

CHAPTER 11. FINANCIAL MANAGEMENT

The objective of this chapter is to examine how the total financial situation of TOT will change when the Project is implemented with various financing schemes. Then, this chapter proposes possible measures to improve the financial position.

11.1 Financial Forecasts

11.1.1 Condition and Assumption

This section presents three kinds of estimated financial statements, i.e., Income Statement, Balance Sheet, and Statement of Cash Flow, from FY 1993 until 2007. Future financial situations depend on many external and internal factors. The study selects three financial cases for considerations at first as shown in Table 11.1.1-1.

Table 11.1.1-1 Conditions and Assumptions of Three Financial Cases

	Case A: Low Profit	Case B: High Profit	Case C: Moderate Profit
1. Operating Revenue (Local & Trunk Rev. from Priv. & Gov. Sub.)	10% Decrease	10% Increase	Original
2. Project Investment Cost (Outside Plant Cost)	50% Increase	Original	30% Increase
3. Depreciation Procedure Improvement	2nd Year: 70% 3rd Year: 30%	2nd Year: 50% 3rd Year: 50%	2nd Year: 60% 3rd Year: 40%
4. Operating Expenses	Past Trend with Additional Inflation (2% Increase/year)	Past Trend without Additional Inflation	Past Trend with Additional Inflation (2% Increase/year)
5. The Number of Employees	Past Trend	2% Increase/year	Past Trend
6. Salary Increase Ratio	5% Increase/year	3% Increase/year	3% Increase/year
7. Long-term Loan	75%	75%	75%

Note:1. Increase or decrease of the operating revenue is only for the local and trunk revenue from normal private and government subscribers excluding public telephones.

2. Only outside plant installation cost of the Project investment cost is increased here.

3. Depreciation Procedure Improvement indicates how much annual investment volume is transferred into the fixed assets in the following year.
4. Operating expenses here mean maintenance expenses and operating & administration expenses.
5. The past trend is the past average increase ratio of (line/employee).
6. Salary increase ratio means average staff remuneration per employee increase ratio.
7. The percentage of long-term loan shows how much the percentage share of the project investment cost will be borrowed as long-term debt.
8. "Original" means the estimation which is studied in Chapter 9.

After estimating the future financial situations of these three cases, another three additional cases are considered from the viewpoint of improving the cash flow of Case C as shown in Figure 11.1.1. In order to keep cash flow positive, short-term loans, five year postponement of the replacements and rehabilitations schedule, and a monthly charges increase are considered in addition to borrowing long-term loan. Table 11.1.1-2 shows the conditions and assumptions of the revised Case C, Case D, and Case E.

