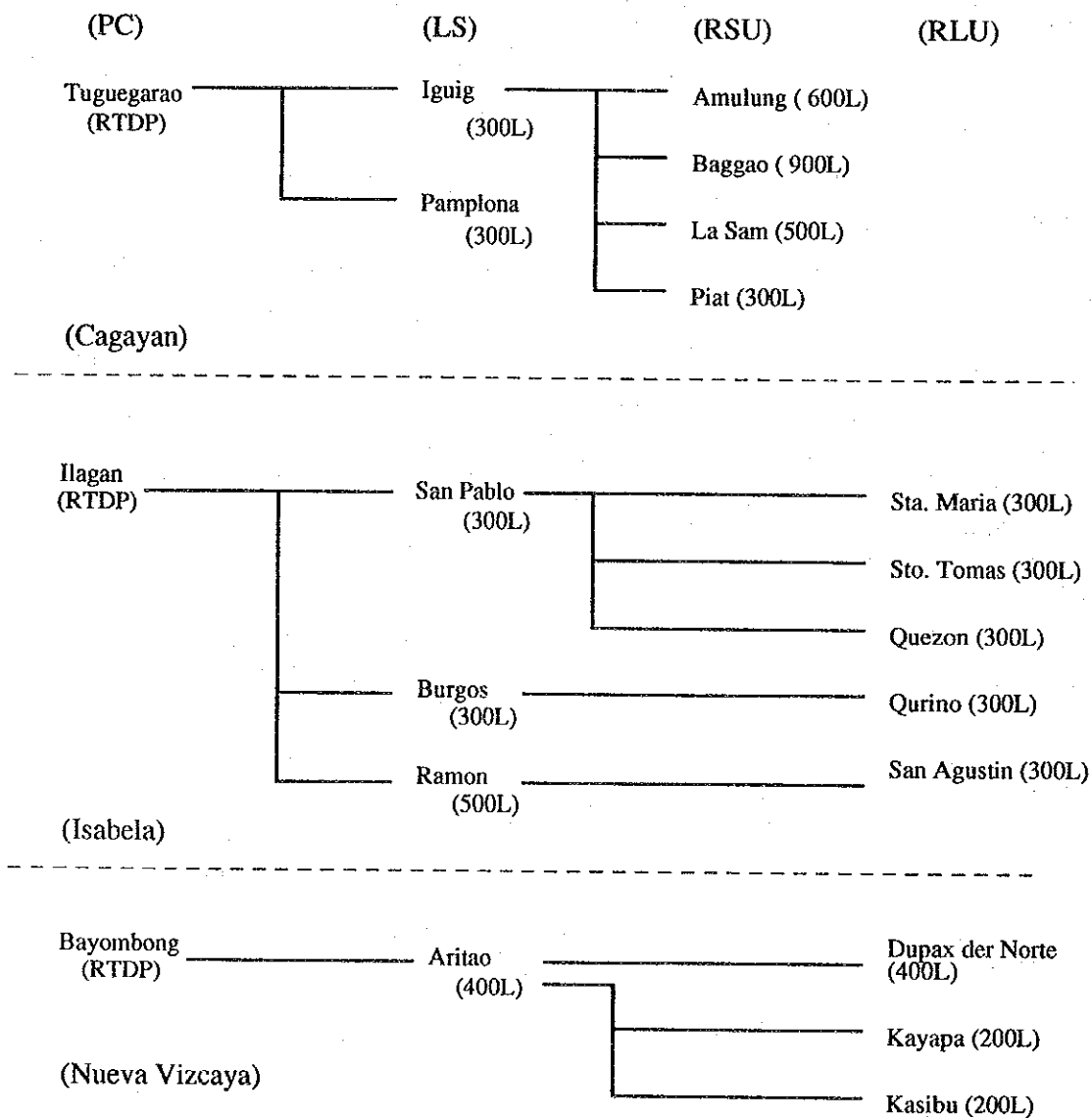
Table 15.3-1 Number of Lines to be Installed (Region 2)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Cagayan	Iguig	300	500
	Amulung	600	900
	Baggao	900	1,400
	La sam	500	700
	Piat	300	500
	Pamplona	300	500
Isabela	San Pablo	300	500
	Sta. Maria	300	500
	Sto. Tomas	300	500
	Quezon	300	400
	Burgos	300	500
	Qurino	300	500
	Ramon	500	900
	San Agustin	300	500
Nueva Vizcaya	Aritao	400	700
	Dupax der Norte	400	600
	Kayapa	300	500
	Kasibu	400	600
	Total	7,000	11,200

15.3.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.3-1. The local exchanges will be connected to primary center of RTDP. The toll homing and routing plan depends on RTDP. RTDP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.3-1 Homing and Routing Plan (Region 2)



15.3.3 Transmission Plan

The transmission route plan is shown in Figure 15.3-2. The type and number of transmission systems for each section in this project are shown in Table 15.3-2.

Figure 15.3-2 Transmission Route Plan (Region 2)

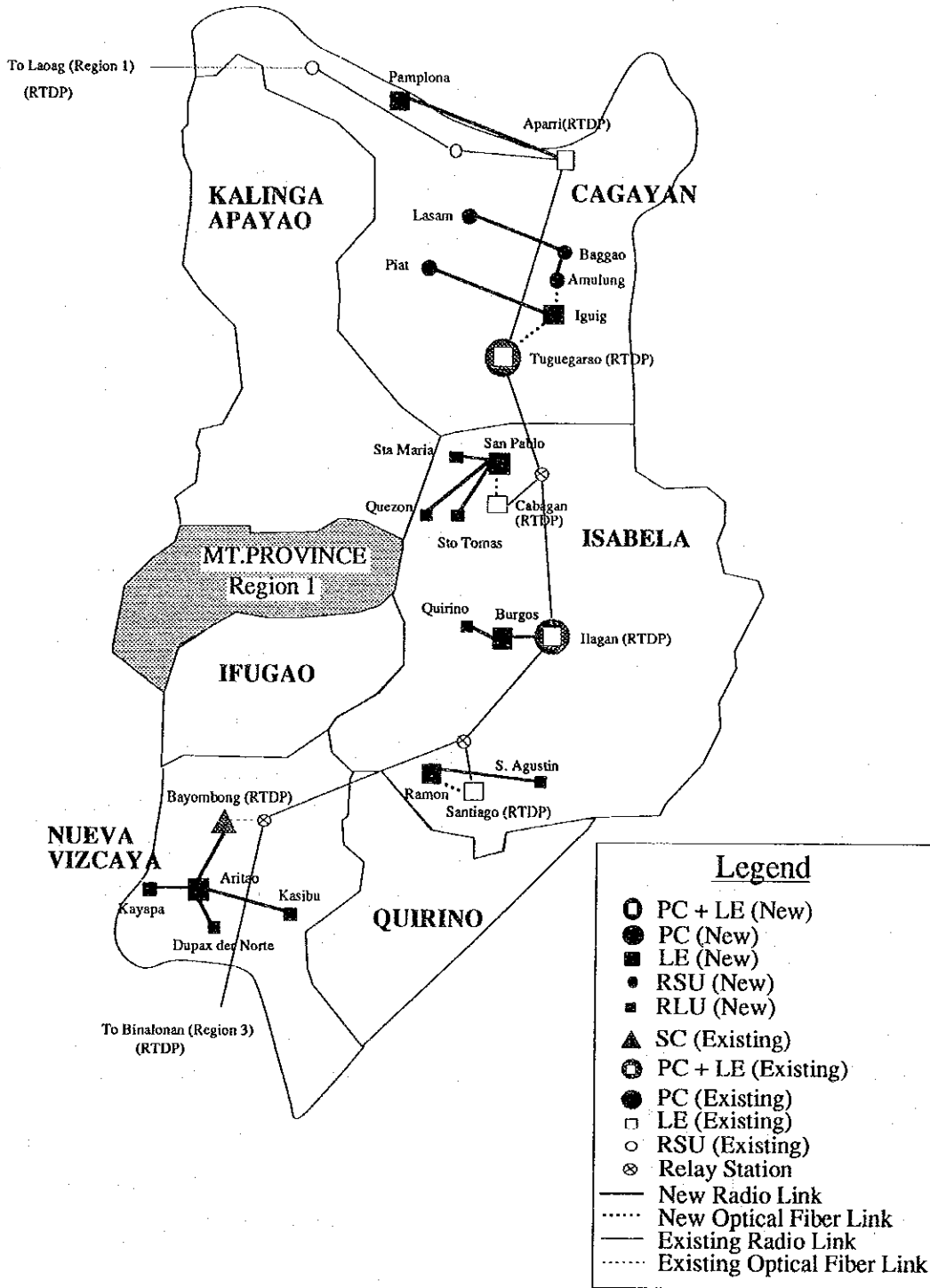


Table 15.3-2 Type and Number of Transmission Systems (Region 2)

Province	Section	System	Dis.(km)	Note
Cagayan	Tuguegarao (RTDP) - Iguig	OF-34M 1+1	15	Interconnection Link
	Iguig - Amulung	OF-34M 1+1	12	
	Iguig - Piat	DR-8M 1+1	30	
	Amulung - Baggao	DR-34M 1+1	14	
	Baggao - Lasam	DR-8M 1+1	24	
	Aparri (RTDP) - Pamplona	DR-8M 1+1	32	
Isabela	Cabagan (RTDP) - San Pablo	DR-34M 1+1	5	Interconnection Link
	San Pablo - Sta Maria	DR-8M 1+1	7	
	San Pablo - Quezon	DR-8M 1+1	25	
	San Pablo - Sto Tomas	DR-8M 1+1	7	
	Ilagan (RTDP) - Burgos	DR-8M 1+1	15	Interconnection Link
	Burgos - Quirino	DR-8M 1+1	3	
	Santiago (RTDP) - Ramon	OF-8M 1+1	13	Interconnection Link
	Ramon - S. Agustin	DR-8M 1+1	40	
Nueva Vizcaya	Bayombong (RTDP) - Aritao	DR-34M 1+1	28	Interconnection Link
	Aritao - Kayapa	DR-8M 1+1	10	
	Aritao - Kasibu	DR-8M 1+1	35	
	Aritao - Dupax der Norte	DR-8M 1+1	15	

15.3.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.3-3.

Table 15.3-3 Estimated Cost (Region 2)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	5.8	2.5	8.3
Transmission System	4.2	1.8	5.9
Outside Plant	1.5	1.5	3.0
Supporting Facilities	0.1	1.3	1.4
Consultant & Engineering	1.6	0.3	1.9
Contingency	1.3	0.7	2.0
Total	14.5	8.1	22.6

15.3.5 Financial Evaluation

The IRR for this project is 1.01%. Considering IRR, the feasibility is low among the 11 project packages. The share of domestic toll calls was set at 30% because all toll calls are handled by toll operators.

A regional cross subsidy of 9,000 pesos per line per year (1,051 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.3-4 shows the financial projection.

Table 15.3 - 4 Financial Projection (Region 2)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines	9,000	9,000 pesos/line/year	7,800	245,450	202,600	49,446	52,790	6,051	54,459	54,459	54,459	54,459	54,459
2. revenue					4,937	5,308	5,680	6,051	6,051	6,051	6,051	6,051	6,051
2.1 local service					35,235	71,760	75,506	79,055	79,951	78,346	76,740	75,135	73,529
2.2 domestic toll call					10,960	22,745	24,394	26,043	26,867	26,867	26,867	26,867	26,867
2.3 international toll call					8,620	17,889	19,186	20,483	21,131	21,131	21,131	21,131	21,131
2.4 other revenue					15,769	31,360	32,172	32,785	32,213	30,602	28,991	27,381	25,770
2.5 doubtful account					495	1,008	1,061	1,110	1,123	1,100	1,078	1,055	1,033
3. cross subsidy					-609	-1,241	-1,306	-1,367	-1,383	-1,355	-1,327	-1,299	-1,272
4. investment cost					22,217	46,103	49,446	52,790	54,459	54,459	54,459	54,459	54,459
5. expense					102,075								
5.1 operating expense					30,284	51,644	44,505	45,737	44,871	42,732	41,338	39,918	38,591
5.2 additional working capital					20,066	39,995	41,266	42,443	42,239	40,799	39,453	38,082	36,802
5.3 franchise tax					9,161	9,497	974	923	233	-417	-417	-417	-417
6. cash flow					1,057	2,153	2,265	2,372	2,399	2,302	2,302	2,254	2,206
cash flow with subsidy					-7,800	-7,800	-245,450	-202,600	31,001	35,080	35,402	35,217	34,938
					-7,800	-7,800	-245,450	-202,600	80,447	89,539	90,073	89,861	89,397

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
1. number of main lines	6,051	6,051	6,051	6,051	6,051	6,051	6,051	6,051	6,051	6,051	6,051	6,051
2. revenue												
2.1 local service	71,924	70,319	68,713	67,108	65,502	63,897	63,897	63,897	63,897	63,897	63,897	1,372,204
2.2 domestic toll call	26,867	26,867	26,867	26,867	26,867	26,867	26,867	26,867	26,867	26,867	26,867	514,016
2.3 international toll call	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	404,275
2.4 other revenue	24,159	22,549	20,938	19,328	17,717	16,106	16,106	16,106	16,106	16,106	16,106	458,370
2.5 doubtful account	1,010	988	965	943	920	897	897	897	897	897	897	19,273
3. cross subsidy	-1,244	-1,216	-1,188	-1,161	-1,133	-1,105	-1,105	-1,105	-1,105	-1,105	-1,105	-23,731
4. investment cost	54,459	54,459	54,459	54,459	54,459	54,459	54,459	54,459	54,459	54,459	54,459	1,050,899
5. expense												565,725
5.1 operating expense	37,347	36,178	35,077	34,039	33,058	32,129	31,713	30,924	30,176	29,466	28,790	738,516
5.2 additional working capital	35,606	34,486	33,433	32,443	31,510	30,629	29,796	29,007	28,259	27,549	26,873	680,737
5.3 franchise tax	-417	-417	-417	-417	-417	0	0	0	0	0	0	16,613
6. cash flow	2,158	2,110	2,061	2,013	1,965	1,917	1,917	1,917	1,917	1,917	1,917	41,166
cash flow with subsidy	34,577	34,141	33,636	33,069	32,445	31,768	32,184	32,973	33,721	34,431	35,107	67,963
	89,036	88,600	88,095	87,528	86,904	86,227	86,643	87,432	88,180	88,890	89,566	1,109,861

15.4 Project Region 3

Region 3 is densely populated area. There are 122 municipalities in Region 3; 103 of them are already served or planned to be served (84%). NTP Tranche 1-1 is on-going and expansion of NTP Tranche 1-1 is planned. Only 6 municipalities in Nueva Ecija province have been selected for this project.

15.4.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.4-1.

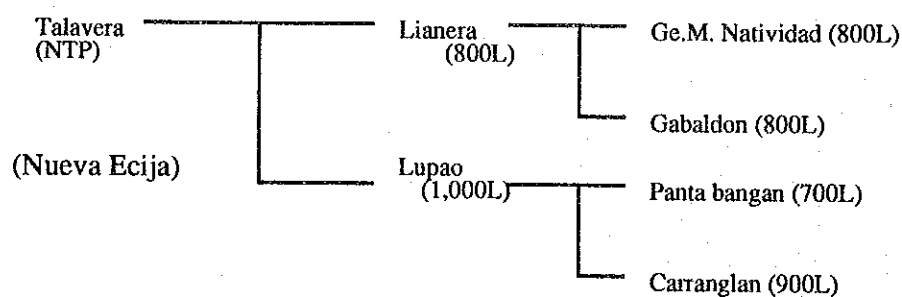
Table 15.4-1 Number of Lines to be Installed (Region 3)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Nueva Ecija	Lianera	800	1,400
	Ge.M. Natividad	800	1,300
	Gabalton	800	1,300
	Lupao	1,000	1,700
	Panta bangan	700	1,100
	Carranglan	900	1,600
	Total	5,000	8,400

15.4.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.4-1. The local exchanges are to be connected to Talavera Primary Center of NTP. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.4-1 Homing and Routing Plan (Region 3)



15.4.3 Transmission Plan

The transmission route plan is shown in Figure 15.4-2. The type and number of transmission systems for each section in this project are shown in Table 15.4-2.

Figure 15.4-2 Transmission Route Plan (Region 3)

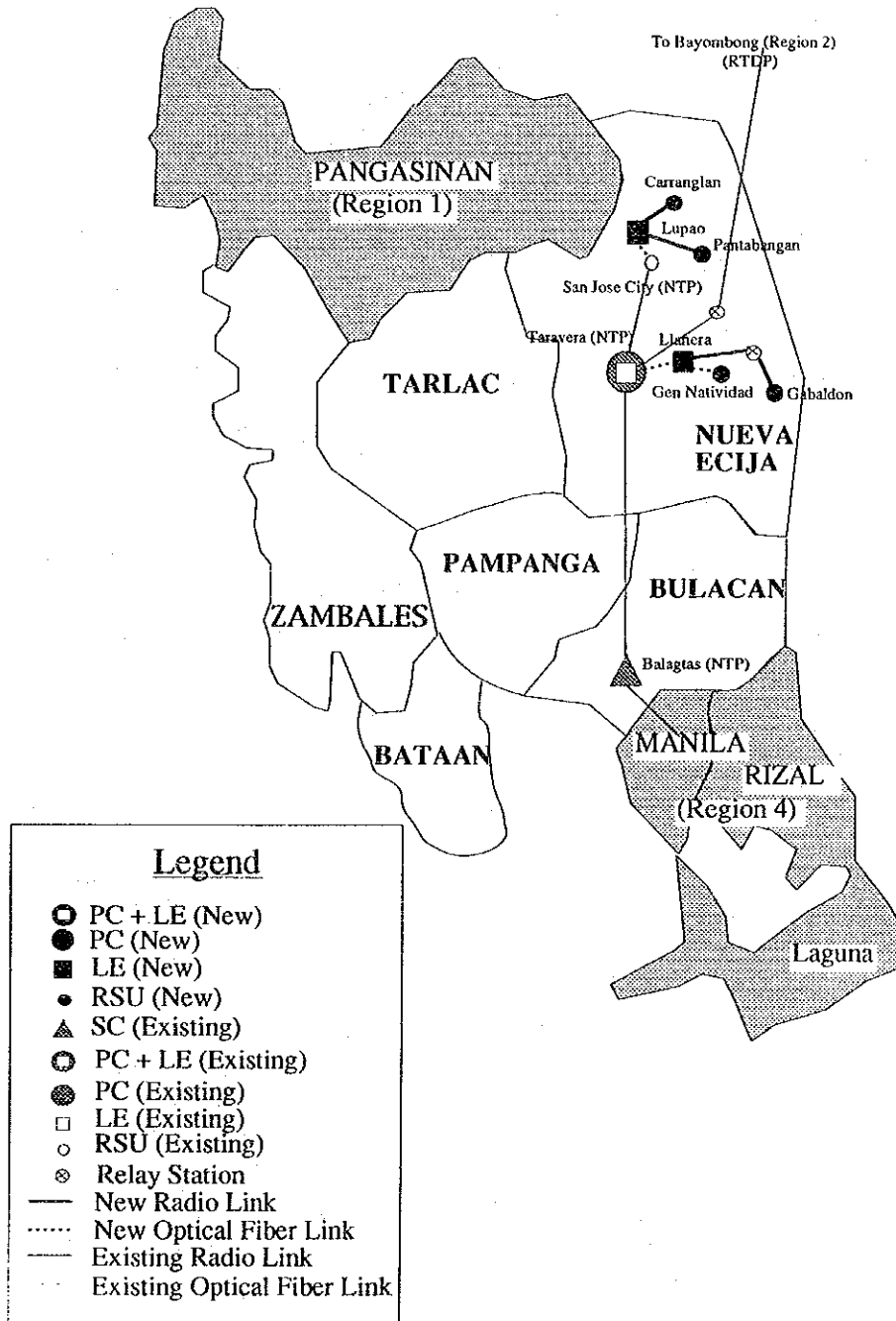


Table 15.4-2 Type and Number of Transmission Systems (Region 3)

Province	Section	System	Dis.(km)	Note
Nueva Ecija	Taravera (NTP) - Llanera	OF-34M 1+1	23	Interconnection Link
	Llanera - Gen Natividad	OF-8M 1+1	7	
	Llanera - Gabaldon	DR-8M 1+1	40	
	San Jose City (NTP) - Lupao	OF-34M 1+1	14	Interconnection Link
	Lupao - Pantabangan	DR-8M 1+1	27	
	Lupao - Carranglan	DR-8M 1+1	20	

15.4.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.4-3.

Table 15.4-3 Estimated Cost (Region 3)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	3.8	1.6	5.4
Transmission System	2.2	1.0	3.3
Outside Plant	1.0	1.0	2.0
Supporting Facilities	0.1	0.8	0.9
Consultant & Engineering	1.0	0.2	1.2
Contingency	0.8	0.4	1.3
Total	8.9	5.0	13.9

15.4.5 Financial Evaluation

The IRR for this project is 3.06%. Considering IRR, the feasibility is low among the 11 project packages. The share of domestic toll calls was set at 30% because all toll calls are handled by toll operators.

A regional cross subsidy of 6,000 pesos per line per year (540 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.4-4 shows the financial projection.