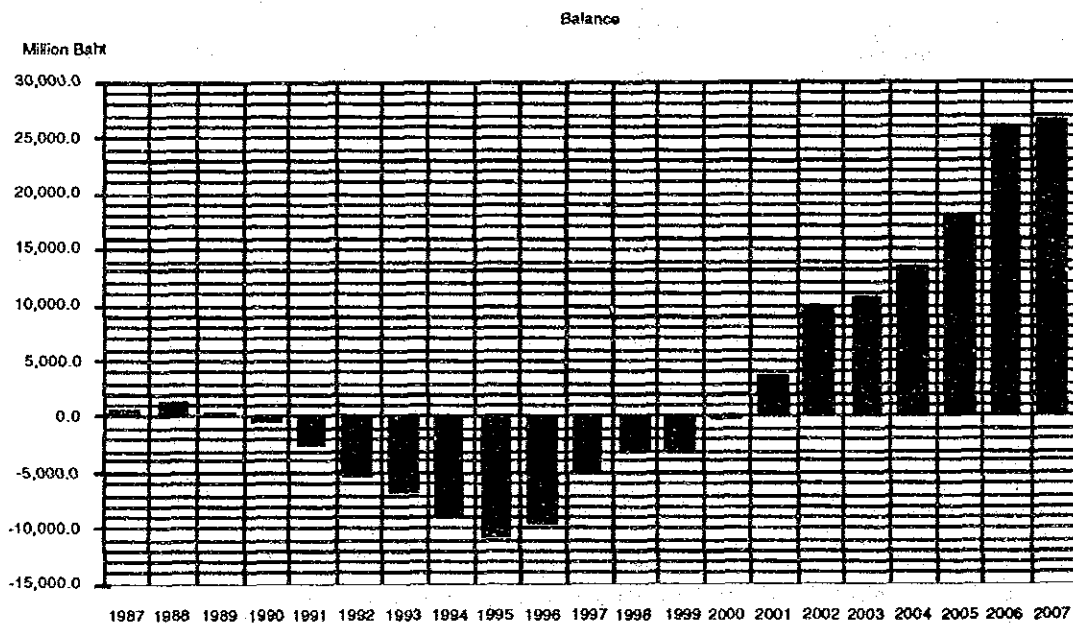


Figure 11.1.1 Estimated Cash Balance of Case C

Table 11.1.1-2 Conditions and Assumptions of Additional Three Financial Cases

	The Revised Case C (Short Term Loan)	Case D: Postponed Replacement Schedule	Case E: Tariff Increase
1. Operating Revenue	Original	Original	Doubled Monthly Charge from FY 1993
2. Project Investment Cost (Outside Plant Cost)	30% Increase	30% Increase 5 year's Delay of Replacements and Rehabilitation Schedule	30% Increase
3. Depreciation Procedure Improvement	Same as Case C	Same as Case C	Same as Case C
4. Operating Expenses	Same as Case C	Same as Case C	Same as Case C
5. The Number of Employees	Same as Case C	Same as Case C	Same as Case C
6. Salary Increase Ratio	Same as Case C	Same as Case C	Same as Case C
7. Long-term Loan	Same as Case C	Same as Case C	Same as Case C
8. Short-term Loan	1990: 1,000 M B 1991: 3,000 M B 1992: 6,000 M B 1993: 8,100 M B 1994:11,000 M B 1995:14,000 M B 1996:14,000 M B 1997:10,000 M B 1998: 9,000 M B 1999: 9,000 M B 2000: 6,500 M B 2001: 3,000 M B	1990: 1,000 M B 1991: 3,000 M B 1992: 6,000 M B 1993: 8,000 M B 1994:10,000 M B 1995:12,000 M B 1996:12,000 M B 1997: 6,500 M B 1998: 4,500 M B 1999: 3,000 M B	1990: 1,000 M B 1991: 3,000 M B 1992: 6,000 M B 1993: 6,500 M B 1994: 7,500 M B 1995: 8,000 M B 1996: 5,000 M B

11.1.2 Debt Service of Each Case

Figure 11.1.2-1 shows the debt service of the revised Case C, Case D, and Case E. Figure 11.1.2-2 shows the debt service coverage ratio of these four cases.

Note: Debt Service = Amortization + Financial Charges

Debt Service Coverage Ratio = [Net Profit before Financial Charges - Remittance to the Treasury - Bonus + Depreciation] / Debt Service

Table 11.1.2 Debt Service Coverage Ratio of Each Case

(Unit: Million Baht)