Table 15.4 - 4 Financial Projection (Region 3)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines													
2. revenue													
2.1 local service													
2.2 domestic toll call													
2.3 international toll call													
2.4 other revenue													
2.5 doubtful account													
3. gross subsidy													
4. investment cost													
5. expense													
5.1 operating expense													
5.2 additional working capital													
5.3 franchise tax													
6. cash flow													
cash flow with subsidy													
6,000 pesos/line/year													
4.800	4,800	4,800	151,325	124,875	20,824	36,581	32,375	35,493	35,110	33,191	32,108	31,006	29,975
					13,799	28,205	30,401	32,436	32,809	31,690	30,644	29,579	28,586
					6,299	6,858	1,305	1,245	439	-324	-324	-324	-324
					727	1,518	1,669	1,812	1,863	1,826	1,788	1,751	1,713
					-59,548	14,020	22,247	24,917	26,987	27,660	27,496	27,351	27,135
					-49,363	35,695	46,532	51,812	55,187	55,860	55,696	55,551	55,335
TOTAL													
1. number of main lines	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
2. revenue	55,863	54,616	53,369	52,123	50,876	49,629	49,629	49,629	49,629	49,629	49,629	49,629	1,053,497
2.1 local service	20,868	20,868	20,868	20,868	20,868	20,868	20,868	20,868	20,868	20,868	20,868	20,868	395,335
2.2 domestic toll call	16,412	16,412	16,412	16,412	16,412	16,412	16,412	16,412	16,412	16,412	16,412	16,412	310,924
2.3 international toll call	18,764	17,513	16,262	15,011	13,760	12,510	12,510	12,510	12,510	12,510	12,510	12,510	350,660
2.4 other revenue	785	767	750	732	715	697	697	697	697	697	697	697	14,797
2.5 doubtful account	-966	-945	-923	-901	-880	-858	-858	-858	-858	-858	-858	-858	-18,219
3. gross subsidy	28,200	28,200	28,200	28,200	28,200	28,200	28,200	28,200	28,200	28,200	28,200	28,200	540,240
4. investment cost													348,750
5. expense	29,008	28,100	27,246	26,439	25,677	24,955	24,633	24,020	23,439	22,887	22,362	21,819	566,428
5.1 operating expense	27,657	26,786	25,969	25,200	24,475	23,791	23,144	22,531	21,950	21,398	20,873	20,350	521,920
5.2 additional working capital	-324	-324	-324	-324	-324	-324	0	0	0	0	0	0	12,903
5.3 franchise tax	1,676	1,638	1,601	1,564	1,526	1,489	1,489	1,489	1,489	1,489	1,489	1,489	31,605
6. cash flow	26,855	26,516	26,124	25,683	25,199	24,673	24,996	25,609	26,190	26,742	27,267	27,767	138,320
cash flow with subsidy	55,055	54,716	54,324	53,883	53,399	52,873	53,196	53,809	54,390	54,942	55,467	55,947	672,560

15.5 Project Region 4

Region 4 has a wide area, composed of middle Ruzon, Mindoro, Palawan, Romblon and so on. There are 221 municipalities in Region 4; 130 of them are already served or planned to be served as of 1993. NTP Tranche 1-1 is on-going project and expansion of NTP Tranche 1-1 is planned project. 25 municipalities including Palawan islands have been selected for this project.

15.5.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.5-1.

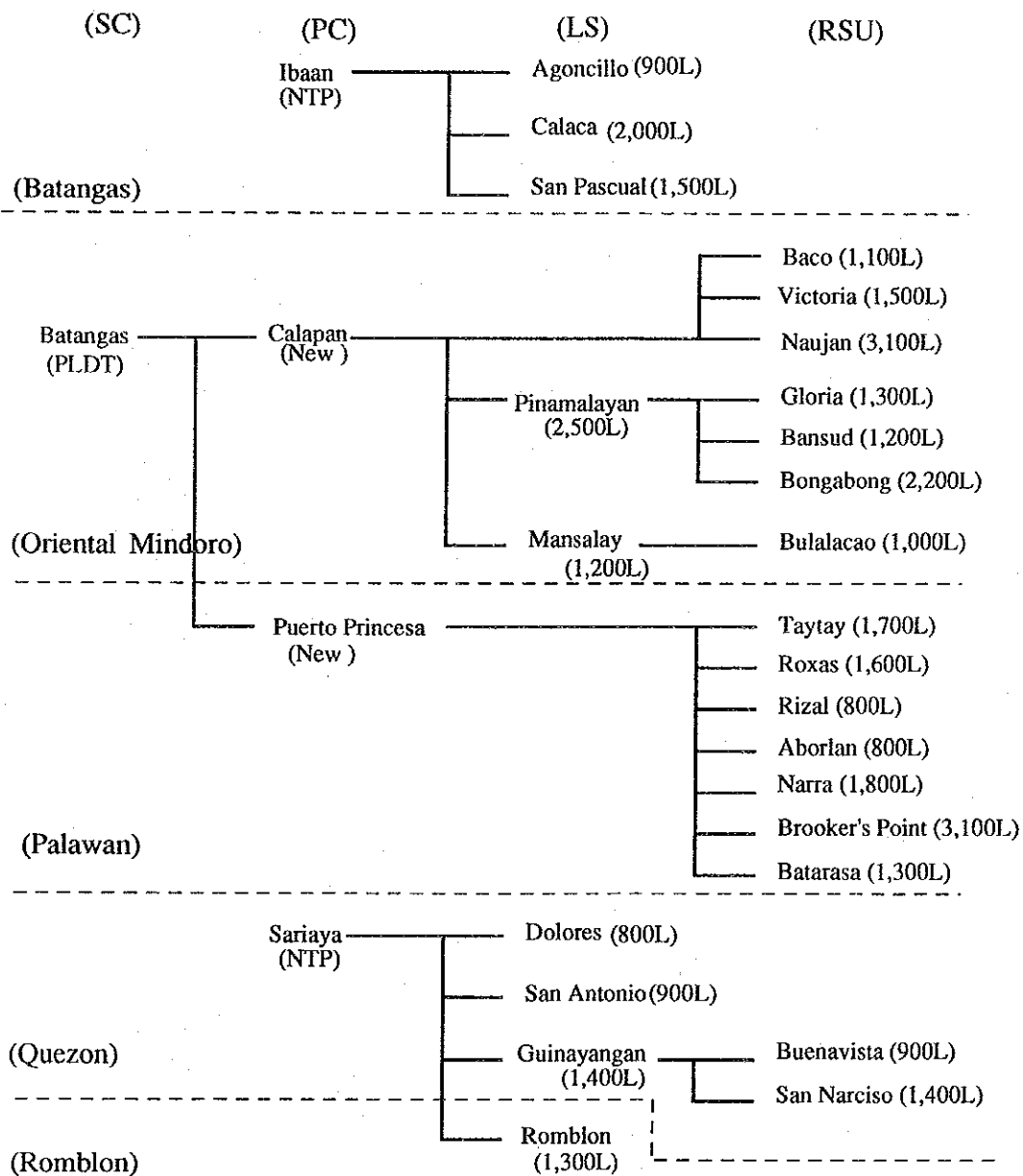
Table 15.5-1 Number of Lines to be Installed (Region 4)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Batangas	Agoncillo	900	1,600
	Calaca	2,000	3,400
	San Pascual	1,500	2,600
Oriental Mindoro	Baco	1,100	1,800
	Victoria	1,500	2,600
	Naujan	3,100	5,400
	Pinamalayan	2,500	4,400
	Gloria	1,300	2,300
	Bansud	1,200	2,000
	Bongabong	2,200	3,800
	Mansalay	1,200	2,100
	Bulalacao	1,000	1,600
Palawan	Taytay	1,700	2,900
	Roxas	1,600	2,800
	Rizal	800	1,300
	Aborlan	800	1,400
	Narra	1,800	3,100
	Brooke's Point	3,100	5,500
	Batarasa	1,300	2,200
Quezon	Dolores	800	1,400
	San Antonio	900	1,600
	Guinayangan	1,400	2,500
	Buenavista	900	1,500
	San Narciso	1,400	2,500
Romblon	Romblon	1,300	2,300
	Total	37,300	64,600

15.5.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.5-1. Primary Centers at Calapan and Puerto Princessa are to be installed and connected to Batangas Secondary Center of PLDT. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.5-1 Homing and Routing Plan (Region 4)



15.5.3 Transmission Plan

The transmission route plan is shown in Figure 15.5-2. The type and number of transmission systems for each section in this project are shown in Table 15.5-2.

Figure 15.5-2 Transmission Route Plan (Region 4) (1/2)

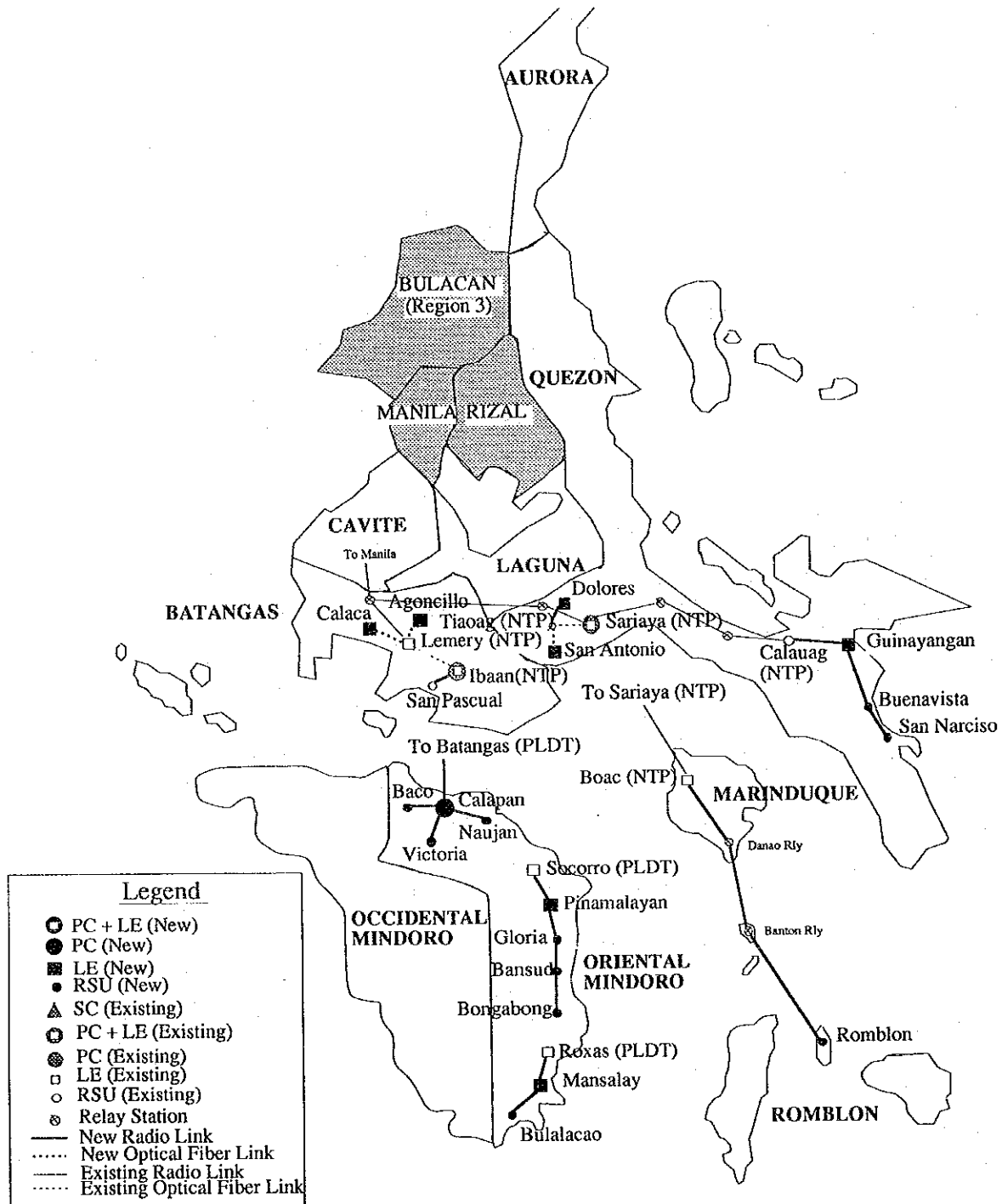


Figure 15.5-2 Transmission Route Plan (Region 4) (2/2)

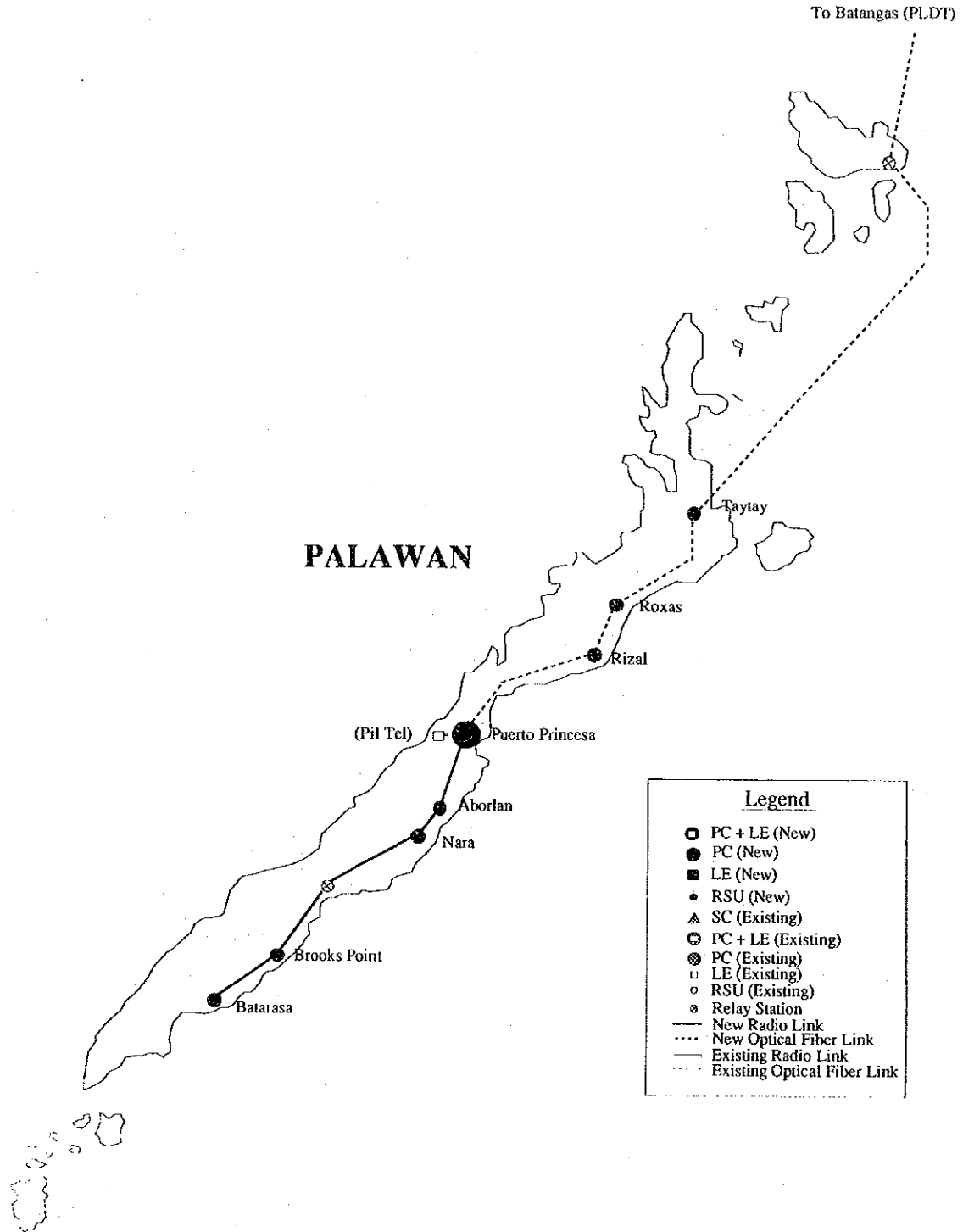


Table 15.5-2 Type and Number of Transmission Systems (Region 4)

Province	Section	System	Dis.(km)	Note
Batangas	Ibaan (NTP) - San Pascual	DR-8M 1+1	10	Interconnection Link
	Lemery (NTP) - Agoncillo	OF-8M 1+1	6	Interconnection Link
	Lemery (NTP) - Calaca	OF-8M 1+1	13	Interconnection Link
Quezon	Tiaoag (NTP) - San Antonio	OF-8M 1+1	7	Interconnection Link
	Tiaoag (NTP) - Dolores	DR-8M 1+1	10	Interconnection Link
	Calauag (NTP) - Guinayangan	DR-34M 1+1	17	Interconnection Link
	Guinayangan - Buenavista	DR-8M 1+1	18	
	Buenavista - San Narciso	DR-8M 1+1	21	
O.Mindoro	Calapan - Baco	DR-8M 1+1	13	
	Calapan - Naujan	DR-34M 1+1	15	
	Calapan - Victoria	DR-8M 1+1	25	
	Calapan - Batangas (PLDT)	DR-8M 1+1	40	Interconnection Link
	Socorro (PLDT) - Pinamalayan	DR-34M 1+1	8	Interconnection Link
	Pinamalayan - Gloria	DR-34M 1+1	8	
	Gloria - Bansud	DR-34M 1+1	11	
	Bansud - Bongabong	DR-8M 1+1	15	
	Roxas (PLDT) - Mansalay	DR-8M 1+1	12	Interconnection Link
	Mansalay - Bulalacao	DR-8M 1+1	24	
	Romblon	Romblon - Boac (NTP)	DR-8M 1+1	110
Palawan	Puerto Princesa - Rizal	OF-34M 1+1	120	
	Rizal - Roxas	OF-34M 1+1	18	
	Roxas - Taytay	OF-34M 1+1	90	
	P.Princesa - Batangas (PLDT)	OF-140M 1+1	600	Interconnection Link
	Puerto Princesa - Aborlan	DR-34M 1+1	40	
	Aborlan - Nara	DR-34M 1+1	10	
	Nara - Brook's Point	DR-34M 1+1	100	
	Brook's Point - Batarasa	DR-8M 1+1	25	
	P. Princesa (PC) - P.Princesa (Pil Tel)	OF-34M 1+1	5	Interconnection Link

15.5.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.5-3.

Table 15.5-3 Estimated Cost (Region 4)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	27.4	11.7	39.1
Transmission System	16.2	6.9	23.1
Outside Plant	23.7	7.1	30.8
Supporting Facilities	0.7	6.0	6.6
Consultant & Engineering	8.5	1.5	10.0
Contingency	7.6	3.3	10.9
Total	84.1	36.5	120.6

15.5.5 Financial Evaluation

The IRR for this project is 5.27%. The share of domestic toll calls was set at 50% because this project includes the regional network in the region. A regional cross subsidy of 5,000 pesos per line per year (3,416 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.5-4 shows the financial projection.

Table 15.5 - 4 Financial Projection (Region 4)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					25,372	28,944	32,516	36,088	36,088	36,088	36,088	36,088	36,088
2. revenue					210,508	443,452	493,626	541,906	560,551	550,977	541,403	531,829	522,254
2.1 local service					56,325	120,581	136,441	152,301	160,232	160,232	160,232	160,232	160,232
2.2 domestic toll call					73,831	158,059	178,849	199,638	210,034	210,034	210,034	210,034	210,034
2.3 international toll call					81,035	166,252	179,940	191,727	192,106	182,501	172,895	163,290	153,685
2.4 other revenue					2,957	6,228	6,933	7,611	7,873	7,739	7,604	7,470	7,335
2.5 doubtful account					-3,641	-7,669	-8,537	-9,372	-9,694	-9,529	-9,363	-9,197	-9,032
3. gross subsidy	5,000 pesos/line/year				63,430	135,790	153,650	171,510	180,440	180,440	180,440	180,440	180,440
4. investment cost	41,525	41,525	1,308,475	1,080,025	544,175								
5. expense					164,168	285,910	258,668	277,022	273,579	257,362	249,049	240,584	232,667
5.1 operating expense					103,121	212,041	230,813	248,212	251,914	243,322	235,297	227,118	219,489
5.2 additional working capital					54,732	60,565	13,045	12,553	4,848	-2,489	-2,489	-2,489	-2,489
5.3 franchise tax					6,315	13,304	14,809	16,257	16,817	16,529	16,242	15,955	15,668
6. cash flow	-41,525	-41,525	-1,308,475	-1,080,025	-497,836	157,542	234,959	264,884	286,973	293,615	292,353	291,245	289,587
cash flow with subsidy	-41,525	-41,525	-1,308,475	-1,080,025	-434,406	293,332	388,609	436,394	467,413	474,055	472,793	471,685	470,027
1. number of main lines	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL	
2. revenue	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088	36,088
2.1 local service	512,680	503,106	493,532	483,958	474,383	464,809	464,809	464,809	464,809	464,809	464,809	464,809	9,653,019
2.2 domestic toll call	160,232	160,232	160,232	160,232	160,232	160,232	160,232	160,232	160,232	160,232	160,232	160,232	3,029,356
2.3 international toll call	210,034	210,034	210,034	210,034	210,034	210,034	210,034	210,034	210,034	210,034	210,034	210,034	3,970,928
2.4 other revenue	144,080	134,474	124,869	115,264	105,658	96,053	96,053	96,053	96,053	96,053	96,053	96,053	2,684,094
2.5 doubtful account	7,201	7,066	6,932	6,797	6,663	6,528	6,528	6,528	6,528	6,528	6,528	6,528	135,581
3. gross subsidy	-8,866	-8,701	-8,535	-8,370	-8,204	-8,038	-8,038	-8,038	-8,038	-8,038	-8,038	-8,038	-166,939
4. investment cost	180,440	180,440	180,440	180,440	180,440	180,440	180,440	180,440	180,440	180,440	180,440	180,440	3,416,420
5. expense	225,247	218,275	211,712	205,520	199,668	194,127	191,648	186,943	182,481	178,243	174,214	174,214	4,407,087
5.1 operating expense	212,356	205,671	199,395	193,491	187,926	182,672	177,704	172,999	168,537	164,299	160,269	160,269	3,996,646
5.2 additional working capital	-2,489	-2,489	-2,489	-2,489	-2,489	-2,489	0	0	0	0	0	0	120,850
5.3 franchise tax	15,380	15,093	14,806	14,519	14,232	13,944	13,944	13,944	13,944	13,944	13,944	13,944	289,591
6. cash flow	287,433	284,831	281,820	278,437	274,715	270,682	273,161	277,866	282,328	286,566	290,596	290,596	2,230,207
cash flow with subsidy	467,873	465,271	462,260	458,877	455,155	451,122	453,601	458,306	462,768	467,006	471,036	471,036	5,641,627

15.6 Project Region 5

There are 115 municipalities in Region 5; Only 40 of them are served or planned to be served as of 1993. 28 municipalities have been selected for this project.

15.6.1 Number of lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.6-1.

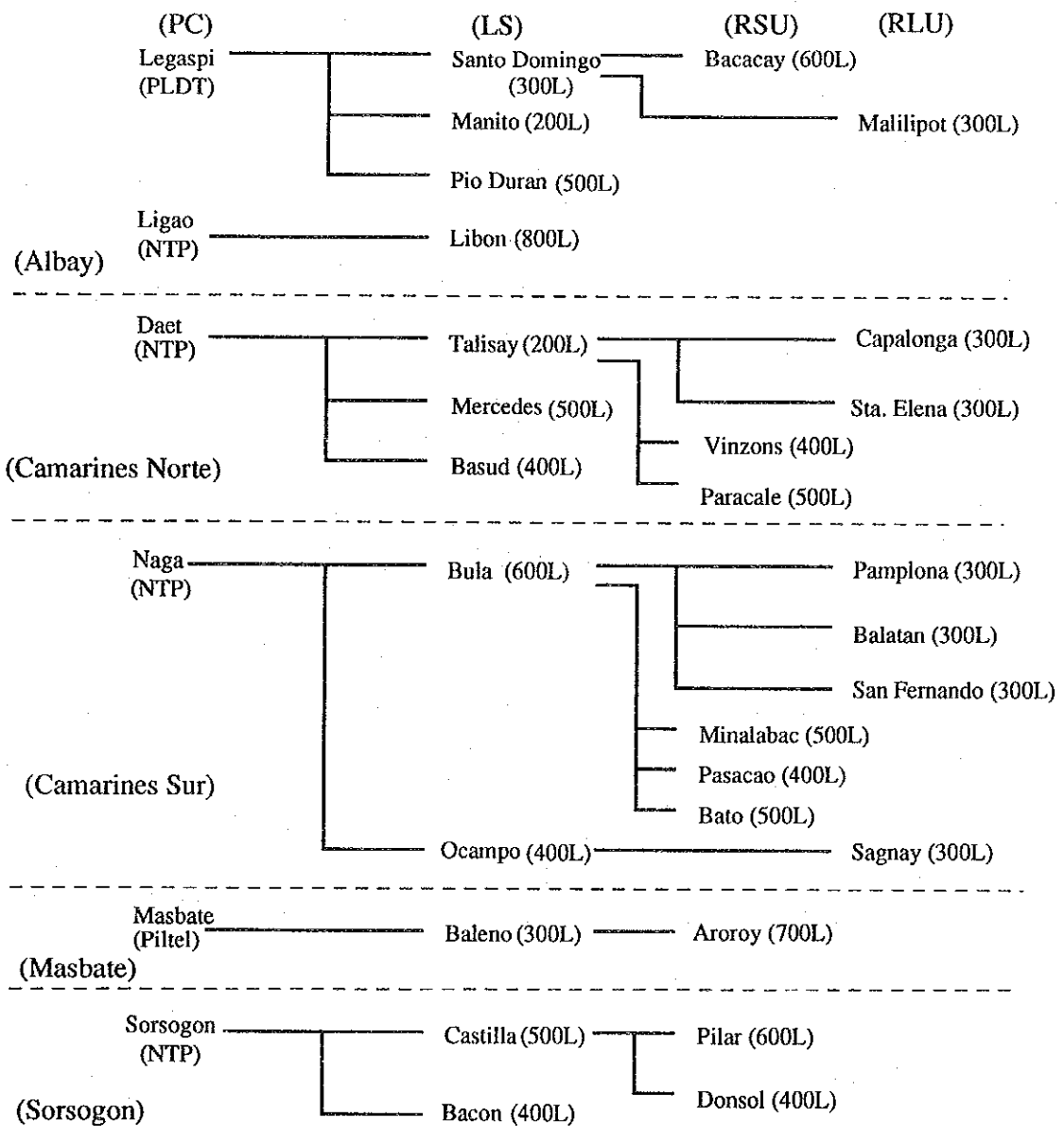
Table 15.6-1 Number of Lines to be Installed (Region 5)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Albay	Santo Domingo	300	500
	Bacacay	600	1,000
	Malilipot	300	500
	Manito	200	400
	Pio Duran	500	800
	Libon	800	1,200
Camarines Norte	Talisay	200	400
	Capalonga	300	500
	Sta. Elena	300	400
	Vinzons	400	700
	Paracale	500	800
	Marcedes	500	700
Camarines Sur	Basud	400	600
	Bula	600	1,000
	Pamplona	300	500
	Balatan	300	400
	San Fernando	300	400
	Minalabac	500	700
	Pasacao	400	700
	Bato	500	700
	Ocampo	400	600
Sagnay	300	500	
Masbate	Baleno	300	400
	Aroroy	700	1,100
Sorsogon	Castilla	500	700
	Pilar	600	900
	Donsol	400	700
	Bacon	400	700
	Total	11,800	18,500

15.6.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.6-1. The local exchanges will be connected to existing primary centers of PLDT or NTP. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.6-1 Homing and Routing Plan (Region 5)



15.6.3 Transmission Plan

The transmission route plan is shown in Figure 15.6-2. The type and number of transmission systems for each section in this project are shown in Table 15.6-2.

Figure 15.6-2 Transmission Route Plan (Region 5)

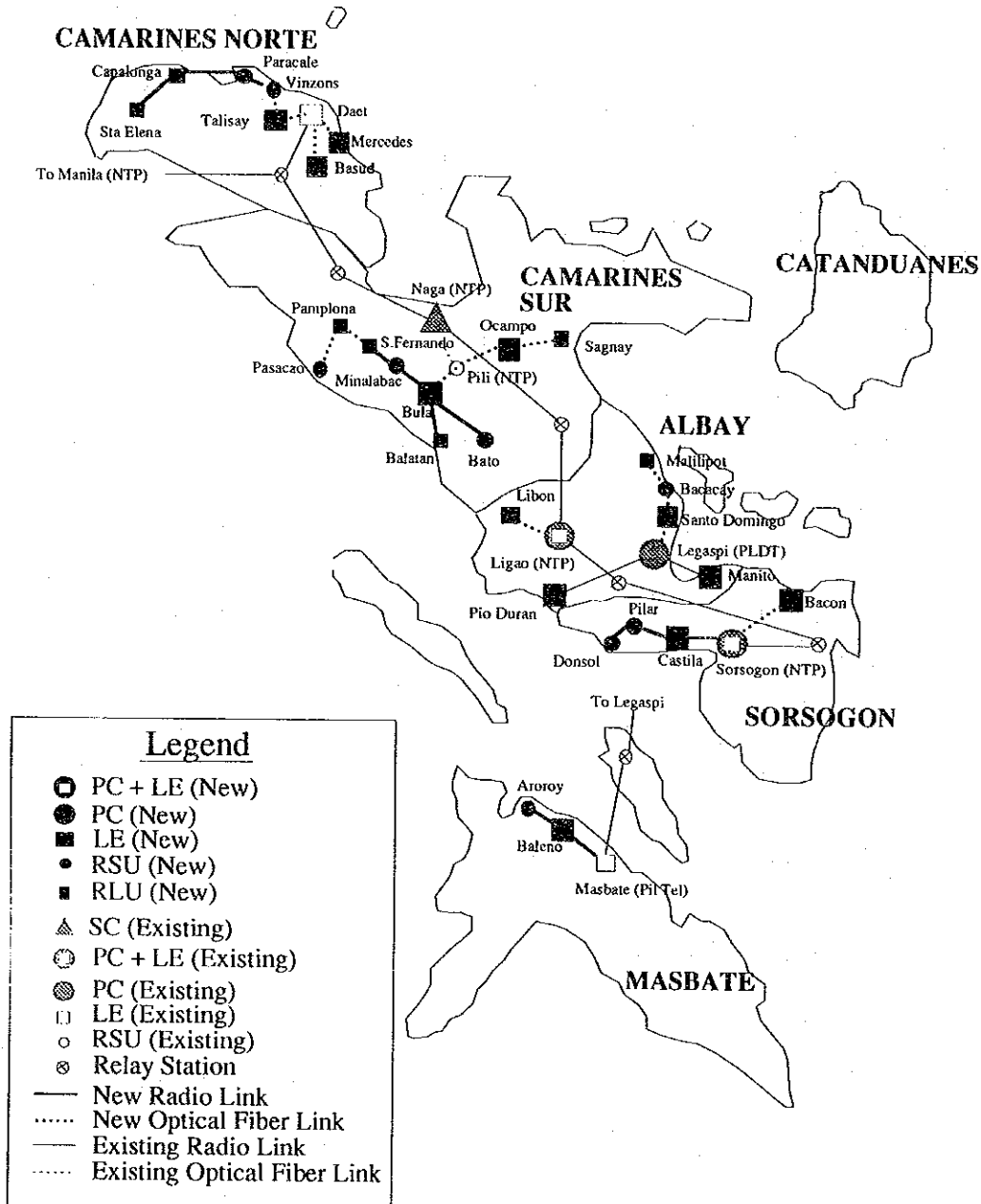


Table 15.6-2 Type and Number of Transmission Systems (Region 5)

Province	Section	System	Dis.(km)	Note
Camarines Norte	Daet (NTP) - Talisay	OF-34M 1+1	6	Interconnection Link
	Daet (NTP) - Mercedes	OF-8M 1+1	5	Interconnection Link
	Daet (NTP) - Basud	OF-8M 1+1	7	Interconnection Link
	Talisay - Vinzons	OF-34M 1+1	5	
	Vinzons - Paracale	DR-34M 1+1	18	
	Paracale - Copalonga	DR-34M 1+1	31	
	Copalonga - Sta Elena	DR-8M 1+1	22	
Camarines Sur	Pili (NTP) - Ocampo	OF-34M 1+1	12	Interconnection Link
	Ocampo - Sagnay	OF-8M 1+1	18	
	Pili (NTP) - Bula	OF-34M 1+1	10	Interconnection Link
	Bula - Bato	DR-8M 1+1	10	
	Bula - Minalabac	DR-34M 1+1	13	
	Bula - Balatan	DR-8M 1+1	15	
	Minalabac - S.Fernando	DR-34M 1+1	5	
	S.Fernando - Pamplona	OF-34M 1+1	7	
	Pamplona - Pasacao	OF-8M 1+1	7	
Albay	Legaspi (PLDT) - Santo Domingo	OF-34M 1+1	11	Interconnection Link
	Legaspi (PLDT) - Manito	DR-8M 1+1	13	Interconnection Link
	Legaspi (PLDT) - Pio Duran	DR-8M 1+1	34	Interconnection Link
	Santo Domingo - Bacacay	OF-34M 1+1	8	
	Bacacay - Malilipot	OF-8M 1+1	7	
	Ligao (NTP) - Libon	OF-8M 1+1	15	Interconnection Link
Sorsogon	Sorsogon (NTP) - Castila	DR-34M 1+1	15	Interconnection Link
	Castila - Pilar	DR-8M 1+1	23	
	Pilar - Donsol	DR-8M 1+1	7	
	Sorsogon (NTP) - Bacon	OF-8M 1+1	9	Interconnection Link
Masbate	Masbate (Pil Tel) -Baleno	DR-8M 1+1	20	Interconnection Link
	Baleno - Aroroy	DR-8M 1+1	10	

15.6.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.6-3.

Table 15.6-3 Estimated Cost (Region 5)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	9.8	4.2	14.0
Transmission System	7.6	3.2	10.9
Outside Plant	2.5	2.5	5.1
Supporting Facilities	0.2	2.2	2.4
Consultant & Engineering	2.8	0.5	3.2
Contingency	2.3	1.3	3.6
Total	25.2	13.9	39.1

15.6.5 Financial Evaluation

The IRR for this project is 1.08%. The share of domestic toll calls was set at 30% because all toll calls are handled by toll operators. A regional cross subsidy of 8,000 pesos per line per year (1,621 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.6-4 shows the financial projection.

Table 15.6 - 4 Financial Projection (Region 5)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497
2. revenue					8,966	9,476	9,987	10,497	10,497	10,497	10,497	10,497	10,497
2.1 local service					63,987	129,167	133,738	138,039	138,690	135,906	133,121	130,336	127,551
2.2 domestic toll call					19,904	40,941	43,208	45,475	46,607	46,607	46,607	46,607	46,607
2.3 international toll call					15,654	32,199	33,982	35,765	36,656	36,656	36,656	36,656	36,656
2.4 other revenue					28,636	56,447	56,983	57,247	55,878	53,084	50,290	47,497	44,703
2.5 doubtful account					899	1,814	1,878	1,939	1,948	1,909	1,870	1,831	1,792
					-1,107	-2,234	-2,313	-2,387	-2,399	-2,350	-2,302	-2,254	-2,206
3. cross subsidy	8,000 pesos/line/year				35,864	73,768	77,852	81,936	83,976	83,976	83,976	83,976	83,976
4. investment cost	13,475	13,475	424,725	350,575	176,625								
5. expense					54,997	92,816	78,294	79,371	77,605	74,129	71,711	69,248	66,946
5.1 operating expense					36,441	71,995	73,093	74,112	73,275	70,776	68,441	66,062	63,843
5.2 additional working capital					16,657	16,947	1,189	1,118	169	-724	-724	-724	-724
5.3 franchise tax					1,920	3,875	4,012	4,141	4,161	4,077	3,994	3,910	3,827
6. cash flow	-13,475	-13,475	-424,725	-350,575	-167,636	36,350	55,444	58,667	61,085	61,777	61,410	61,088	60,605
cash flow with subsidy	-13,475	-13,475	-424,725	-350,575	-131,772	110,118	133,296	140,603	145,061	145,753	145,386	145,064	144,581
2007													
1. number of main lines	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497	10,497
2. revenue	124,766	121,981	119,196	116,412	113,627	110,842	110,842	110,842	110,842	110,842	110,842	110,842	2,391,567
2.1 local service	46,607	46,607	46,607	46,607	46,607	46,607	46,607	46,607	46,607	46,607	46,607	46,607	895,238
2.2 domestic toll call	36,656	36,656	36,656	36,656	36,656	36,656	36,656	36,656	36,656	36,656	36,656	36,656	704,095
2.3 international toll call	41,909	39,115	36,321	33,527	30,733	27,939	27,939	27,939	27,939	27,939	27,939	27,939	800,003
2.4 other revenue	1,752	1,713	1,674	1,635	1,596	1,557	1,557	1,557	1,557	1,557	1,557	1,557	33,591
2.5 doubtful account	-2,158	-2,110	-2,061	-2,013	-1,965	-1,917	-1,917	-1,917	-1,917	-1,917	-1,917	-1,917	-41,360
3. cross subsidy	83,976	83,976	83,976	83,976	83,976	83,976	83,976	83,976	83,976	83,976	83,976	83,976	1,621,036
4. investment cost													978,875
5. expense	64,787	62,760	60,850	59,049	57,347	55,735	55,014	53,646	52,348	51,115	49,943	48,713	1,287,713
5.1 operating expense	61,768	59,824	57,999	56,281	54,662	53,134	51,689	50,321	49,023	47,790	46,618	45,486	1,187,148
5.2 additional working capital	-724	-724	-724	-724	-724	-724	0	0	0	0	0	0	28,819
5.3 franchise tax	3,743	3,659	3,576	3,492	3,409	3,325	3,325	3,325	3,325	3,325	3,325	3,325	71,747
6. cash flow	59,979	59,222	58,346	57,362	56,280	55,106	55,827	57,196	58,494	59,726	60,899	62,072	124,979
cash flow with subsidy	143,955	143,198	142,322	141,338	140,256	139,082	139,803	141,172	142,470	143,702	144,875	146,048	1,738,015

15.7 Project Region 6

Region 6 project is the expansion of NTP Tranche 1-2 in Region 6. It includes the expansion of 8 existing local exchange sites and 17 new sites. There are 131 municipalities in Region 6; 63 of them are already served or planned to be served as of 1993.

15.7.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.7-1.

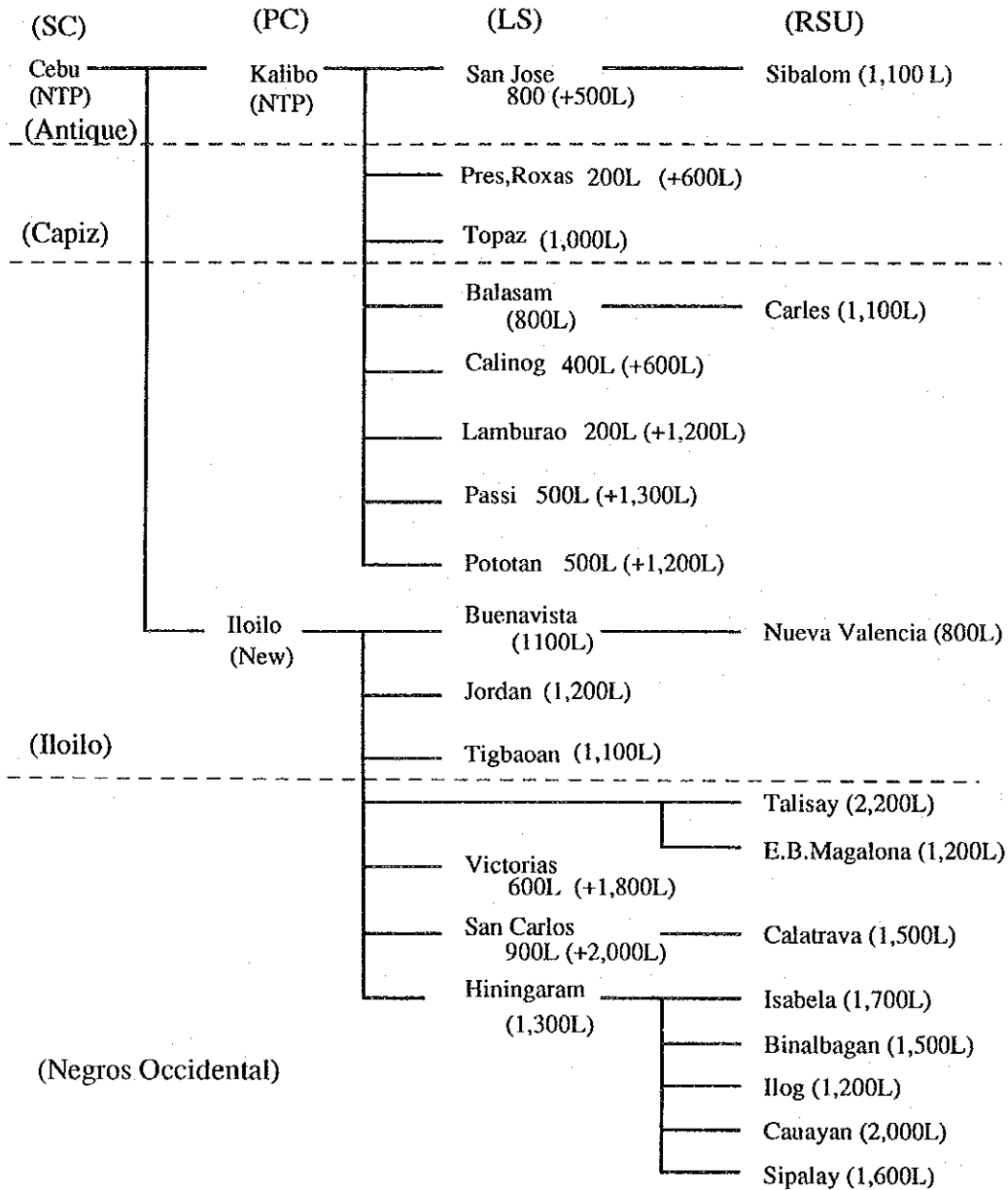
Table 15.7-1 Number of Lines to be Installed (Region 6)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Antique	San Jose	500	900
	Sibalom	1,100	1,800
Capiz	Pres, Roxas	600	1,000
	Topaz	1,000	1,700
Iloilo	Balagam	800	1,300
	Carles	1,100	1,800
	Calinog	600	1,100
	Lamburag	1,200	2,000
	Passi	1,300	2,200
	Pototan	1,200	2,000
	Buenavista	1,100	1,700
	Jordan	1,200	1,900
	Nueva Valencia	800	1,300
Tigbaoan	1,100	1,800	
Negros Occidental	Talisay	2,200	3,800
	E.B.Magalona	1,200	2,000
	Victorias	1,800	3,000
	San Carlos	2,000	3,600
	Calatrava	1,500	2,500
	Hinigaram	1,300	2,200
	Isabela	1,700	2,800
	Binalbagan	1,500	2,600
	Ilog	1,200	1,900
	Cauayan	2,000	3,300
	Sipalay	1,600	2,600
	Total	31,600	52,800

15.7.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.7-1. New primary center at Iloilo is planned to install under Cebu secondary center of NTP. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.7-1 Homing and Routing Plan (Region 6)



15.7.3 Transmission Plan

The transmission route plan is shown in Figure 15.7-2. The type and number of transmission systems for each section in this project are shown in Table 15.7-2.