Year	Revised Case C			Case D			Case E		
	Total Internal Fund	Total Debt Service	Debt Service Coverage Ratio (%)	Total Internal Fund	Total Debt Service	Debt Service Coverage Ratio (%)	Total Internal Fund	Total Debt Service	Debt Service Coverage Ratio (%)
1989	4,715.4	3,603.9	130.84	5,703.0	3,603.9	158.25	5,703.0	3,603.9	158.25
1990	4,929.0	4,474.6	110.15	6,777.2	4,474.6	151.46	6,777.2	4,474.6	151.46
1991	5,703.0	8,849.0	64.45	8,604.6	8,849.0	97.24	8,604.6	8,849.0	97.24
1992	6,777.2	10,097.0	67.12	10,690.0	10,083.7	106.01	10,696.4	10,097.0	105.94
1993	8,604.6	15,484.3	55.57	13,280.1	15,410.6	86.17	14,253.3	15,370.3	92.73
1994	10,696.4	20,421.7	52.38	15,905.4	20,096.8	79.14	17,019.6	18,458.4	92.21
1995	13,313.7	25,368.5	52.48	18,399.0	23,921.4	76.91	19,692.6	21,191.7	92.93
1996	16,015.5	28,838.8	55.53	21,032.6	26,227.4	80.19	22,426.6	21,770.1	103.02
1997	18,664.3	30,664.1	60.87	23,085.5	27,831.5	82.95	24,592.8	20,310.3	121.09
1998	21,426.5	27,638.8	77.52	24,628.7	22,924.2	107.44	26,588.3	16,285.0	163.27
1999	23,569.5	29,469.0	79.98	25,967.7	23,384.5	111.05	28,452.9	19,186.5	148.30
2000	25,314.3	29,028.8	87.20	27,259.2	21,124.7	129.04	30,297.2	18,924.4	160.10
2001	26,804.9	26,265.7	102.05	28,616.9	17,916.1	159.73	32,229.1	19,088.9	168.84
2002	28,254.6	21,583.0	130.91	30,171.3	17,197.2	175.44	34,061.9	18,369.3	185.43
2003	29,531.7	18,416.0	160.36	32,280.4	17,233.8	187.31	36,442.1	18,416.0	197.88
2004	30,625.0	18,357.7	166.82	34,317.3	17,182.4	199.72	38,722.1	18,357.7	210.93
2005	32,384.4	18,540.5	174.67	36,695.0	17,414.1	210.72	41,351.1	18,540.5	223.03
2006	34,265.9	19,146.3	178.97	39,161.6	18,088.2	216.50	44,091.4	19,146.3	230.29
2007	36,474.2	18,660.6	195.46	41,283.7	17,740.8	232.71	46,534.7	18,660.6	249.37