Figure 15.7-2 Transmission Route Plan (Region 6)

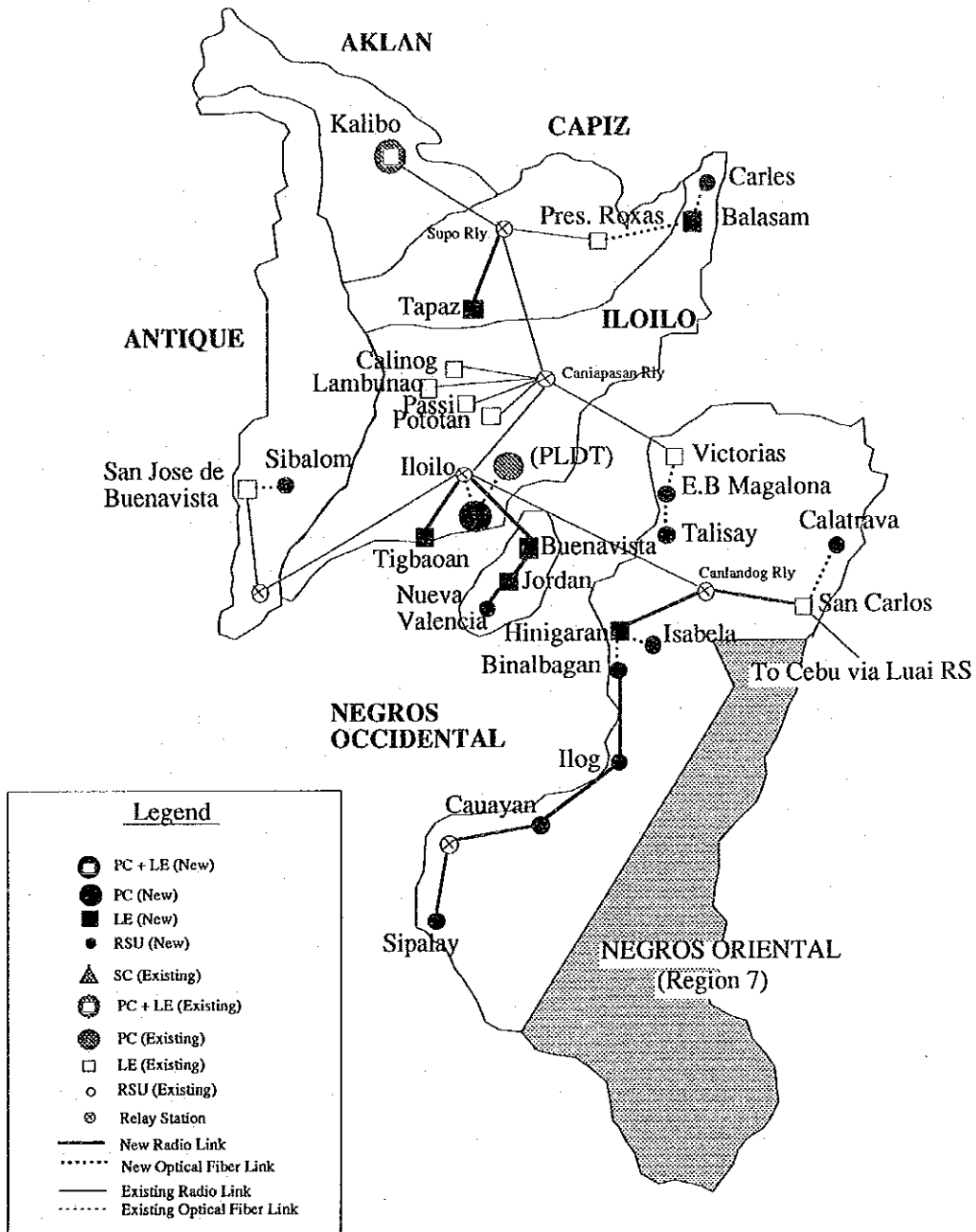


Table 15.7-2 Type and Number of Transmission Systems (Region 6)

Province	Section	System	Dis.(km)	Note
Capiz	Pres.Roxas - Balasam (Iloilo)	OF-8M 1+1	20	
	Balasam - Carles (Iloilo)	OF-8M 1+1	13	
	Tapaz - Supo Rly	DR-8M 1+1	xx	
Antique	Sibalom - S.J.Buenavista	OF-8M 1+1	7	
Iloilo	Iloilo (PC) - Iloilo (PLDT)	OF-140M 1+1	5	Interconnection Link
	Iloilo (PC) - Iloilo Relay	OF-8M 1+1	5	
	Buenavista - Iloilo Relay	DR-34M 1+1	15	
	Buenavista - Jordan	DR-34M 1+1	5	
	Jordan - Nueva Valencia	DR-8M 1+1	15	
Negros Occidental	Tigbaoan - Iloilo Rly	DR-8M 1+1	xx	
	Hinigaran - Isabela	DR-8M 1+1	15	
	Hinigaran - Binalbagan	OF-34M 1+1	9	
	Hinigaran - Canlandog Rly	DR-34M 1+1	xx	
	Binalbagan - Ilog	DR-34M 1+1	22	
	Ilog - Cauayan	DR-34M 1+1	17	
	Cauayan - Sipalay	DR-8M 1+1	49	
	Victorias - E.B Magalona	OF-34M 1+1	8	
	E.B Magalona - Talisay	OF-34M 1+1	7	
	San Carlos - Canlandog Rly	DR-34M 1+1	xx	
San Carlos - Calatrava	OF-8M 1+1	11		

15.7.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.7-3.

Table 15.7-3 Estimated Cost (Region 6)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	26.6	9.7	32.3
Transmission System	10.0	4.3	14.3
Outside Plant	5.9	5.9	11.7
Supporting Facilities	0.5	5.0	5.5
Consultant & Engineering	5.4	1.0	6.4
Contingency	4.4	2.6	7.0
Total	48.9	28.3	77.2

15.7.5 Financial Evaluation

The IRR for this project is 8.34%. Considering IRR, the feasibility is medium among the 11 project packages. The share of domestic toll calls was set at 50% because this project includes the regional network in the region.

A regional cross subsidy of 2,000 pesos per line per year (1,152 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.7-4 shows the financial projection.

Table 15.7 - 4 Financial Projection (Region 6)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					22,521	25,108	27,695	30,282	30,282	30,282	30,282	30,282	30,282
2. revenue					186,858	388,864	424,095	457,955	470,357	482,323	454,290	446,256	438,222
2.1 local service					49,997	105,737	117,223	128,708	134,451	134,451	134,451	134,451	134,451
2.2 domestic toll call					65,537	138,602	153,656	168,711	176,239	176,239	176,239	176,239	176,239
2.3 international toll call					71,931	145,787	154,594	162,024	161,195	153,135	145,075	137,015	128,956
2.4 other revenue					2,625	5,462	5,957	6,432	6,606	6,494	6,381	6,268	6,155
2.5 doubtful account					-3,232	-6,725	-7,334	-7,920	-8,134	-7,995	-7,856	-7,718	-7,579
3. cross subsidy	2,000 pesos/line/year				22,521	47,629	52,803	57,977	60,564	60,564	60,564	60,564	60,564
4. investment cost	26,600	26,600	837,775	691,500	348,425								
5. expense					145,722	250,123	220,185	232,305	228,720	215,956	208,981	201,877	195,234
5.1 operating expense					91,534	185,936	198,302	209,763	211,385	204,175	197,441	190,578	184,176
5.2 additional working capital					48,583	52,521	9,160	8,803	3,224	-2,089	-2,089	-2,089	-2,089
5.3 franchise tax					5,606	11,666	12,723	13,739	14,111	13,870	13,629	13,388	13,147
6. cash flow	-26,600	-26,600	-837,775	-691,500	-307,289	138,741	203,910	225,650	241,637	246,367	245,309	244,379	242,988
cash flow with subsidy	-26,600	-26,600	-837,775	-691,500	-284,768	186,370	256,713	283,627	302,201	306,931	305,873	304,943	303,552

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
1. number of main lines	30,282	30,282	30,282	30,282	30,282	30,282	30,282	30,282	30,282	30,282	30,282	30,282
2. revenue	430,189	422,155	414,121	406,088	398,054	390,020	390,020	390,020	390,020	390,020	390,020	8,139,950
2.1 local service	134,451	134,451	134,451	134,451	134,451	134,451	134,451	134,451	134,451	134,451	134,451	2,552,883
2.2 domestic toll call	176,239	176,239	176,239	176,239	176,239	176,239	176,239	176,239	176,239	176,239	176,239	3,346,330
2.3 international toll call	120,896	112,836	104,777	96,717	88,657	80,597	80,597	80,597	80,597	80,597	80,597	2,267,180
2.4 other revenue	6,042	5,929	5,817	5,704	5,591	5,478	5,478	5,478	5,478	5,478	5,478	114,330
2.5 doubtful account	-7,440	-7,301	-7,162	-7,023	-6,884	-6,745	-6,745	-6,745	-6,745	-6,745	-6,745	-140,772
3. cross subsidy	60,564	60,564	60,564	60,564	60,564	60,564	60,564	60,564	60,564	60,564	60,564	1,151,954
4. investment cost												1,930,900
5. expense	189,008	183,158	177,651	172,455	167,544	162,895	160,815	158,867	153,123	149,567	146,185	3,718,371
5.1 operating expense	178,191	172,582	167,316	162,361	157,691	153,283	149,114	145,166	141,422	137,866	134,484	3,372,767
5.2 additional working capital	-2,089	-2,089	-2,089	-2,089	-2,089	-2,089	0	0	0	0	0	101,405
5.3 franchise tax	12,906	12,665	12,424	12,183	11,942	11,701	11,701	11,701	11,701	11,701	11,701	244,199
6. cash flow	241,181	238,997	236,471	233,633	230,510	227,126	229,206	233,154	236,898	240,454	243,835	2,490,679
cash flow with subsidy	301,745	299,561	297,035	294,197	291,074	287,690	289,770	293,718	297,462	301,018	304,399	3,640,633

15.8 Project Region 7

Region 7 project is the expansion of NTP Tranche 1-2 in Region 7. It includes expansion of 7 existing local exchange sites and 23 new sites. There are 132 municipalities in Region 7; 27 of them are served or planned to be served. NTP Tranche 1-2 is on-going project as of 1993.

15.8.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.8-1.

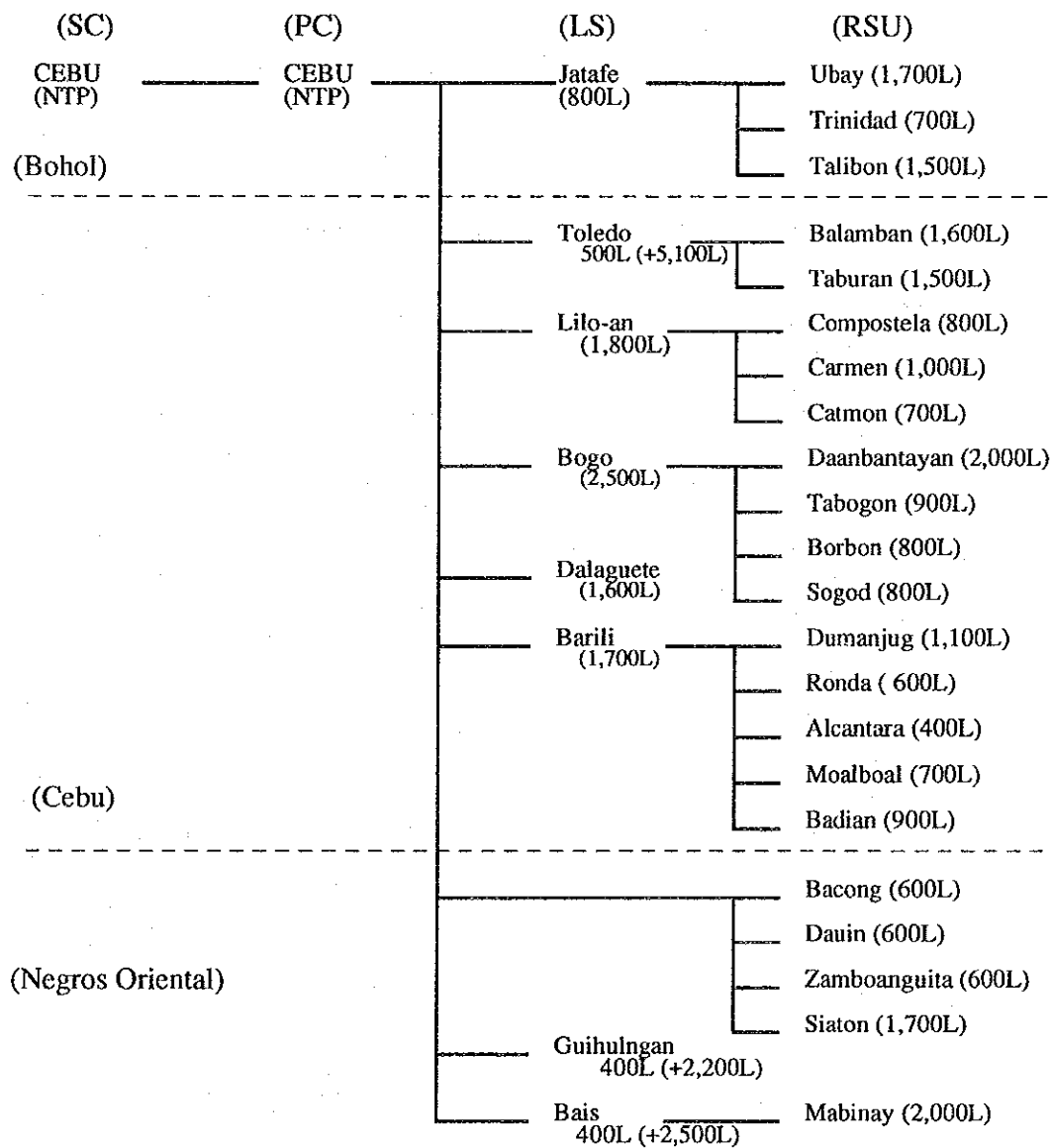
Table 15.8-1 Number of Lines to be Installed (Region 7)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Bohol	Jatafe	800	1,300
	Ubay	1,700	2,900
	Trinidad	700	1,200
Cebu	Talibon	1,500	2,500
	Toledo	5,100	9,300
	Balamban	1,600	2,800
	Taburan	1,500	2,600
	Lilo-an	1,800	3,200
	Compostela	800	1,400
	Carmen	1,000	1,800
	Catmon	700	1,200
	Bogo	2,500	4,400
	Daanbantayan	2,000	3,500
	Tabogon	900	1,500
	Borbon	800	1,400
	Sogod	800	1,400
	Dalaguete	1,600	2,800
	Barili	1,700	2,900
	Dumanjug	1,100	1,900
	Ronda	600	900
Alcantara	400	600	
Moalboal	700	1,200	
Badian	900	1,600	
Negros Oriental	Bacong	600	1,000
	Dauin	600	1,100
	Zamboanguita	600	1,100
	Siaton	1,700	3,000
	Guihulngan	2,200	3,900
	Bais	2,500	4,600
	Mabinay	2,000	3,600
	Total	41,400	72,600

15.8.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.8-1. The toll homing and routing plan depends on the network plan of NTP. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.8-1 Homing and Routing Plan (Region 7)



15.8.3 Transmission Plan

The transmission route plan is shown in Figure 15.8-2. The type and number of transmission systems for each section in this project are shown in Table 15.8-2.

Figure 15.8-2 Transmission Route Plan (Region 7)

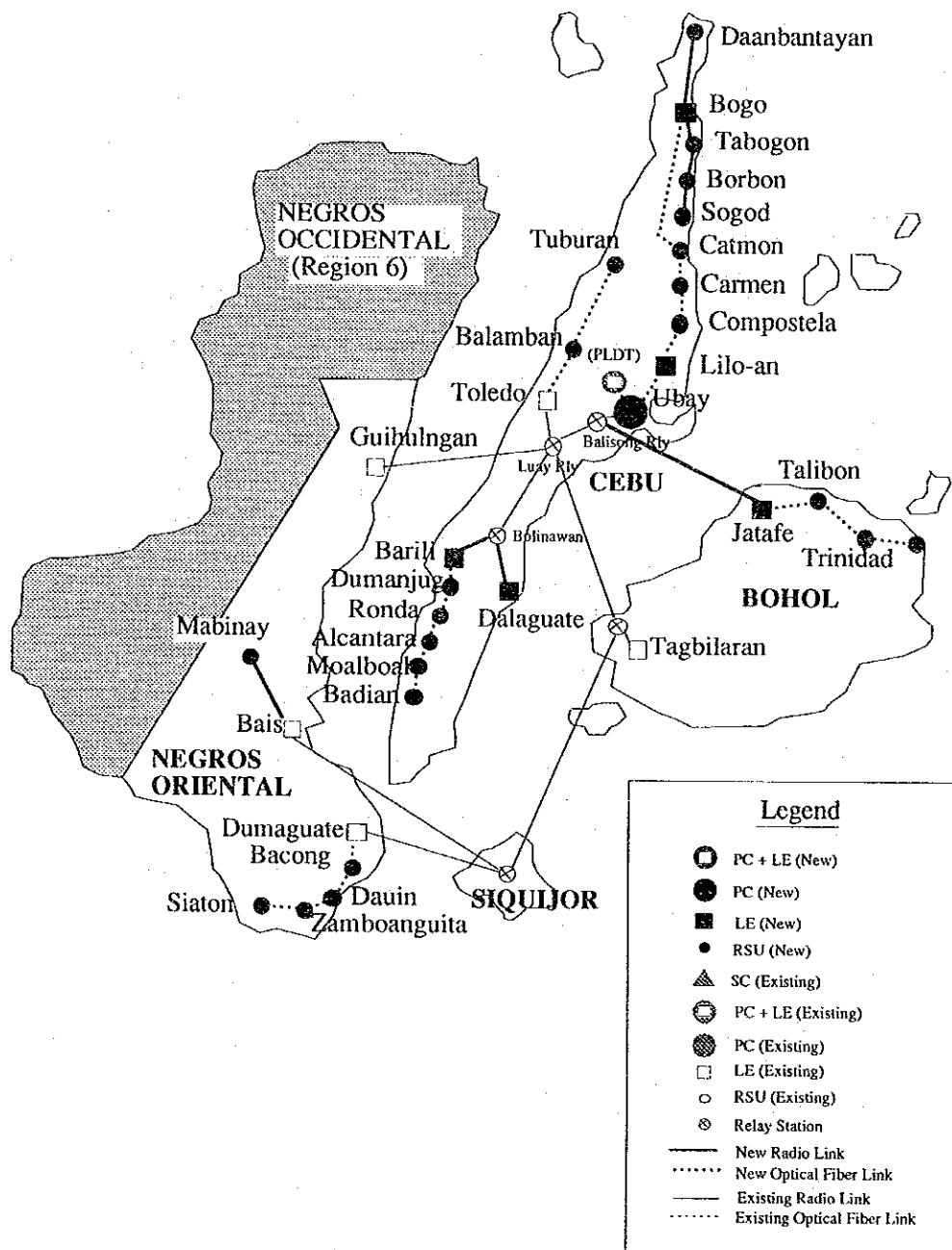


Table 15.8-2 Type and Number of Transmission Systems (Region 7)

Province	Section	System	Dis.(km)	Note
Cebu	Cebu (PC) - Cebu(PLDT)	OF-140M 1+1	5	Interconnection Link
	Cebu (PC) - Lilo-an	OF-34M 2+1	18	
	Lilo-an - Compostela	OF-34M 1+1	5	
	Compostera - Carmen	OF-34M 1+1	14	
	Carmen - Catmon	OF-34M 1+1	18	
	Catmon - Bogo	OF-34M 1+1	23	
	Sogod - Borbon	DR-8M 1+1	9	
	Borbon - Tabogon	DR-8M 1+1	12	
	Tabogon - Bogo	DR-8M 1+1	12	
	Babo - Daanbantayan	DR-8M 1+1	23	
	Dalaguete - Bolinawan Rly	DR-34M 1+1	xx	
	Barili - Bolinawan Rly	DR-34M 1+1	35	
	Barili - Dumanjug	OF-34M 1+1	12	
	Dumanjug - Ronda	OF-34M 1+1	7	
	Ronda -Alcantara	OF-34M 1+1	4	
	Alcantara - Moalboal	OF-34M 1+1	3	
	Moalboal - Badian	OF-34M 1+1	8	
	Toledo - Balamban	OF-34M 1+1	16	
	Balamban - Tuburan	OF-8M 1+1	29	
	Negros Oriental	Dumaguete - Bacong	OF-34M 1+1	
Bacong - Dauin		OF-34M 1+1	7	
Dauin - Zamboanguata		OF-34M 1+1	9	
Zamboanguata - Siaton		OF-34M 1+1	11	
Mabinay - Bais		DR-8M 1+1	25	
Bohol	Jatafe - Balisong Rly	DR-34M 1+1	xx	
	Jatafe - Talibon	OF-34M 1+1	17	
	Talibon - Trinidad	OF-34M 1+1	5	
	Trinidad - Ubay	OF-8M 1+1	15	

15.8.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.8-3.

Table 15.8-3 Estimated Cost (Region 7)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	28.7	12.3	41.0
Transmission System	12.7	5.4	18.1
Outside Plant	7.4	7.4	14.8
Supporting Facilities	0.7	6.3	7.0
Consultant & Engineering	6.9	1.2	8.1
Contingency	5.6	3.3	8.9
Total	62.0	35.9	97.9

15.8.5 Financial Evaluation

The IRR for this project is 8.74%. The share of domestic toll calls was set at 50% because this project includes the regional network in the region. A regional cross subsidy of 2,000 pesos per line per year (1,517 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.8-4 shows the financial projection.