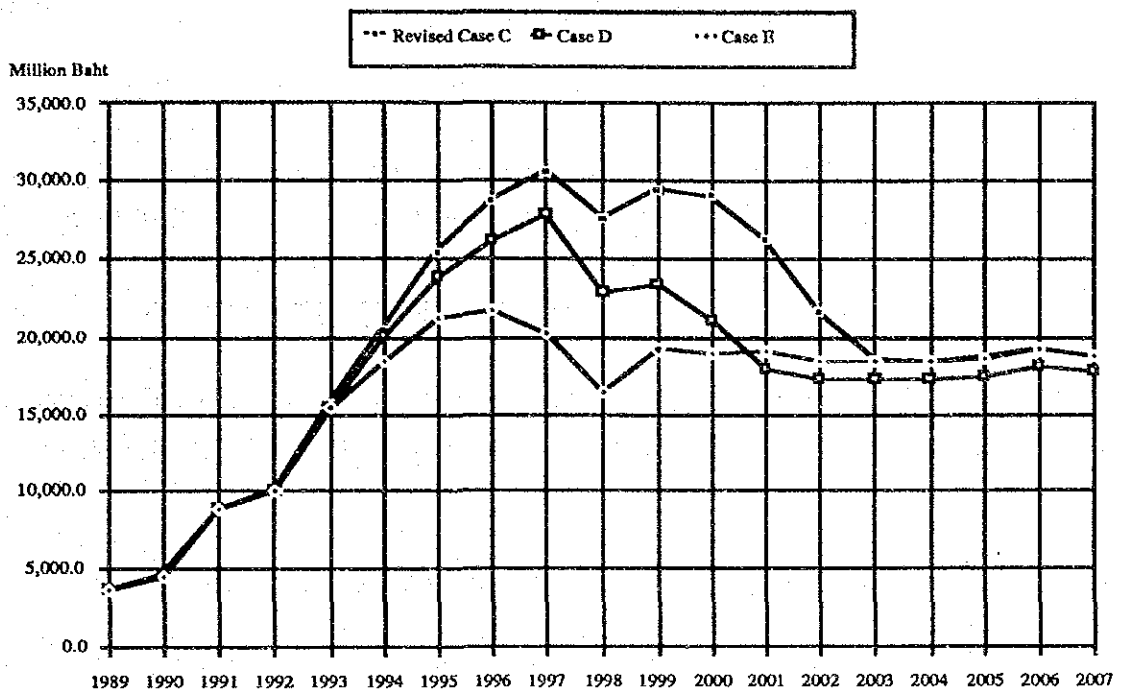


Figure 11.1.2-1 Debt Service of Each Case

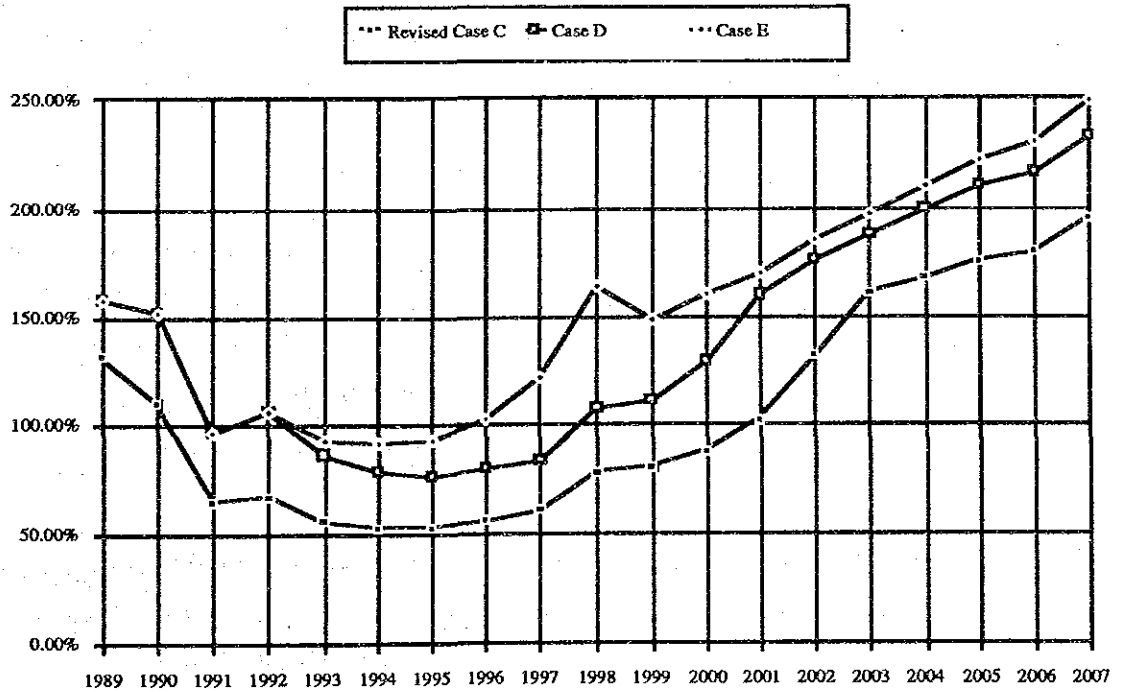


Figure 11.1.2-2 Debt Service Coverage Ratio of Each Case

11.2 Measures to Improve Financial Position

11.2.1 Financial Policy

Major financial conditions imposed on TOT are the following two:

- 1) more than 25% of construction expenses of any investment project must be financed by internal reserves,
- 2) more than 1.5 debt service coverage ratio must be maintained,

In some situations, especially in Phase-1, it is expected not to be able to meet with the above conditions. Hence, TOT should examine the following issues to improve its financial position.

11.2.2 Fund Management

TOT must manage not only large amount but also many kinds of financial funds for many years, once the Project starts. They must manage all kinds of loans, equities, working capital, cash in-flows and out-flows. Financial mismanagement will jeopardize implementation of the projects and cause a tremendous loss to TOT and the society. Hence, it is recommended to obtain a help of a professional fund manager who is knowledgeable on both domestic and international money markets. He or she should be responsible of managing to keep the financial charges and currency exchange loss at the minimum possible level.

11.2.3 Remittance to the Treasury

In order to increase its internal reserve so that TOT can generate larger amount of own fund for implementing projects, the remittance to the treasury is a heavy burden. TOT should work more aggressively on being totally or partially excused from paying remittance to the treasury until at least TOT eliminates the existence of waiting applicants.