Table 15.8 - 4 Financial Projection (Region 7)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					27,571	31,761	35,950	40,140	40,140	40,140	40,140	40,140	40,140
2. revenue					228,758	484,410	543,835	601,036	623,484	612,835	602,186	591,557	580,888
2.1 local service					61,208	131,718	150,319	168,920	178,222	178,222	178,222	178,222	178,222
2.2 domestic toll call					80,232	172,658	197,040	221,422	233,615	233,615	233,615	233,615	233,615
2.3 international toll call					88,061	181,608	198,243	212,647	213,673	202,990	192,306	181,622	170,939
2.4 other revenue					3,213	6,804	7,638	8,442	8,757	8,608	8,458	8,308	8,159
2.5 doubtful account					-3,956	-8,377	-9,405	-10,394	-10,783	-10,598	-10,414	-10,230	-10,046
3. cross subsidy	2,000 pesos/line/year				27,571	59,332	67,711	76,090	80,280	80,280	80,280	80,280	80,280
4. investment cost	33,700	33,700	1,061,550	876,200	441,475								
5. expense					178,398	312,624	286,055	308,200	304,740	286,259	277,013	267,596	258,791
5.1 operating expense					112,059	231,622	254,289	275,296	280,199	270,642	261,716	252,619	244,133
5.2 additional working capital					59,477	66,469	15,450	14,872	5,836	-2,769	-2,769	-2,769	-2,769
5.3 franchise tax					6,863	14,532	16,315	18,031	18,705	18,385	18,066	17,746	17,427
6. cash flow	-33,700	-33,700	-1,061,550	-876,200	-991,115	171,786	257,780	292,836	318,744	326,576	325,173	323,941	322,097
cash flow with subsidy	-33,700	-33,700	-1,061,550	-876,200	-563,544	231,118	325,491	368,926	399,024	406,856	405,453	404,221	402,377
TOTAL													
1. number of main lines	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140	40,140
2. revenue	570,239	559,590	548,941	538,292	527,643	516,994	516,994	516,994	516,994	516,994	516,994	516,994	10,715,634
2.1 local service	178,222	178,222	178,222	178,222	178,222	178,222	178,222	178,222	178,222	178,222	178,222	178,222	3,363,710
2.2 domestic toll call	233,615	233,615	233,615	233,615	233,615	233,615	233,615	233,615	233,615	233,615	233,615	233,615	4,409,189
2.3 international toll call	160,255	149,571	138,888	128,204	117,520	106,837	106,837	106,837	106,837	106,837	106,837	106,837	2,977,546
2.4 other revenue	8,009	7,860	7,710	7,561	7,411	7,261	7,261	7,261	7,261	7,261	7,261	7,261	150,506
2.5 doubtful account	-9,862	-9,678	-9,493	-9,309	-9,125	-8,941	-8,941	-8,941	-8,941	-8,941	-8,941	-8,941	-185,316
3. cross subsidy	80,280	80,280	80,280	80,280	80,280	80,280	80,280	80,280	80,280	80,280	80,280	80,280	1,517,184
4. investment cost													2,446,625
5. expense	250,538	242,783	235,483	228,596	222,087	215,924	213,167	207,934	202,970	198,257	193,774	189,188	4,891,188
5.1 operating expense	236,199	228,764	221,784	215,216	209,026	203,183	197,657	192,424	187,460	182,747	178,264	173,730	4,435,301
5.2 additional working capital	-2,769	-2,769	-2,769	-2,769	-2,769	-2,769	0	0	0	0	0	0	134,418
5.3 franchise tax	17,107	16,788	16,468	16,149	15,829	15,510	15,510	15,510	15,510	15,510	15,510	15,510	321,469
6. cash flow	319,701	316,806	313,458	309,696	305,556	301,070	303,827	309,060	314,023	318,737	323,219	327,782	3,377,821
cash flow with subsidy	399,981	397,086	393,738	389,976	385,836	381,550	384,107	389,340	394,303	399,017	403,499	408,005	4,893,005

15.9 Project Region 8

Region 8 project is the expansion of NTP Tranche 1-2 in Region 8. It includes expansion of 9 NTP Tranche 1-2 local exchange sites and 10 new sites. There are 143 municipalities: 21 of them are served or planned to be served as of 1993. NTP Tranche 1-2 is on-going project.

15.9.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.9-1.

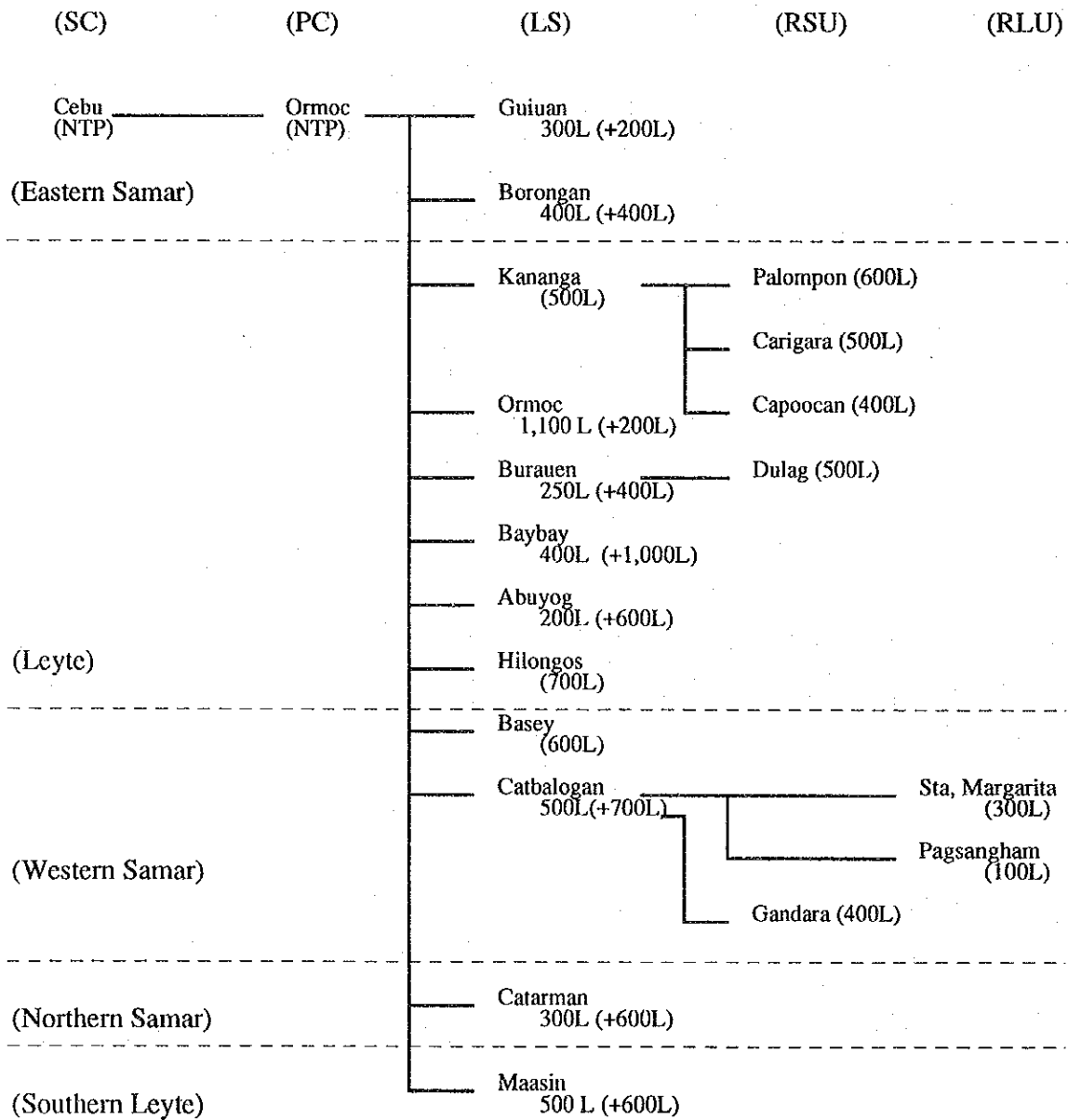
Table 15.9-1 Number of Lines to be Installed (Region 8)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Eastern Samar	Guiuan	200	300
	Borongan	400	800
Leyte	Kananga	500	800
	Palompon	600	1,000
	Carigara	500	900
	Capoocan	400	500
	Ormoc	200	600
	Burauen	400	600
	Dulag	500	700
	Baybay	1,000	1,600
	Abuyog	600	1,000
	Hilongos	700	1,100
Western Samar	Basey	600	900
	Catbalogan	700	1,100
	Sta. Margarita	300	400
	Pagsangham	100	200
	Gandara	400	500
Northern Samar	Catarman	600	900
Southern Leyte	Maasin	600	900
	Total	9,300	14,800

15.9.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.9-1. The toll homing and routing plan depends on the network plan of NTP. NTP's network homing plan is shown in Figure 5.1-2 in Chapter 5.

Figure 15.9-1 Homing and Routing Plan (Region 8)



15.9.3 Transmission Plan

The transmission route plan is shown in Figure 15.9-2. The type and number of transmission systems for each section in this project are shown in Table 15.9-2.

Figure 15.9-2 Transmission Route Plan (Region 8)

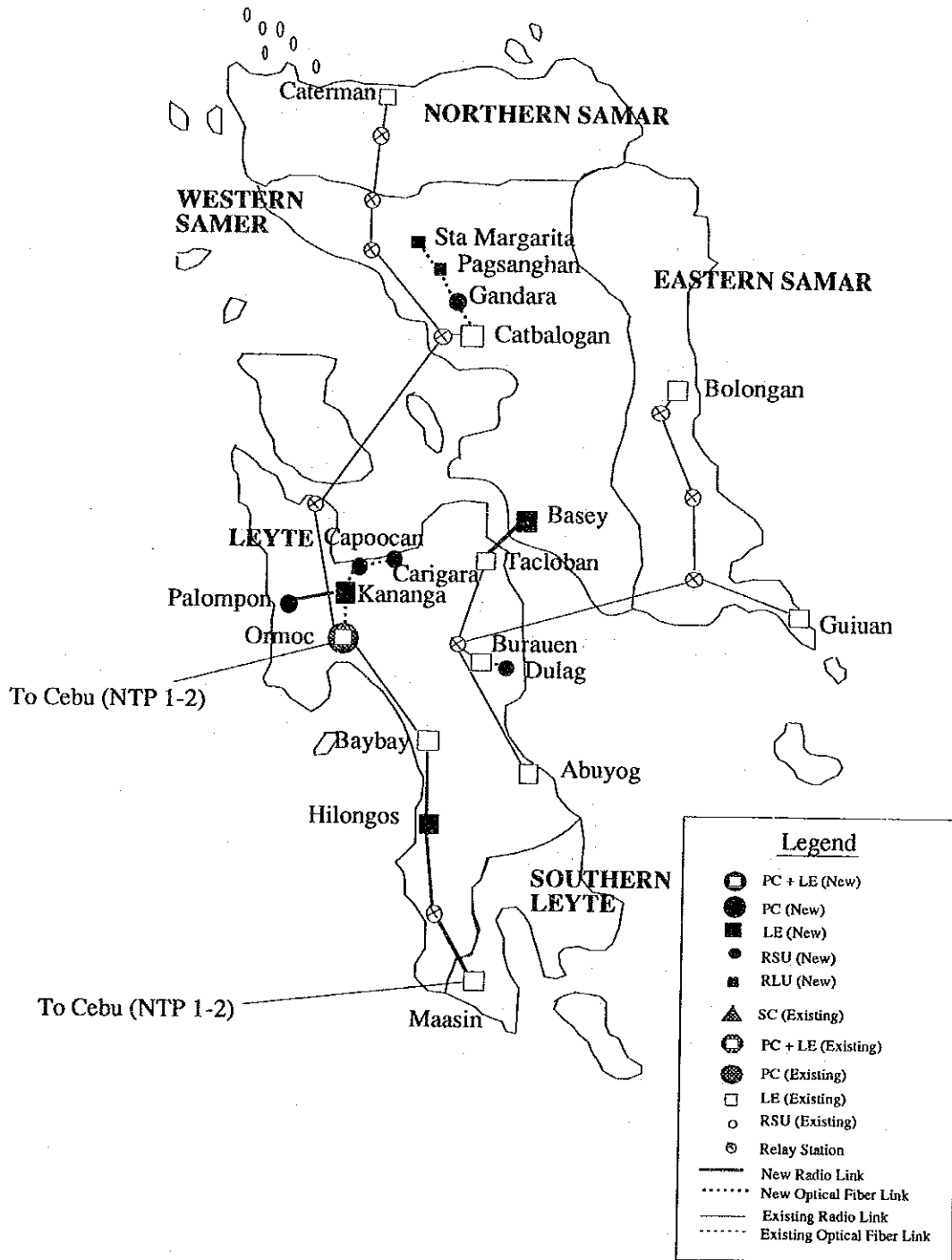


Table 15.9-2 Type and Number of Transmission Systems (Region 8)

Province	Section	System	Dis.(km)	Note
Western Samar	Catbalogan - Gandara	OF-34M 1+1	30	
	Gandara - Pagsanghan	OF-34M 1+1	10	
	Pagsanghan - Sta Margarita	OF-34M 1+1	10	
	Basey - Tacloban	DR-34M 1+1	10	
Leyte	Ormoc - Kananga	OF-34M 1+1	21	
	Kananga - Capoocan	OF-34M 1+1	23	
	Kananga - Palompon	DR-8M 1+1	24	
	Capoocan - Carigara	OF-34M 1+1	5	
	Dulag - Burauen	OF-34M 1+1	15	
	Hilongos - Baybay	DR-34M 1+1	40	
Southern Leyte	Maasin - Hilongos	DR-34M 1+1	40	

15.9.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.9-3.

Table 15.9-3 Estimated Cost (Region 8)

	(Unit: US \$ Million)		
	Foreign	Local	Total
Switching System	6.9	2.9	9.8
Transmission System	4.3	1.9	6.2
Outside Plant	1.8	1.8	3.6
Supporting Facilities	0.2	1.5	1.7
Consultant & Engineering	1.8	0.3	2.1
Contingency	1.5	0.8	2.3
Total	16.5	9.2	25.7

15.9.5 Financial Evaluation

The IRR for this project is 5.86%. Considering IRR, the feasibility is medium among the 11 project packages. The share of domestic toll calls was set at 50% because this project includes the regional network in the region.

A regional cross subsidy of 5,000 pesos per line per year (773 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.9-4 shows the financial projection.

Table 15.9 - 4 Financial Projection (Region 8)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					5,831	6,591	7,350	8,110	8,110	8,110	8,110	8,110	8,110
2. revenue					48,382	101,422	111,972	122,119	125,971	123,819	121,667	119,516	117,364
2.1 local service					12,945	27,578	30,949	34,321	36,008	36,008	36,008	36,008	36,008
2.2 domestic toll call					16,969	36,150	40,569	44,989	47,200	47,200	47,200	47,200	47,200
2.3 international toll call					18,625	38,024	40,817	43,206	43,171	41,013	38,854	36,695	34,537
2.4 other revenue					680	1,425	1,573	1,715	1,769	1,739	1,709	1,679	1,648
2.5 doubtful account					-837	-1,754	-1,936	-2,112	-2,179	-2,141	-2,104	-2,067	-2,030
3. gross subsidy	5,000 pesos/line/year				14,578	31,055	34,853	38,650	40,550	40,550	40,550	40,550	40,550
4. investment cost	8,850	8,850	278,950	230,225	116,000								
5. expense					37,730	65,326	58,458	62,237	61,393	57,837	55,968	54,066	52,287
5.1 operating expense					23,699	48,493	52,356	55,935	56,612	54,681	52,878	51,040	49,325
5.2 additional working capital					12,579	13,790	2,743	2,638	1,001	-559	-559	-559	-559
5.3 franchise tax					1,451	3,043	3,359	3,664	3,779	3,715	3,650	3,585	3,521
6. cash flow	-8,850	-8,850	-278,950	-230,225	-105,348	36,095	53,514	59,882	64,578	65,982	65,699	65,450	65,077
cash flow with subsidy	-8,850	-8,850	-278,950	-230,225	-90,771	67,150	88,367	98,532	105,128	106,532	106,249	106,000	105,627

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
1. number of main lines	8,110	8,110	8,110	8,110	8,110	8,110	8,110	8,110	8,110	8,110	8,110	
2. revenue	115,213	113,061	110,910	108,758	106,606	104,455	104,455	104,455	104,455	104,455	104,455	2,173,508
2.1 local service	36,008	36,008	36,008	36,008	36,008	36,008	36,008	36,008	36,008	36,008	36,008	681,928
2.2 domestic toll call	47,200	47,200	47,200	47,200	47,200	47,200	47,200	47,200	47,200	47,200	47,200	893,880
2.3 international toll call	32,378	30,220	28,061	25,903	23,744	21,586	21,586	21,586	21,586	21,586	21,586	604,761
2.4 other revenue	1,618	1,588	1,558	1,528	1,497	1,467	1,467	1,467	1,467	1,467	1,467	30,528
2.5 doubtful account	-1,992	-1,955	-1,918	-1,881	-1,844	-1,806	-1,806	-1,806	-1,806	-1,806	-1,806	-37,589
3. gross subsidy	40,550	40,550	40,550	40,550	40,550	40,550	40,550	40,550	40,550	40,550	40,550	772,935
4. investment cost												642,875
5. expense	50,619	49,053	47,578	46,186	44,871	43,626	43,069	42,011	41,009	40,056	39,151	992,530
5.1 operating expense	47,722	46,220	44,810	43,483	42,232	41,052	39,935	38,878	37,875	36,923	36,017	900,167
5.2 additional working capital	-559	-559	-559	-559	-559	-559	0	0	0	0	0	27,158
5.3 franchise tax	3,456	3,392	3,327	3,263	3,198	3,134	3,134	3,134	3,134	3,134	3,134	65,205
6. cash flow	64,593	64,008	63,332	62,572	61,735	60,829	61,386	62,443	63,446	64,399	65,304	538,103
cash flow with subsidy	105,143	104,558	103,882	103,122	102,285	101,379	101,936	102,993	103,996	104,949	105,854	1,306,038

15.10 Project Region 9

Region 9 project takes over the NTP Tranche 1-3. The selected municipalities by Tranche 1-3 and other priority areas are included in this project. There are 104 municipalities in Region 9; Only 11 of them are served or planned to be installed as of 1993.

15.10.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.10-1.

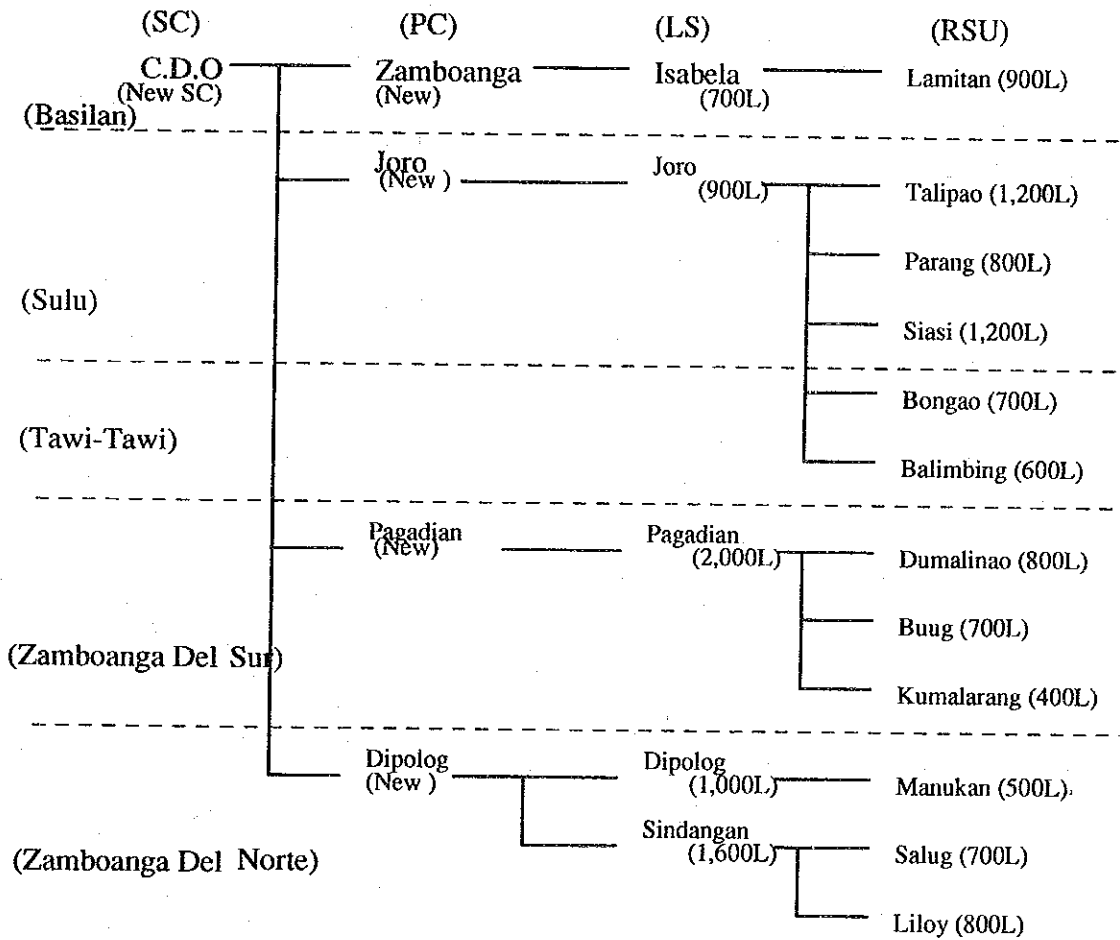
Table 15.10-1 Number of Lines to be Installed (Region 9)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Basilan	Isabela	700	1,300
	Lamitan	900	1,500
Sulu	Jolo	900	1,500
	Talipao	1,200	1,900
	Parang	800	1,300
	Siasi	1,200	2,000
Tawi-Tawi	Bongao	700	1,100
	Balimbing	600	900
Zamboanga Del Sur	Pagadian	2,000	3,500
	Dumalinao	800	1,300
	Buug	700	1,200
	Kumalarang	400	600
Zamboanga Del Norte	Diplog	1,000	1,800
	Manukan	500	900
	Sindangan	1,600	2,800
	Salug	700	1,100
	Liloy	800	1,300
	Total	15,500	26,000

15.10.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.10-1. 4 primary centers and one secondary center are planned to install to formulate the toll regional network.

Figure 15.10-1 Homing and Routing Plan (Region 9)



15.10.3 Transmission Plan

The transmission route plan is shown in Figure 15.10-2. The type and number of transmission systems for each section in this project are shown in Table 15.10-2.