11.2.4 Depreciation

One good and widely practiced method to increase the available amount of internal reserve is to take the maximum advantage of depreciation, although net income on book decreases. There are three issues to be examined on depreciation. The first is on accounting method of calculating depreciation. The second is on service lives of equipment and facilities. The third is on work in progress and plant under construction.

11.2.5 Tariff

Tariff is one of major revenue management tools. Tariff structures of TOT have never been closely examined from either economic theoretic viewpoints or management viewpoints. To establish a sound and effective financial management system, it is recommended for TOT to conduct a tariff review project at the earliest possible time.

11.2.6 Marketing and Customer Relations

After TOT eliminates the existence of waiting applicants and achieves demand-supply balance for the telephone services, marketing efforts must be greatly enhanced in order to create more demands for the telecommunications services and offer customer friendly services. Marketing becomes very important in opening up people's minds to make them being fully aware that modern and sophisticated telecommunications services are not just to transmit voice messages, but to transmit, store, and process all kinds of information and to support people in making intelligent decisions. TOT should lead the industry to promote "Informationization" of the society and become the primary promoter of the telecommunications services.

11.2.7 Increase General Work Efficiency

TOT should consider the following measures to increase general work efficiency.

- 1) promotion of office automation,
- 2) clarifications, documentation, and manualization of job definition, purposes, objectives, duties, rules, procedures, standards, and organization-wide education of middle and lower management people,
- 3) promotion of QC circles,
- 4) effective utilization of management information system.

11.3 Another Alternative Measures to Ease the Cash-flow Problems

In case that TOT has problems of raising enough internal and external capital to carry out the Project, alternative measures such as delaying the target years of achieving the demand-supply balance, rehabilitations and replacement of facilities, and introduction of ISDN. TOT should be, however, aware of consequences of resorting to these policies, i.e., slow down of telecommunications development and, hence, slow down of the socio-economic development.

CHAPTER 12. HUMAN RESOURCE MANAGEMENT

12.1 Human Resources

TOT is expected to undertake complex and massive facility expansion projects until 2007 so that it can offer better accessibility to the network and more diversified and sophisticated services to the customers. The current policy and management system for human resources are not, however, adequate for accommodating the large scale expansion projects.

When facilities are expanded, the manpower must be also expanded at the same time. Massive facilities will be just wasted without proper expansion and allocation of human resources. Expenses on human resources are the major expense items in business operations; therefore, they must be efficiently and carefully managed.

12.1.1 The Required Number of Staff and Human Resources Management Policy

- 1) The required number of staff must be estimated by adjustment of a microscopic and a macroscopic approach. The conditions and figures should be reviewed not only every year but also five to ten year intervals.
- 2) In order to estimate the required number of staff by any microscopic approach, job classification and description must be clarified at first. Then rules must be standardized for estimation of the required number of staff in each department of TOT.
- 3) The lines per employee figure of TOT is fairly low for an operating entity which provides mainly telephone service and makes a wide use of digital exchanges as shown in Figure 12.1.1. It is necessary for TOT to make efforts to improve efficiency of the staff.
- 4) The present situation of staff allocation must be reviewed for making necessary improvements to increase labor productivity.
- 5) The number and allocation of staff are closely related to service qualities. Quality control of services must be uniformly administered throughout the country by universally set standards which are coordinated with facility expansion.
- 6) It is essential to create a department which administers human resources management. This department should possess total authority and responsibility in formulating and

implementing all plans (short, medium, and long) and policies regarding human resources necessary for facility expansion, operation, and maintenance.