Figure 15.10-2 Transmission Route Plan (Region 9)

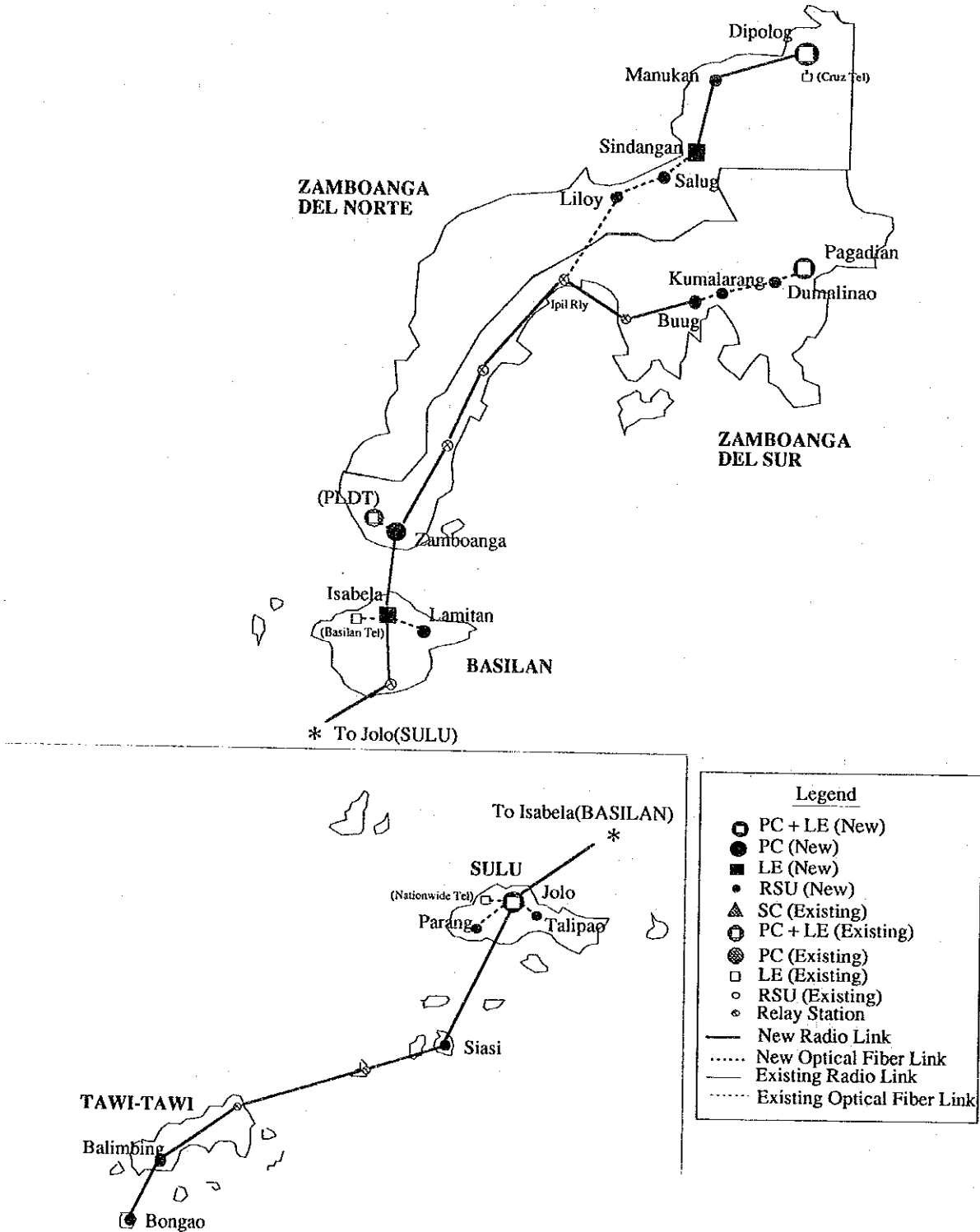


Table 15.10-2 Type and number of Transmission Systems (Region 9)

Province	Section	System	Dis.(km)	Note
Zamboanga del N	Dipolog - Manukan	DR-34M 1+1	30	
	Dipolog - Dipolog (Cruz Tel.Co)	OF-8M 1+1	5	Interconnection Link
	Manukan - Sindangan	DR-34M 1+1	35	
	Sindangan - Salug	OF-34M 1+1	28	
	Salug - Liloy	OF-34M 1+1	11	
	Liloy - Ipil Rly	OF-34M 1+1	40	
Zamboanga del S	Zamboanga - Zamboanga (PLDT)	OF-140M 1+1	5	Interconnection Link
	Pagadian - Dumalinao	OF-34M 1+1	5	
	Dumalinao - Kumalang	OF-34M 1+1	40	
	Kumalang - Buug	OF-34M 1+1	10	
	Buug - Ipil Rly	DR-34M 1+1	50	
	Ipil Rly - Zamboanga	DR-34M 2+1	110	
Basilan	Isabela - Zamboanga	DR-34M 1+1	29	
	Isabela - Lamitan	OF-8M 1+1	20	
	Isabela - Isabela (Basilan Tel. Sys.)	Metallic Cable	3	Interconnection Link
Sulu	Jolo - Isabela	DR-34M 1+1	125	
	Jolo - Talipao	OF-8M 1+1	17	
	Jolo - Parang	OF-8M 1+1	22	
	Jolo - Jolo (Nationwide Tel. Sys.)	Metallic Cable	3	Interconnection Link
	Siasi - Jolo	DR-34M 1+1	60	
Tawi-Tawi	Balimbing - Siasi	DR-34M 1+1	110	
	Balimbing - Bongao	DR-8M 1+1	23	

15.10.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.10-3.

Table 15.10-3 Estimated Cost (Region 9)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	11.8	5.0	16.8
Transmission System	8.4	3.6	12.0
Outside Plant	3.0	3.0	6.0
Supporting Facilities	0.3	2.6	2.9
Consultant & Engineering	3.2	0.6	3.8
Contingency	2.7	1.5	4.2
Total	29.4	16.3	45.7

15.10.5 Financial Evaluation

The IRR for this project is 6.0%. Considering IRR, the feasibility is medium among the 11 project packages. The share of domestic toll calls was set at 50% because this project includes the regional network in the region.

A regional cross subsidy of 4,000 pesos per line per year (1,109 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.10-4 shows the financial projection.

Table 15.10 - 4 Financial Projection (Region 9)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					10,684	11,976	13,268	14,560	14,560	14,560	14,560	14,560	14,560
2. revenue					88,646	185,003	202,753	219,817	226,157	222,294	218,431	214,568	210,706
2.1 local service					23,719	50,305	56,042	61,779	64,646	64,646	64,646	64,646	64,646
2.2 domestic toll call					31,091	65,941	73,461	80,981	84,739	84,739	84,739	84,739	84,739
2.3 international toll call					34,125	69,359	73,909	77,772	77,506	73,631	69,755	65,880	62,005
2.4 other revenue					1,245	2,598	2,848	3,087	3,176	3,122	3,068	3,014	2,959
2.5 doubtful account					-1,533	-3,199	-3,506	-3,802	-3,911	-3,844	-3,778	-3,711	-3,644
3. cross subsidy	4,000 pesos/line/year				21,368	45,320	50,488	55,656	58,240	58,240	58,240	58,240	58,240
4. investment cost	15,725	15,725	495,350	408,850	206,000								
5. expense					69,131	119,064	105,501	111,714	110,070	103,835	100,481	97,065	93,871
5.1 operating expense					43,424	88,461	94,804	100,683	101,637	98,170	94,932	91,633	88,555
5.2 additional working capital					23,048	25,053	4,615	4,437	1,648	-1,004	-1,004	-1,004	-1,004
5.3 franchise tax					2,659	5,550	6,083	6,595	6,785	6,669	6,553	6,437	6,321
6. cash flow	-15,725	-15,725	-495,350	-408,850	-186,485	65,940	97,251	108,103	116,087	118,459	117,950	117,503	116,834
cash flow with subsidy	-15,725	-15,725	-495,350	-408,850	-165,117	111,260	147,739	163,759	174,327	176,699	176,190	175,743	175,074

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
1. number of main lines	14,560	14,560	14,560	14,560	14,560	14,560	14,560	14,560	14,560	14,560	14,560	14,560
2. revenue	206,843	202,980	199,118	195,255	191,392	187,529	187,529	187,529	187,529	187,529	187,529	3,909,139
2.1 local service	64,646	64,646	64,646	64,646	64,646	64,646	64,646	64,646	64,646	64,646	64,646	1,226,187
2.2 domestic toll call	84,739	84,739	84,739	84,739	84,739	84,739	84,739	84,739	84,739	84,739	84,739	1,607,300
2.3 international toll call	58,129	54,254	50,379	46,503	42,628	38,753	38,753	38,753	38,753	38,753	38,753	1,088,351
2.4 other revenue	2,905	2,851	2,797	2,742	2,688	2,634	2,634	2,634	2,634	2,634	2,634	54,906
2.5 doubtful account	-3,577	-3,510	-3,444	-3,377	-3,310	-3,243	-3,243	-3,243	-3,243	-3,243	-3,243	-67,605
3. cross subsidy	58,240	58,240	58,240	58,240	58,240	58,240	58,240	58,240	58,240	58,240	58,240	1,108,672
4. investment cost												1,141,650
5. expense	90,878	88,065	85,417	82,919	80,558	78,322	77,322	75,424	73,624	71,914	70,288	1,785,461
5.1 operating expense	85,677	82,980	80,448	78,065	75,820	73,701	71,696	69,798	67,998	66,288	64,662	1,619,430
5.2 additional working capital	-1,004	-1,004	-1,004	-1,004	-1,004	-1,004	0	0	0	0	0	48,758
5.3 franchise tax	6,205	6,089	5,974	5,858	5,742	5,626	5,626	5,626	5,626	5,626	5,626	117,274
6. cash flow	115,965	114,915	113,701	112,336	110,834	109,207	110,207	112,105	113,906	115,616	117,241	982,028
cash flow with subsidy	174,205	173,155	171,941	170,576	169,074	167,447	168,447	170,345	172,146	173,856	175,481	2,086,700

15.11 Project Region 10

Region 10 project takes over the planned areas of Region 10 of NTP Tranche 1-3. The municipalities selected by Tranche 1-3 and other priority areas are included in this project. There are 124 municipalities in Region 10; 55 of them are served or planned to be served as of 1993.

15.11.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.11-1.

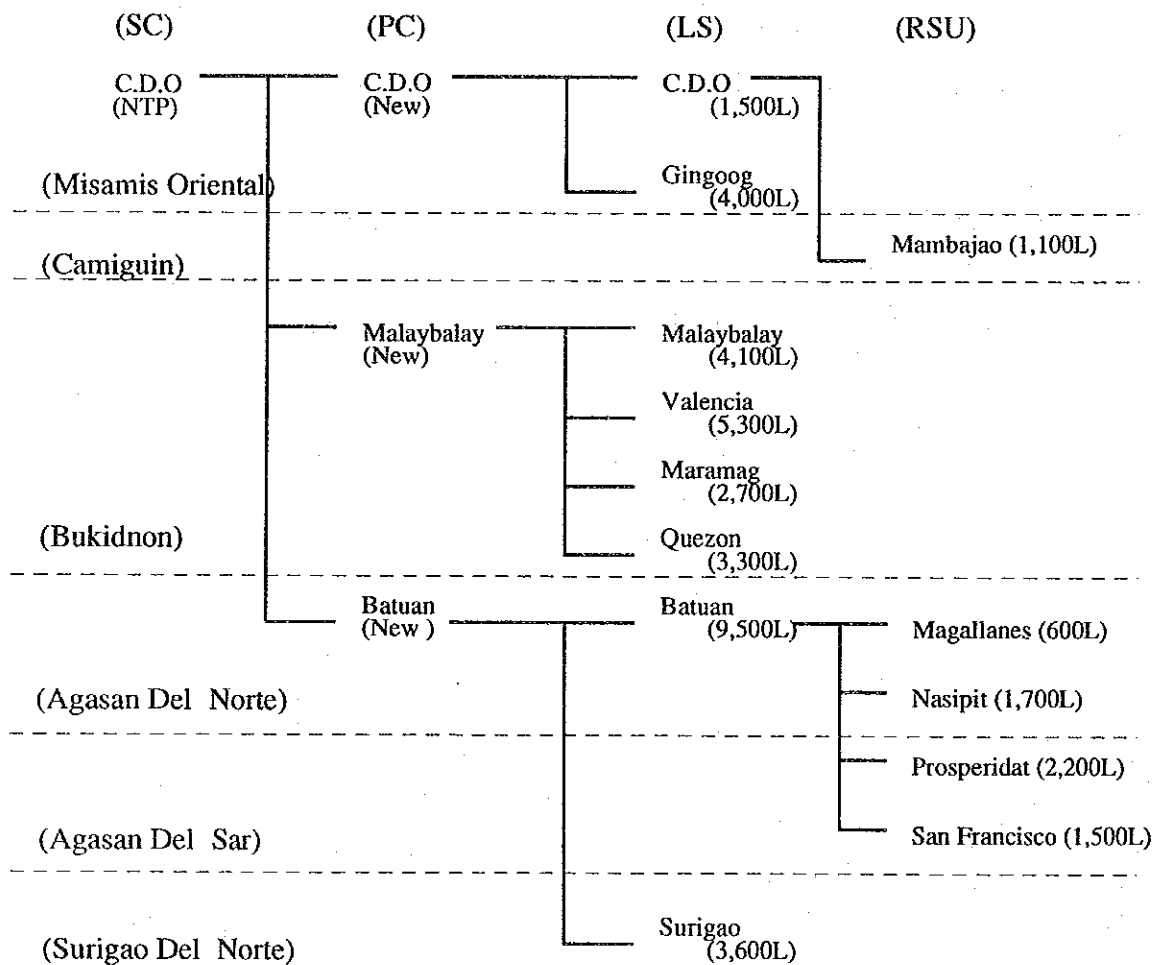
Table 15.11-1 Number of Lines to be Installed (Region 10)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
Misamis Oriental	Cagayan De Oro	1,500	7,200
	Gingoog	4,000	7,100
Camiguin	Mambajao	1,100	1,900
Bukidnon	Malaybalay	4,100	7,400
	Valencia	5,300	9,400
	Maramag	2,700	4,800
	Quezon	3,300	5,900
Agasan Del Norte	Batuan	9,500	17,300
	Magallanes	600	1,000
	Nasipit	1,700	3,000
Agasan Del Sar	Prosperidat	2,200	3,900
	San Francisco	1,500	2,600
Surigao Del Norte	Surigao	3,600	6,600
	Total	41,100	78,100

15.11.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.11-1. 2 primary centers and one secondary center are planned to install to formulate the toll regional network.

Figure 15.11-1 Homing and Routing Plan (Region 10)



15.11.3 Transmission Plan

The transmission route plan is shown in Figure 15.11-2. The type and number of transmission systems for each section in this project are shown in Table 15.11-2.

Figure 15.11-2 Transmission Route Plan (Region 10)

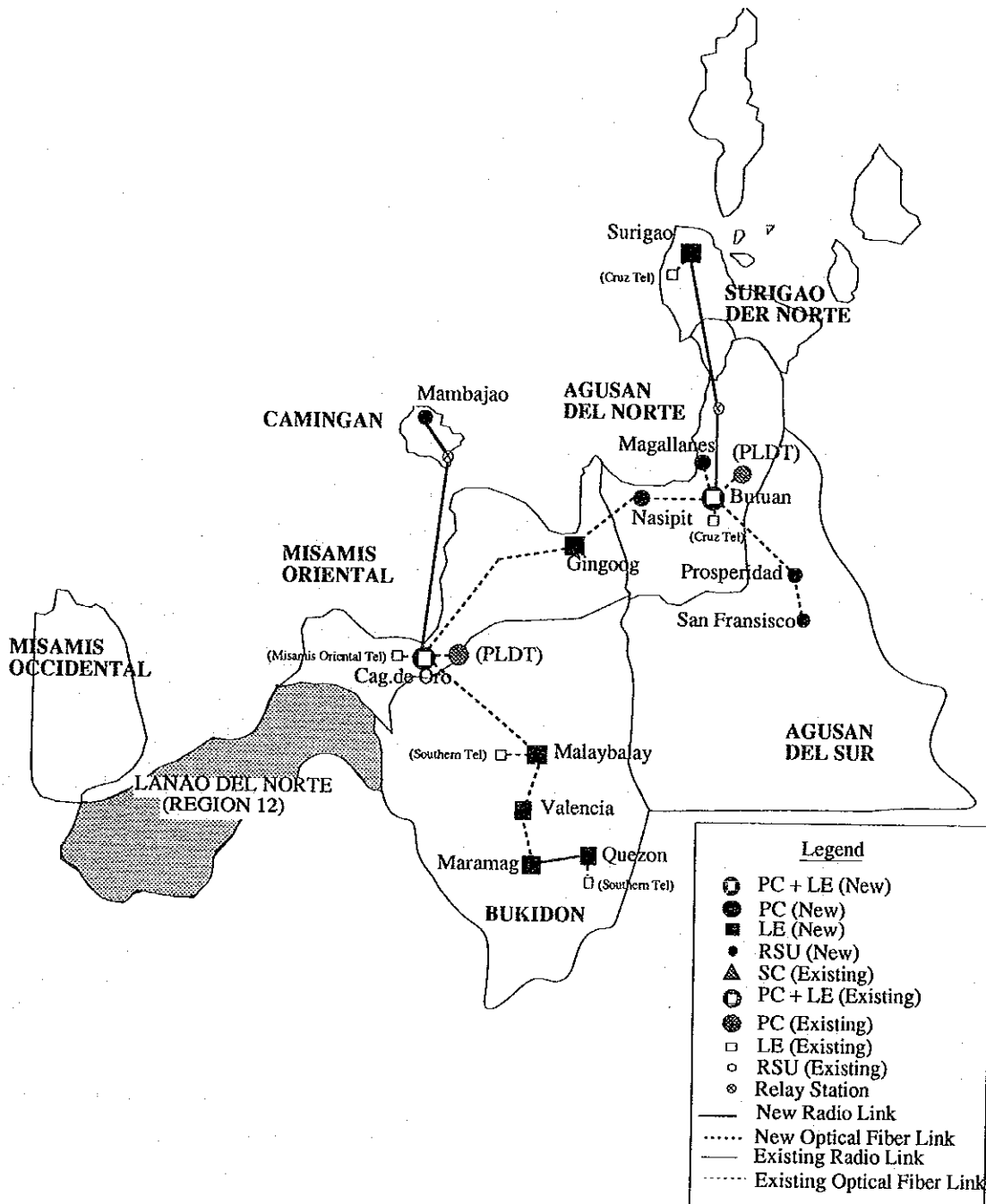


Table 15.11-2 Type and Number of Transmission Systems (Region 10)

Province	Section	System	Dis.(km)	Note
Surigao der Norte	Surigao - Butuan	DR-34M 1+1	95	
	Surigao - Surigao (Cruz Tel. Sys.)	Metallic Cable	3	Interconnection Link
Agusan der Norte	Butuan - Magallanes	OF-8M 1+1	16	
	Butuan - Nasipit	OF-34M 1+1	18	
	Nasipit - Gingoog	OF-34M 1+1	50	
	Butuan - Butuan (PLDT)	OF-34M 1+1	5	Interconnection Link
	Butuan - Butuan (Cruz Tel. Sys.)	OF-34M 1+1	5	Interconnection Link
Agusan der Sur	Prosperidad - Butuan	OF-34M 1+1	60	
	Prosperidad - San Fransisco	OF-34M 1+1	25	
Misamis Oriental	Cag.de Oro - Gingoog	OF-34M 1+1	70	
	Cag.de Oro - Mambajao	DR-34M 1+1	85	
	Cag.de Oro - Cag.de Oro (PLDT)	OF-140M 1+1	5	Interconnection Link
	C. Oro - C. Oro (Mis. Oriental Tel.)	OF-34M 1+1	5	Interconnection Link
Bukidon	Malaybalay - Cag.de Oro	OF-34M 1+1	75	
	Malaybalay - Valencia	OF-34M 1+1	30	
	Malaybalay - Malaybalay (S.Tel.Co.)	Metallic Cable	3	Interconnection Link
	Valencia - Maramag	OF-34M 1+1	25	
	Maramag - Quezon	DR-34M 1+1	8	
	Quezon - Quezon (S.Tel.Co)	Metallic Cable	3	Interconnection Link

15.11.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.11-3.

Table 15.11-3 Estimated Cost (Region 10)

	(Unit: US\$ Million)		
	Foreign	Local	Total
Switching System	24.7	10.6	35.3
Transmission System	9.4	4.0	13.4
Outside Plant	6.4	6.4	12.7
Supporting Facilities	0.6	5.4	6.0
Consultant & Engineering	5.7	1.0	6.7
Contingency	4.7	2.7	7.4
Total	51.4	30.1	81.5

15.11.5 Financial Evaluation

The IRR for this project is 10.64%. Considering IRR, the feasibility is high among the 11 project packages. The share of domestic toll calls was set at 50% because this project includes the regional network in the region.

A regional cross subsidy of 500 pesos per line per year (376 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.11-4 shows the financial projection.

Table 15.11 - 4 Financial Projection (Region 10)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines					22,003	28,147	34,292	40,436	40,436	40,436	40,436	40,436	40,436
2. revenue					182,557	409,441	501,487	590,274	628,079	617,352	606,624	595,897	585,169
2.1 local service					48,847	111,333	138,614	165,895	179,535	179,535	179,535	179,535	179,535
2.2 domestic toll call					64,028	145,937	181,697	217,457	235,336	235,336	235,336	235,336	235,336
2.3 international toll call					70,275	153,501	182,805	208,839	215,248	204,485	193,723	182,961	172,198
2.4 other revenue					2,564	5,751	7,044	8,291	8,822	8,671	8,520	8,370	8,219
2.5 doubtful account					-3,157	-7,081	-8,673	-10,208	-10,862	-10,676	-10,491	-10,305	-10,120
3. gross subsidy					5,501	12,538	15,610	18,682	20,218	20,218	20,218	20,218	20,218
4. investment cost	28,100	28,100	884,675	730,225	367,925								
5. expense					142,370	267,050	273,467	311,161	310,937	288,370	279,055	269,570	260,699
5.1 operating expense					89,428	195,777	234,490	270,369	282,266	272,638	263,646	254,482	245,934
5.2 additional working capital					47,465	58,990	23,932	23,084	9,829	-2,789	-2,789	-2,789	-2,789
5.3 franchise tax					5,477	12,283	15,045	17,708	18,842	18,521	18,199	17,877	17,555
6. cash flow	-28,100	-28,100	-884,675	-730,225	-327,737	-142,390	-228,020	-279,112	-317,142	-328,982	-327,569	-326,327	-324,469
cash flow with subsidy	-28,100	-28,100	-884,675	-730,225	-322,237	-154,928	-243,630	-297,794	-337,360	-349,200	-347,787	-346,545	-344,687

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
1. number of main lines	40,436	40,436	40,436	40,436	40,436	40,436	40,436	40,436	40,436	40,436	40,436	40,436
2. revenue	574,441	563,714	552,986	542,259	531,531	520,804	520,804	520,804	520,804	520,804	520,804	10,606,634
2.1 local service	179,535	179,535	179,535	179,535	179,535	179,535	179,535	179,535	179,535	179,535	179,535	3,337,255
2.2 domestic toll call	235,336	235,336	235,336	235,336	235,336	235,336	235,336	235,336	235,336	235,336	235,336	4,374,501
2.3 international toll call	161,436	150,673	139,911	129,149	118,386	107,624	107,624	107,624	107,624	107,624	107,624	2,929,334
2.4 other revenue	8,068	7,918	7,767	7,616	7,466	7,315	7,315	7,315	7,315	7,315	7,315	148,975
2.5 doubtful account	-9,934	-9,749	-9,563	-9,378	-9,192	-9,007	-9,007	-9,007	-9,007	-9,007	-9,007	-183,431
3. gross subsidy	20,218	20,218	20,218	20,218	20,218	20,218	20,218	20,218	20,218	20,218	20,218	376,318
4. investment cost												2,039,025
5. expense	252,385	244,574	237,219	230,282	223,724	217,516	214,739	209,467	204,467	199,719	195,203	4,831,974
5.1 operating expense	237,941	230,451	223,419	216,803	210,568	204,681	199,114	193,843	188,843	184,094	179,579	4,378,366
5.2 additional working capital	-2,789	-2,789	-2,789	-2,789	-2,789	-2,789	0	0	0	0	0	135,409
5.3 franchise tax	17,233	16,911	16,590	16,268	15,946	15,624	15,624	15,624	15,624	15,624	15,624	318,199
6. cash flow	322,056	319,140	315,767	311,977	307,807	303,288	306,065	311,337	316,337	321,085	325,601	3,735,635
cash flow with subsidy	342,274	339,358	335,985	332,195	328,025	323,506	326,283	331,555	336,555	341,303	345,819	4,111,453

15.12 Project Region 11

The municipalities selected by NTP Tranche 1-3 and other priority areas are included in this project. There are 86 municipalities in Region 11; 37 of them are already served or planned to be served as of 1993.

15.12.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.12-1.

Table 15.12-1 Number of Lines to be Installed (Region 11)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
South Cotabato	General Santos	10,300	19,300
	Glan	2,400	4,100
	Polomolok	4,900	8,700
	Koronadal	5,600	10,000
	Surallah	2,100	3,700
	Tantangan	1,100	1,800
Surigao Del Sur	Bislig	2,500	4,500
Davao Del Norte	Tagum	6,800	12,300
	Carmen	1,900	3,400
	Maco	2,200	3,800
	Mabini	1,000	1,700
	Sto. Tomas	3,700	6,600
	Asuncion	2,200	3,700
	Kapatong	2,600	4,500
	Montevista	1,200	2,100
	Monkayo	2,300	4,000
Davao Del Sur	Malita	3,200	5,600
	Jose Abad Santos	1,800	3,000
	Don Marcelino	1,100	1,900
Davao Oriental	Mati	4,500	8,200
	Tarragona	800	1,300
	Manay	1,300	2,300
	Caraga	1,200	2,000
	Baganda	2,100	3,700
	Cateel	1,000	1,800
	Total	69,800	124,000

15.12.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.12-1. 4 primary centers and one secondary center are planned to install to formulate the toll regional network.

Figure 15.12-1 Homing and Routing Plan (Region 11)

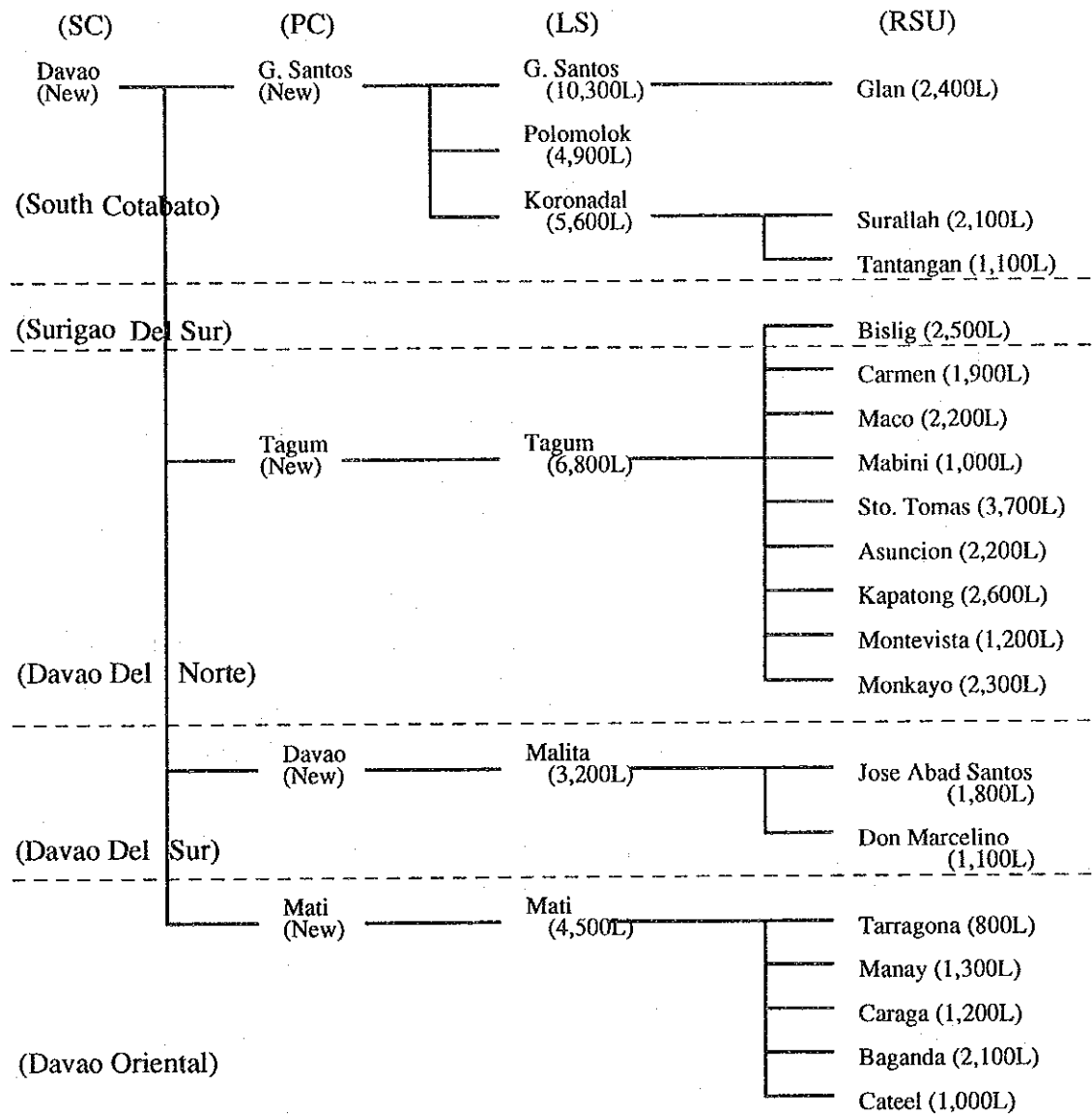


Table 15.12-2 Type and Number of Transmission Systems (Region 11)

Province	Section	System	Dis.(km)	Note
Surigao del Sur	Bislig - Monkayo	DR-34M 1+1	55	
Davao del Norte	Tagum - Montevista	OF-34M 1+1	40	
	Montevista - Monkayo	OF-34M 1+1	15	
	Tagum - Asuncion	DR-8M 1+1	10	
	Tagum - Sto. Tomas	DR-34M 1+1	21	
	Sto. Tomas - Kapalong	DR-8M 1+1	7	
	Tagum - Maco	OF-34M 1+1	12	
	Maco - Mabini	OF-34M 1+1	4	
	Tagum - Carmen	OF-34M 1+1	10	
	Tagum - Mati	DR-34M 1+1	75	
	Tagum - Tagum (PLDT)	OF-34M 2+1	5	Interconnection Link
	Tugum - Tagum (Cruz Tel Co.)	OF-34M 1+1	5	Interconnection Link
Davao Oriental	Mati - Tarragona	OF-34M 1+1	35	
	Mati - Mati (Mati Tel Sys.)	Metallic Cable	3	Interconnection Link
	Tarragona - Manay	OF-34M 1+1	21	
	Manay - Caraga	OF-34M 1+1	20	
	Caraga - Baganga	OF-34M 1+1	29	
	Baganga - Cateel	OF-8M 1+1	34	
Davao del Sur	Davao - Davao (PLDT)	OF-140M 1+1	5	Interconnection Link
	Davao - Digos Rly	DR-140M 1+1	45	
	Digos - Malita	DR-34M 1+1	50	
	Malita - Don Marcelino	DR-34M 1+1	30	
	Don Marcelino - Jose Abad Santos	DR-8M 1+1	25	
South Cotabato	G.Santos - Digos Rly	DR-140M 1+1	75	
	G.Santos - Glan	DR-34M 1+1	40	
	G.Santos - G.Santos (Pil Tel)	OF-34M 1+1	5	Interconnection Link
	Polomloc - Koronadal	OF-34M 1+1	43	
	Koronadal - Surallah	DR-8M 1+1	17	
	Koronadal - Tantaran	OF-34M 1+1	13	

15.12.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.12-3.

Table 15.12-3 Estimated Cost (Region 11)

(Unit: US \$ Million)

	Foreign	Local	Total
Switching System	42.0	18.0	59.9
Transmission System	18.6	7.9	26.5
Outside Plant	10.8	10.8	21.6
Supporting Facilities	1.0	9.2	10.2
Consultant & Engineering	10.0	1.8	11.8
Contingency	8.2	4.8	13.0
Total	90.6	52.5	143.1

15.12.5 Financial Evaluation

The IRR for this project is 10.55%. Considering IRR, the feasibility is high. The share of domestic toll calls was set at 50% because this project includes the regional network in the region. A regional cross subsidy of 500 pesos per line per year is needed to maintain the IRR between 11% and 12%. Table 15.12-4 shows the financial projection.

Table 15.12 - 4 Financial Projection (Region 11)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431
2. revenue					380,036	809,492	917,494	1,021,501	1,062,925	1,044,771	1,026,616	1,008,461	990,306
2.1 local service					101,685	220,113	253,601	287,090	303,834	303,834	303,834	303,834	303,834
2.2 domestic toll call					133,290	288,527	332,422	376,321	398,270	398,270	398,270	398,270	398,270
2.3 international toll call					146,295	303,482	334,451	361,408	364,274	346,060	327,846	309,633	291,419
2.4 other revenue					5,338	11,370	12,887	14,347	14,929	14,674	14,419	14,164	13,909
2.5 doubtful account					-6,572	-13,999	-15,867	-17,666	-18,382	-18,068	-17,754	-17,440	-17,126
3. cross subsidy					11,451	24,788	28,559	32,330	34,216	34,216	34,216	34,216	34,216
4. investment cost	49,275	49,275	1,552,125	1,281,125	645,475								
5. expense					296,374	523,009	484,616	525,571	520,344	488,016	472,254	456,201	441,189
5.1 operating expense					186,164	387,065	429,010	467,885	477,686	461,393	446,175	430,667	416,200
5.2 additional working capital					98,809	111,659	28,080	27,042	10,770	-4,720	-4,720	-4,720	-4,720
5.3 franchise tax					11,401	24,285	27,525	30,645	31,888	31,343	30,798	30,254	29,709
6. cash flow	-49,275	-49,275	-1,552,125	-1,281,125	-561,814	286,483	432,878	495,930	542,581	556,754	554,362	552,261	549,117
cash flow with subsidy	-49,275	-49,275	-1,552,125	-1,281,125	-550,363	311,271	461,437	528,260	576,797	590,970	588,578	586,476	583,333
500 pesos/line/year													
1. number of main lines	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431	68,431
2. revenue	972,152	953,997	935,842	917,688	899,533	881,378	881,378	881,378	881,378	881,378	881,378	881,378	18,229,083
2.1 local service	303,834	303,834	303,834	303,834	303,834	303,834	303,834	303,834	303,834	303,834	303,834	303,834	5,723,839
2.2 domestic toll call	398,270	398,270	398,270	398,270	398,270	398,270	398,270	398,270	398,270	398,270	398,270	398,270	7,502,882
2.3 international toll call	273,205	254,992	236,778	218,564	200,351	182,137	182,137	182,137	182,137	182,137	182,137	182,137	5,061,579
2.4 other revenue	13,654	13,399	13,144	12,889	12,634	12,379	12,379	12,379	12,379	12,379	12,379	12,379	256,036
2.5 doubtful account	-16,812	-16,498	-16,184	-15,870	-15,557	-15,243	-15,243	-15,243	-15,243	-15,243	-15,243	-15,243	-315,254
3. cross subsidy	34,216	34,216	34,216	34,216	34,216	34,216	34,216	34,216	34,216	34,216	34,216	34,216	645,075
4. investment cost													3,577,275
5. expense	427,119	413,899	401,453	389,712	378,616	368,109	363,408	354,487	346,026	337,990	330,348	330,348	8,318,741
5.1 operating expense	402,674	390,000	378,098	366,902	356,350	346,387	336,967	328,046	319,584	311,548	303,907	303,907	7,542,710
5.2 additional working capital	-4,720	-4,720	-4,720	-4,720	-4,720	-4,720	0	0	0	0	0	0	229,158
5.3 franchise tax	29,165	28,620	28,075	27,531	26,986	26,441	26,441	26,441	26,441	26,441	26,441	26,441	546,872
6. cash flow	545,033	540,098	534,389	527,975	520,917	513,270	517,970	526,891	535,353	543,388	551,030	551,030	6,333,067
cash flow with subsidy	579,249	574,313	568,604	562,191	555,133	547,485	552,185	561,107	569,568	577,604	585,246	585,246	6,977,642

15.13 Project Region 12

Region 12 project includes the selected municipalities of NTP Tranche 1-3 and other priority areas in Region 12. The project covers the expansion of Marawi and Iligan, which was installed in trial stage of NTP Tranch 1-3. There are 108 municipalities; 21 of them are served or planned to be served as of 1993.

15.13.1 Number of Lines

The switching capacities and number of primary cable pairs to be installed are shown in Table 15.13-1.

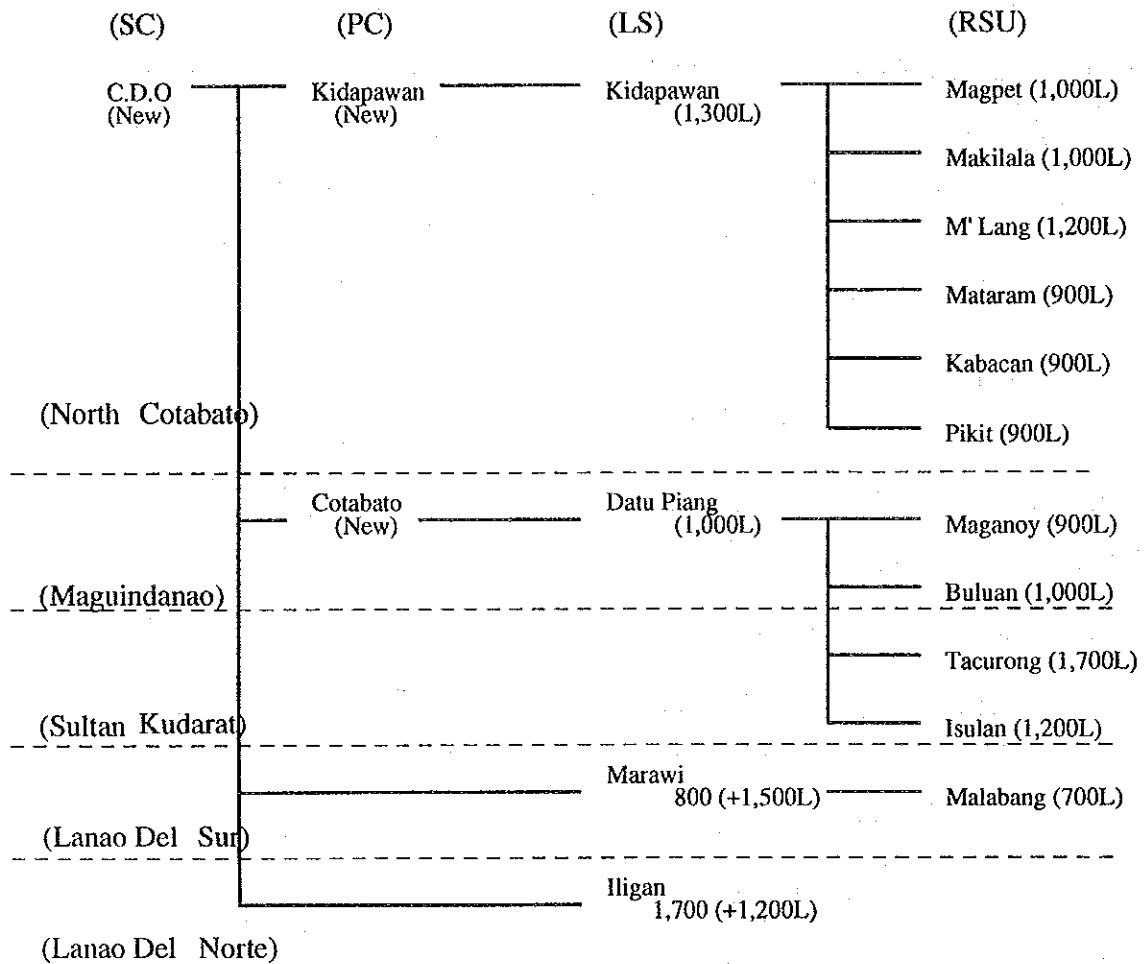
Table 15.13-1 Number of Lines to be Installed (Region 12)

Province	Municipalities	Switching Capacity (Lines)	No. of Primary Cable Pairs
North Cotabato	Kidapawan	1,300	2,000
	Magpet	1,000	1,500
	Makilala	1,000	1,500
	M' Lang	1,200	1,900
	Mataram	900	1,300
	Kabacan	900	1,400
	Pikit	900	1,400
Maguindanao	Datu Piang	1,000	1,500
	Maganoy	900	1,400
	Buluan	1,000	1,400
Lanao Del Sur	Marawi	1,500	2,300
	Malabang	700	1,000
Lanao Del Norte	Iligan	1,200	2,200
Sultan Kudarat	Tacurong	1,700	2,500
	Isulan	1,200	1,900
	Total	16,400	25,200

15.13.2 Homing and Routing Plan

The homing and routing plan are shown in Figure 15.13-1. Two primary center are planned to install to formulated the toll regional network of NTP.

Figure 15.13-1 Homing and Routing Plan (Region 12)



15.13.3 Transmission Plan

The transmission route plan is shown in Figure 15.13-2. The type and number of transmission systems for each section in this project are shown in Table 15.13-2.

Figure 15.13-2 Transmission Route Plan (Region 12)

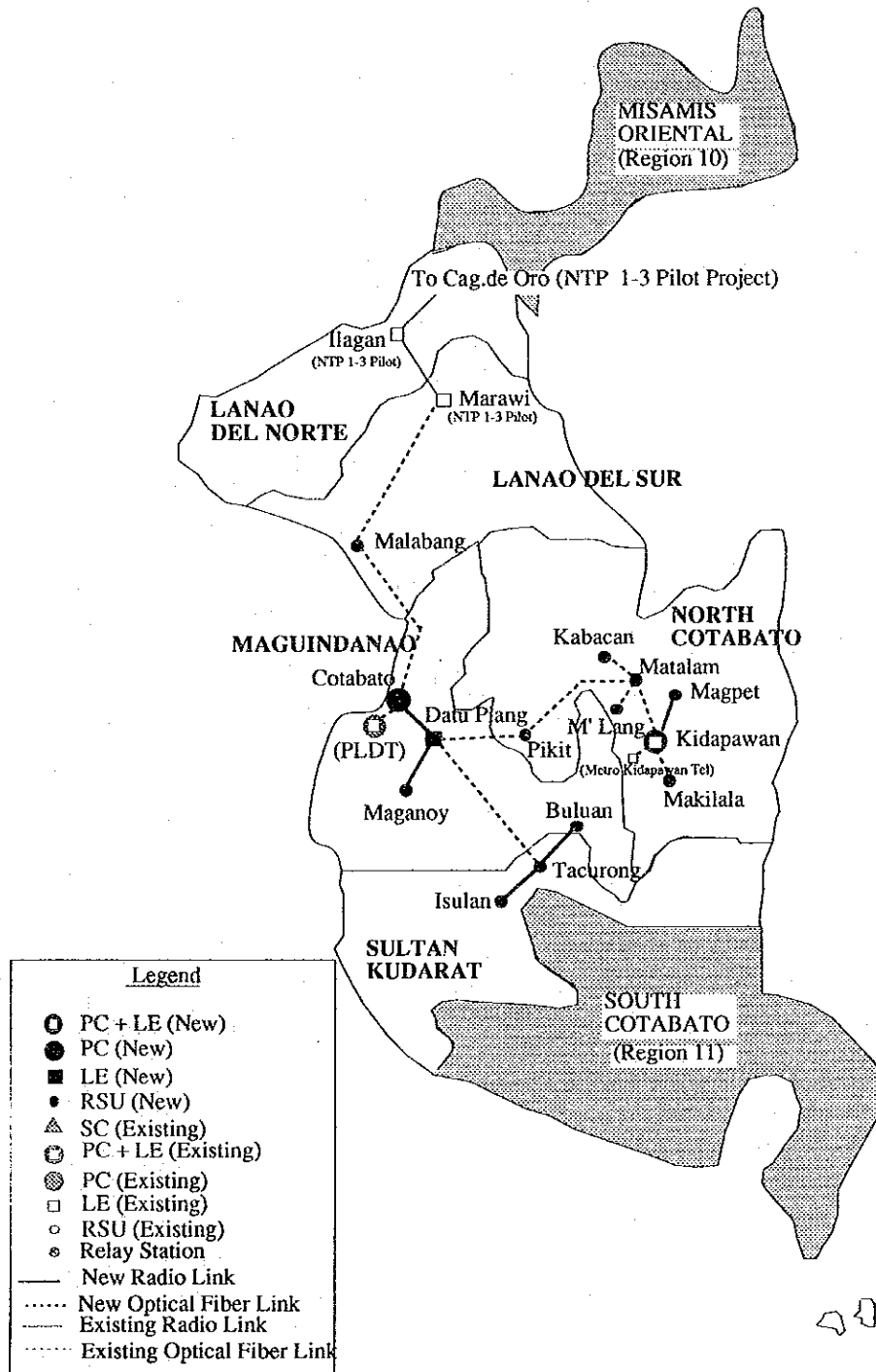


Table 15.13-2 Type and Number of Transmission Systems (Region 12)

Province	Section	System	Dis.(km)	Note
Lanao del Sur	Marawi - Malabang	OF-34M 1+1	65	
Magindanao	Cotabato - Malabang	OF-34M 1+1	65	
	Cotabato - Cotabato (PLDT)	OF-34M 1+1	5	Interconnection Link
	Cotabato - Datu Piang	DR-34M 1+1	34	
	Datu Piang - Maganoy	DR-8M 1+1	20	
	Datu Piang - Pikit	OF-34M 1+1	30	
North Cotabato	Kidapawan - Makilala	OF-8M 1+1	15	
	Kidapawan - Magpet	DR-8M 1+1	8	
	Kidapawan - Matalam	OF-34M 1+1	20	
	Kidapawan - Kidapawan (M.K.Tel)	Metallic Cable	3	Interconnection Link
	Matalam - M'lang	OF-34M 1+1	17	
	Matalan - Kabacan	OF-34M 1+1	12	
	Pikit - Matalam	OF-34M 1+1	30	
Sultan Kudarat	Tacurong - Datu Piang	OF-34M 1+1	47	
	Tacurong - Buluan	DR-8M 1+1	10	
	Tacurong - Isulan	DR-34M 1+1	10	

15.13.4 Cost Estimation

The estimated cost for this project is summarized in Table 15.13-3.