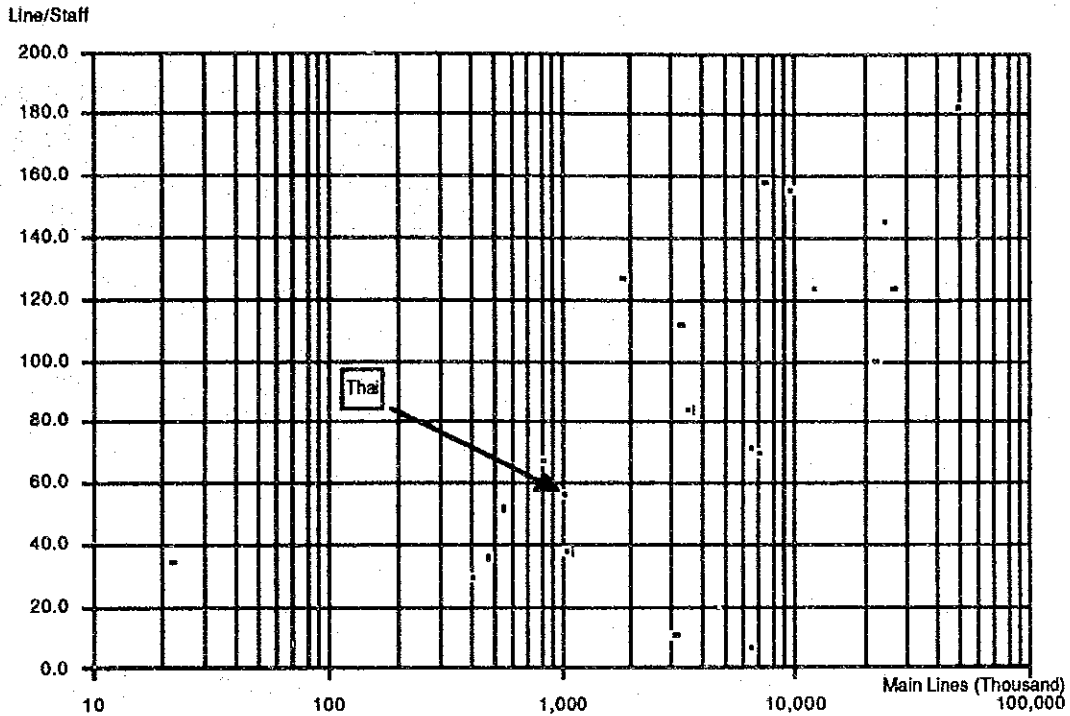


Figure 12.1.1 Main Telephone Lines and Lines per Staff by Country

12.1.2 The Number of TOT Staff in the Fiscal Year of 2007

1) Estimation by Macroscopic Approaches

a) If TOT adheres to the government imposed 2% ceiling policy of annual new employment rate, the total number of TOT employees at the end of FY 2007 will be calculated to be 26,200 persons.

b) If TOT can keep the present ratio of manpower cost over total revenue until FY 2007, the total number of employees at the end of FY 2007 will become 30,100 persons.

2) Estimation by Microscopic Approaches

Due to lack of appropriate data for detailed estimation by microscopic approaches, the required number of staff at the end of FY 2007 is estimated by using the number of subscribers

and the historical growth rate of the number of connected lines per employee. It will become 32,700 persons.

3) The Number of Staff in the Fiscal Year of 2007

a) The number of TOT staff in FY 2007 employed for the Project is obtained by adjusting the figures estimated by macroscopic and microscopic approaches. In case of applying the 2% ceiling policy for annual new employment rate, the number of TOT staff in FY 2007 will be 26,200. It is essential for TOT to undertake manpower productivity improvement projects at every level in the organization.

b) Since a large amount of manpower is expected to be involved for the Project, utilizing outside human resources such as contractor, subcontractors, and part-time workers must be also taken into account.

12.2 Organization

In general, organization is the means by which management coordinates the efforts of employees to attain the business objectives.

TOT is expected to undertake complex and massive expansion, rehabilitation, and replacement projects of its facilities and to operate and maintain them for providing diversified and sophisticated services. Hence, the organization must be structured to attain those objectives.

12.2.1 Shifting More Authority and Responsibilities to the Telecommunications Area Authorities

As its facilities and business operations become more complex and massive, centralized management by the headquarters will face numerous difficulties in controlling regional and end offices. On the other hand, almost no discretionary decision making authority is given to regional and end offices. To increase its operational efficiency, TOT should review roles and functions of the headquarters and regional and end offices and decentralize its directing and controlling functions more to regional and end offices.

The headquarters should be more specialized in over-all strategic decision makings, planning and coordinations of inter-telecommunications area problems.

Figure 12.2.1 shows the concept of decentralization.

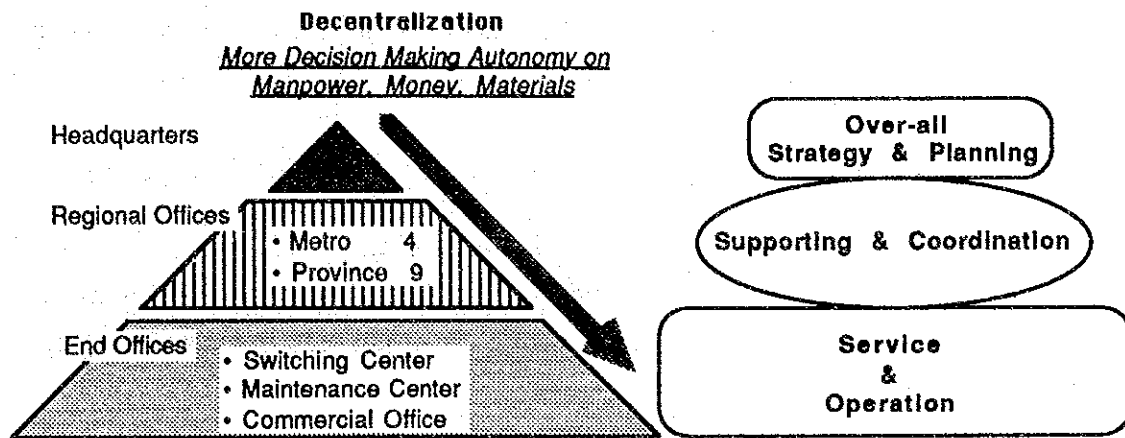


Figure 12.2.1 The Outline of a Decentralization Plan

12.2.2 Introduction of Profit and Cost Center System

After successfully eliminating a long list of waiting applicants, a profit and cost center system should be gradually introduced into the organization to increase operational efficiency, improve customer relations, and create positive working environment.

12.3 Human Development

Organizations flourish through the efforts of individuals, because people are the most important resource a manager has. It is expected that the operation and management of TOT will become larger and more complicated in the future; therefore, it must develop skills and abilities of its people up to the sufficient level to be able to operate its own complex, massive, and sophisticated facilities.

12.3.1 Development of Professional Staff

1) Of all human resource categories, shortage of professional engineers will be highly expected and become a critical issue in the near future without proper measures as construction of complex, massive, and sophisticated facilities progresses. It is urgent and essential to take proper measures for acquiring professional engineers who can establish own technical standards and specifications, develop own technologies, and design own facilities.

2) To do so, at first, it is necessary to figure out how many people with what qualifications are needed in which field. It is recommended for TOT to make career development plans in which specific qualifications to be obtained and training methods are clearly defined and described.

12.3.2 Needs of Additional Training Centers

TOT has currently one training center in Bangkok; however, it is needed to establish at least three more training centers in the provincial areas in the future since TOT must expand its employees with its facility expansion. It must figure out not only how many training centers being needed, but also what roles being expected.

12.3.3 Human Resources Development Programs

1) On-The-Job Training Programs

In order to level up the abilities of the staff, TOT should promote further utilization of on-the-job training programs.

2) Experience Enrichment Program

TOT does not have any policy on transferring its employees from one department to another department or from headquarters to regional offices except for upper management people or unless an employee makes an explicit request of transfer. TOT should consider rotating its prominent staff in various departments and offices for enrichment of over-all management experiences.

12.4 Promotion and Compensation System

Promotion and compensation systems affect employee motivations and incentives. Hence, they must be formulated and practiced to take out the fullest extent of employees contributions to organizations.

12.4.1 Promotion System

1) It will be critical for further development of TOT if it can increase work incentives of non-college graduate employees and obtain more contributions from them since their share in

the total staff in TOT is about 90%. TOT should give more internal opportunities for its non-college graduate employees to improve their status.

2) It is recommended for TOT to promote more able non-college graduate staff to higher management positions for creating higher work incentives among non-college graduate staff.

3) The basic principle of staff appraisal is to evaluate employees on their abilities and achievements as fairly as possible.