Table 15.13-3 Estimated Cost (Region 12)

	(Unit: US \$ Million)		
	Foreign	Local	Total
Switching System	12.4	5.4	17.8
Transmission System	5.9	2.6	8.5
Outside Plant	3.2	3.2	6.4
Supporting Facilities	0.3	2.7	3.0
Consultant & Engineering	3.1	0.5	3.6
Contingency	2.5	1.4	3.9
Total	27.4	15.8	43.2

15.13.5 Financial Evaluation

The IRR for this project is 7.78%. Considering IRR, the feasibility is medium among the 11 project packages. The share of domestic toll calls was set at 50% because this project includes the regional network in the region.

A regional cross subsidy of 3,000 pesos per line, per year (911 million pesos) is needed to maintain the IRR between 11% and 12%. Table 15.13-4 shows the financial projection.

Table 15.13 - 4 Financial Projection (Region 12)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
(unit: thousand US \$)													
1. number of main lines	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701
2. revenue		13,947	14,532	15,116	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701
2.1 local service		115,719	232,509	238,119	243,425	243,884	239,718	69,713	69,713	69,713	69,713	69,713	69,713
2.2 domestic toll call		30,962	63,223	65,818	68,414	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713
2.3 international toll call		40,586	82,873	86,274	89,678	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382
2.4 other revenue		44,546	87,169	86,800	86,124	83,581	79,402	75,223	71,044	66,865	62,686	58,507	54,328
2.5 doubtful account		1,625	3,266	3,344	3,419	3,425	3,367	3,308	3,250	3,191	3,133	3,074	3,016
3. cross subsidy		-2,001	-4,021	-4,118	-4,210	-4,218	-4,146	-4,074	-4,002	-3,930	-3,858	-3,785	-3,713
4. investment cost	3,000 pesos/line/year	20,921	42,719	44,472	46,226	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103
5. expense	14,875	14,875	468,550	386,725	194,875								
5.1 operating expense		90,244	148,518	119,945	120,179	117,038	111,972	108,355	104,672	101,228	98,813	95,494	92,159
5.2 additional working capital		56,686	111,177	111,343	111,497	109,602	105,863	102,372	98,813	95,494	92,159	88,825	85,490
5.3 franchise tax		30,087	30,366	1,458	1,380	119	-1,083	-1,083	-1,083	-1,083	-1,083	-1,083	-1,083
6. cash flow	-14,875	-14,875	-468,550	-386,725	-169,400	83,991	118,173	123,245	126,846	127,746	127,197	126,715	125,994
cash flow with subsidy	-14,875	-14,875	-468,550	-386,725	-148,480	126,710	162,645	169,471	173,949	174,849	174,300	173,818	173,097
2007													
1. number of main lines	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701	15,701
2. revenue	223,056	218,891	214,725	210,559	206,394	202,228	202,228	202,228	202,228	202,228	202,228	202,228	202,228
2.1 local service	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713	69,713
2.2 domestic toll call	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382	91,382
2.3 international toll call	62,686	58,507	54,328	50,149	45,970	41,791	41,791	41,791	41,791	41,791	41,791	41,791	41,791
2.4 other revenue	3,133	3,074	3,016	2,957	2,899	2,840	2,840	2,840	2,840	2,840	2,840	2,840	2,840
2.5 doubtful account	-3,858	-3,785	-3,713	-3,641	-3,569	-3,497	-3,497	-3,497	-3,497	-3,497	-3,497	-3,497	-3,497
3. cross subsidy	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103	47,103
4. investment cost													
5. expense	97,999	94,966	92,111	89,417	86,871	84,460	83,382	81,335	79,393	77,549	75,796	74,130	72,553
5.1 operating expense	92,391	89,483	86,752	84,183	81,762	79,476	77,315	75,268	73,326	71,483	69,729	68,074	66,419
5.2 additional working capital	-1,083	-1,083	-1,083	-1,083	-1,083	-1,083	0	0	0	0	0	0	0
5.3 franchise tax	6,692	6,567	6,442	6,317	6,192	6,067	6,067	6,067	6,067	6,067	6,067	6,067	6,067
6. cash flow	125,057	123,924	122,614	121,143	119,523	117,768	118,847	120,894	122,835	124,679	126,432	128,185	129,938
cash flow with subsidy	172,160	171,027	169,717	168,246	166,626	164,871	165,950	167,997	169,938	171,782	173,535	175,288	177,041
TOTAL													

15.14 Personal Handy Phone Systems

At present, second generation mobile communication systems are being developed in the world. It is expected that the introduction of new digital cordless telephone system will induce further growth of the demand for mobile communication systems since the price of its services and terminals will be much lower than cellular mobile telephone systems. Personal handy phone system is assumed to install in Makati district as a model case and its investment cost is estimated in this section.

15.14.1 Demand Forecast and Service Area

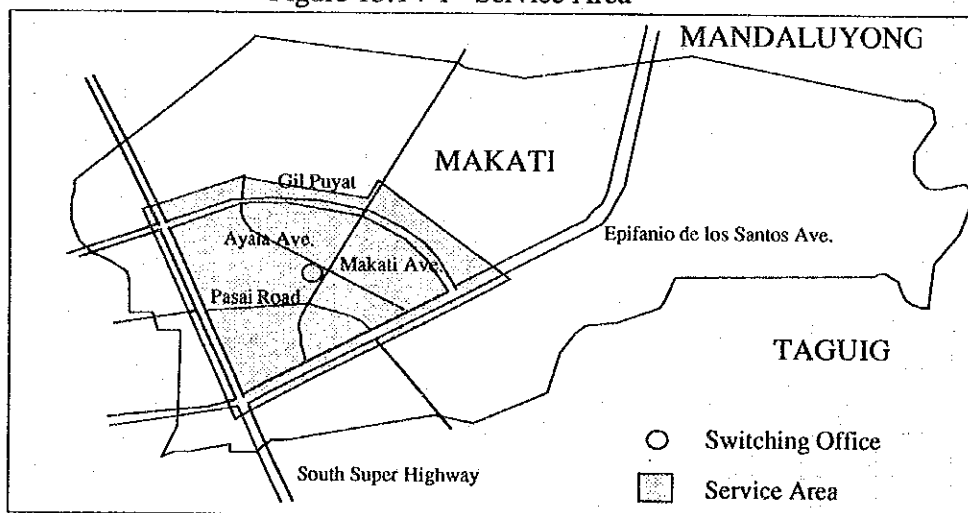
(1) Estimating number of subscribers

There is no data to forecast number of subscribers in this systems, thus, future increase in subscribers is assumed to 10,000 subscribers (about 10% of telephone subscribers) by 1998 in Makati district.

(2) Service Areas

It will provide service to subscribers in Makati district by 1998, covering 13 percent of Makati district including business areas (Figure 15.14-1). Number of cell sites was computed to 130 (100 for the outside, 30 for the inside of shopping centers, business buildings are not included), basically one cell site covers about 30,000m² areas.

Figure 15.14-1 Service Area



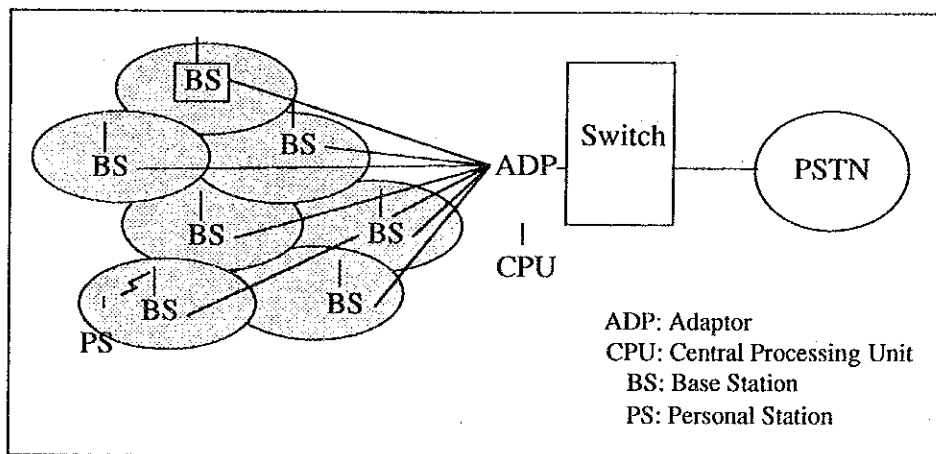
15.14.2 Traffic Forecast

It is assumed that the same calling rate of this systems as existing basic telephones', 0.05 erlang per subscriber. Necessary voice channels per cell site are computed to 11 channels based on average number of calling rate 3.58 erlang per cell site.

15.14.3 System Configuration

This system is composed of switching equipment, adaptor and work station, base stations, and personal stations. Figure 15.14-2 shows system configuration.

Figure 15.14-2 System Configuration



15.14.4 Implementation Schedule

Figure 15.14-3 shows implementation schedule.

Figure 15.14-3 Implementation Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Detail Design												
Construction												

15.14.5 Cost Estimation

Table 15.14-1 shows the estimated cost, cost per terminal shows about US\$ 904.5.

Table 15.14-1 Estimated Cost

	(Unit: 1000 US\$)
Switching equipment (1,430 channels)	715
Adapter and CPU (including work station and software)	210
Base station (11ch 130)	1,950
Installation (including entrance cable)	1,170
Terminal equipment (10,000 subscribers)	5,000
<u>Total</u>	<u>9,045</u>

Note: Building cost is not included.

CHAPTER 16

RECOMMENDATIONS

CHAPTER 16 RECOMMENDATIONS

This master plan was prepared as a guideline to understand the perspective and targets of future telecommunications and to put forth a development principle for telecommunications toward the 21st century: thoroughly forecasting the size of a single network and the investment enough to meet the supply targets through the year 2010, and analyzing the expected financial situation.

Based on the results of this study, the recommendations described in this chapter for implementing this master plan by the relevant organizations focus on the technical and economic aspects needed to improve and optimize the telecommunication network in the Philippines.

16.1 Higher Priority to Telecommunications

Telecommunications is no longer simply a means of communicating; it has also become a tool to control the various information processing systems that are essential to all socio-economic activities. The flow of information has become one of the determinants of the movement of people, goods, and money - the main elements of socio-economic activity. While people and goods physically move, monetary transactions are now simply settled between computers through telecommunication facilities. Daily socio-economic activities depend entirely on information and telecommunication systems to transmit and process vital information. These telecommunication and processing systems have reached the some level of importance in modern infrastructures as transport systems. Furthermore, economic activities no longer are restricted to domestic areas, but extend to the every corner of the world. Telecommunications is an indispensable tool for worldwide economic activities.

The EIRR (Economic Internal Rate of Return) for the master plan, calculated in chapter 14, is as high as 49%. This shows that the benefits of telecommunications to the national economy are significant. (Note: The FIRR (Financial Internal Rate of Return) for the master plan is calculated as 11.6%)

It is recommended that governmental organizations in the Philippines should recognize the importance of telecommunications to developing their country and give a higher priority to telecommunications than before in the development of the country.

16.2 Adequate Scale of Network for Each Local Operating Company

From the economic viewpoint, an adequate scale of network (at least several thousand subscribers) is needed for each operating company to attain network efficiency. Independent networks for small areas, such as a municipality are not economical. For a small municipality, it is better to use a RSU (Remote Switching Unit) or RLU (Remote Line Unit) connected to the host switching system in a nearby big city. Nevertheless, independent local switching systems serve small areas. (Some even use a PABX as a local switching system.) It is recommended that each local operator should have an adequate scale network, covering one or more provinces to create economical networks. These networks can be formed by rearranging franchises, such as through merger or joint operations.

While it may be possible to develop small and economical local switching systems, it is difficult to make a local switching system cheaper than an RSU or RLU because even small independent switching systems need a full range of functions if they are to function as a local switching system, including central processing, charging, alternate routing, and CCS No. 7, which are not needed in an RSU or RLU.

16.3 Interconnection

(1) Grade of Service (GOS)

Two carriers whose networks are interconnected with each other are responsible for maintaining their network up to the point of interconnection (POI) and keeping the quality in conformance with MC 10-16-90 issued by NTC. If a problem develops across the network systems, both carriers should work to restore normal operations. To do this quickly and efficiently, they must communicate with each other as soon as possible.

This intercarrier communication would be facilitated with a hot line system. Such a system must use a line independent from the regular communication network. A nationwide hot line system is best, because trouble in one part of the network may sometimes cause nationwide trouble. In such cases, a long distance carrier can limit the traffic going towards the affected area on the basis of the hot line information.

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52. Information from PLDT
 - (1) PLDT Expansion Program Summary
 - (2) Numbering Plan
 - (3) Training Profile
 - (4) Telephone Switching Facilities at the End of 1992 and the Future(X-6 Program)
 - (5) Outside Plant Facilities at the end of 1992
 - (6) Tariff Structure and revision history
 - (7) PLDT Toll Backbone Network Facility
 - (8) Toll Completion Rate

Others

53. Executive Order No.59 : The Policy Guidelines for Compulsory Interconnection of Authorized Public Telecommunications Carriers
54. Executive Order No.109 : The Policy to Improve the Provision of Local Exchange Carrier Service
55. Project Profile Phase I Tranche I-1
56. Project Profile NTP I-2
57. Details of PLDT X-6 Program (1992-1996)
58. X-5 Complementary Program (1991-1993)
59. Implementation of the National Telephone Program (NTP) Phase I Tranche I-3
60. National Telephone Program Phase I Vol. I~Vol. VIII

(2) Introduction of Metering System between Interconnection Circuits

To ensure fair sharing of income, it is recommended that meters be install on both sides of network interconnections to show how much interconnecting calls use the networks. The meters would count the charging units, which would vary with the distance of each call, and record them.

It is also recommended that today's revenue sharing system should be changed to the this new metering system.

(3) Coordination of Interconnection Circuit Construction

Among cooperating organizations, especially two companies who intend to interconnect their networks, installation of interconnection circuits must be done in close cooperation. Otherwise, one side would have to wait until the other side completes its construction, so the system of the former remains idle until that of the latter is completed. The users of both networks as well as the operators will thus be inconvenienced. The operators should therefore coordinate their construction plans and implement them together. It is recommended that if trouble occurs during implementation, NTC coordinate the implementation schedule in according with MC No. 9-7-93.

16.4 New Mobile Telecommunication System

The introduction of a new digital cordless telecommunication system is expected to induce further expansion in the mobile communication system, as well as replace or compensate for wired telephone service, since the price of its terminals will be much lower than for cellular mobile telephones. These digital cordless telecommunication systems, such as PHP (Personal Handy Phone System) in Japan, DECT (Digital European Cordless Telecommunications system) and CT-2 (Cordless Telephone - 2 system) in Europe, have evolved from analog cordless telephone systems. In planning for the local telephone networks, it is recommended taking into consideration the new trends in technology and paying attention to the study of this field in ITU and APT.

16.5 Management of Telecommunications Information and Statistics

Having current and accurate data is indispensable to working out the best strategy. Correctly grasping the situation in telecommunications is essential to making strategies and plans. The following information should be recorded and updated at least annually in a standard format.

- (a) Number of subscribers and waiting applicants
- (b) Number of working subscriber lines (or main stations)
- (c) Type and capacity of each switching system
- (d) Type of transmission system, route, capacity, and location of repeater stations
- (e) Financial statement
- (f) Rate of applications for service that are satisfied within four weeks
- (g) Monthly trouble complaints per 100 main stations
- (h) Rate of trouble complaints that are cleared within two days
- (i) Call completion rate

This data is not now always available in the Philippines. All operating companies should submit this data to NTC periodically. If necessary, NTC should direct the operating companies to report this information.

The statistics currently submitted by the operating companies are not consistent with respect to "data units". For example, for main stations, some companies report switching capacity, while some report working subscriber lines. For another example, for leased lines, some companies report the total transmission repeater spans of their leased lines, while others report the number of subscriber lines. The format and the units should be standardized in all operating company reports, including annual reports.

16.6 Technical Standards

(1) Establishment of Telecommunications Technology Standards Organization

ITU recommendations often obtain alternative standards, sometimes prescribed in an abstract way. As networks change to digital ones, offering new services and increasing interconnections, each country must determine their own standards either based on ITU recommendations or their own standards relevant to their special conditions.

It is recommended to establish a Telecommunications Technology Standards Organization composed of telecommunications operators, manufacturers, representatives of users, and governmental organizations (such as TELOF), to develop the Philippine standards in the telecommunication field. It would pursue the same activities as TTC (Telecommunication Technology Committee) in Japan, ETSI (European Telecommunications Standards Institute) in Europe, and T1 Committee in North America, standardizing such areas as network connection protocols and terminal equipment.

Its main activities would be as follow:

- (a) study the establishment of standards for telecommunication network,
- (b) study and research standards for connection within the national telecommunication network, and
- (c) disseminate the standards.

In the Philippines, the Electronics and Telecommunications Standards Institute of the Philippines (ETSIP) was established for about the same purposes. It may therefore be a suitable organization for this role. Furthermore, it is recommended that the work should be carried out in close cooperation with APT (Asia Pacific Telecommunity), which has already started studying national technology standardization.

(2) Adoption of LR as Criteria of Speech Quality

On the basis of ITU Recommendations G.101 to 121 and P.76 to 79, it is recommended to adopt LR (Loudness Rating) as the criteria for prescribing accurate and practical units of speech quality, as mentioned in Section 11.8.

16.7 Fostering Local Manufacturing

As described in Chapter 12, the network expansion planned through 2010 will be far larger than previous projects. The network in 2010 will be about ten times as large as today's network. Fostering telecommunication equipment manufacturing in the Philippines, as mentioned in NTDP, is desirable in order to supply a considerable portion of the telecommunication equipment from domestic manufacture. This will contribute to growth in the Philippine economy through technology transfer, increase job opportunities, and reduce foreign currency expenditure.

It is recommended that the government should encourage manufacturing in this area by taking such actions as reducing taxes and providing financial support.

The telecommunications technology standards organization can also support manufacturing by establishing technical standards.

16.8 Financial Strategies

A huge amount of capital investment is needed to implement this master plan. Financial strategies are essential, as mentioned in Chapter V of NTDP. It includes:

- (1) Access to Long-Term Financing
 - (a) Establishment of Philippine government-source sector development funds
 - (b) ADB/WB umbrella co-financing scheme
 - (c) Use of bilateral ODA
- (2) Access to foreign capital markets
- (3) Incentives during startup and formative period
 - (a) Reduced import taxes and duties for capital equipment
 - (b) Income tax holiday
 - (c) Carryover of net loss deduction from tax
- (4) Obligation of financial reporting to NTC

Furthermore, tariff adjustments are desirable to attract investors and users. The government should:

- (1) Study new tariffs, taking account of the network cost.
- (2) Modify the present Foreign Currency Adjustment (FCA) mechanism.
- (3) Revise the upper limit of the rate of return.
- (4) Implement meter charging for local calls to make a more reasonable charging system based on the length of the call.

16.9 Strengthen Training

Training is essential to promoting smooth operations and maintenance work. It is recommended to implement the following measures.

- (a) Promote on-the-job training.
- (b) Expand the training capacity of the TTI and TTC.
- (c) Enhance the project-associated training in manufacturers' factories and in the Philippines.
- (d) Enhance training the staff of local telephone companies at the TTI and TTC.
- (e) Promote training in each region by instructors dispatched from the TTI and TTC.
- (f) Conduct efficient training programs (training of leaders, engineers, technicians, and new staff).
- (g) Establish a training center in each company.

16.10 Project Package Implementation

The backlog of waiting telephone applicants must be eliminated and the network must be expanded to unserved areas. The majority of waiting applicants are concentrated in Metro Manila, where private operating companies will invest. It is desirable that telecommunication network expansion into the rural unserved areas will also be undertaken by private sectors, but it should be implemented under strong government leadership considering the governmental finance including ODA , because these are low-profit areas.

Only 20.6% of cities and municipalities had local exchange telephone service as of the end of 1992. As mentioned in Chapter 9, the target coverage ratio for municipalities at the end of 2010 is 100%.

The project packages proposed in this report would expand the network to the unserved rural areas as the implementation plan for each region for the first phase (Phase-A: 1994 to 98) of the master plan, based on the conditions that PLDT's X-5C and X-6 projects, and the RTDP-C, NTP Tranche 1-1 and expansion of NTP Tranche 1-1 projects are implemented completely.

Therefore, it is recommended that these projects; PLDT's X-5C and X-6 projects, and the RTDP-C, NTP Tranche 1-1 and expansion of NTP Tranche 1-1 projects be implemented without exception and that the project packages proposed here be started as soon as possible as the first step toward the target.

JICA