4) TOT currently classifies its clerical workers and craftsmen into three ranks; however, it should add one more rank to give more incentive to those people.

12.4.2 Compensation System

1) Compensation system must be designed not only from a viewpoint of providing employees with enough monetary compensation for their keeping a decent standard of living but also from a viewpoint of attracting quality staff. Although the over-all compensation structure of TOT is quite reasonable in comparison with other government agencies, it should keep working on upgrading its welfare programs, fringe benefits, and salaries for junior level employees.

2) Within a given budget framework, it is recommended for TOT to establish new expense categories on various compensations to promote further labor productivity increase.

3) TOT should establish a total personnel expense management system in the near future and provide higher compensations for higher productivity goals.

12.5 Recommendations

Figure 12.5 shows an implementation schedule of some of the recommended projects. It goes without saying that preliminary studies and tasks must be finished before the actual implementation.

Items \ Term	Prior to the Project 1990 ~ 1992	Phase-1 1993 ~ 1997	Phase-2 1998 ~ 2002	Phase-3 2003 ~ 2007
Staff Management	• Establishment & Improvement of Staff Management Systems	→		
	• Improvement of Work Performance	→		
	• Service Level Targets	→		
Organization	• Decentralization to Regional Offices	→	• Introduction of Profit & Cost Center	
Human Resource Development	• Development of Professionals	→		

Figure 12.5 Recommended Projects

CHAPTER 13. PROPOSALS - IMPLEMENTATION OF THE MASTER PLAN -

This chapter presents some guidelines for the project implementation, guidelines for upgrade of service qualities and for traffic promotion activities.

13.1 Guidelines for the Project Implementation

Guidelines for the selection and assignment of projects to each phase and telecommunication area are described as follows.

1) Key Points on Giving Priority Order to the Strategies

The strategies described in Chapter 5 are examined from the viewpoint of priority of implementation of the Master Plan, taking the following five key points into consideration as shown in Table 13.1-1.

- a) Investment efficiency,
- b) Current trend of telecommunication technology in the world,
- c) Suitable telecommunication services for each area,
- d) Coordination with national development policies,
- e) To offer impartial services.

2) Project Implementation Programs

Outlines of the long range project implementation program are shown in Table 13.1-2. Also outlines of the project implementation program for in Phase-1 are shown in Table 13.1-3.

Table 13.1-1 Implementation of Master Plan

Project Formation

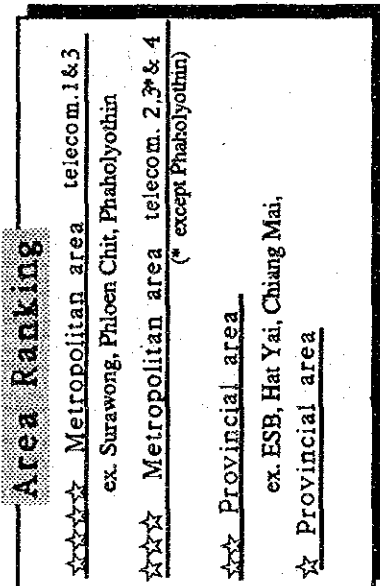
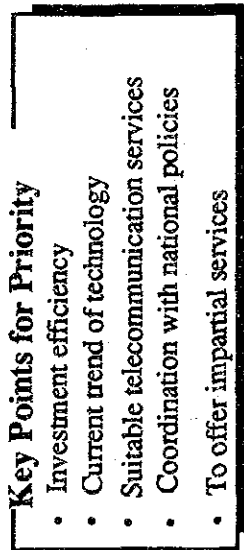
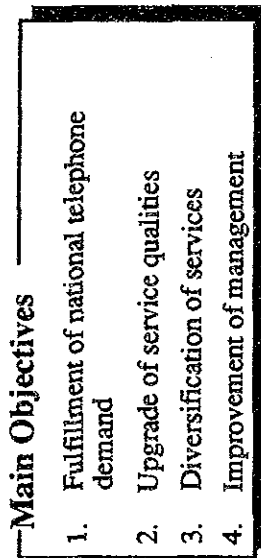
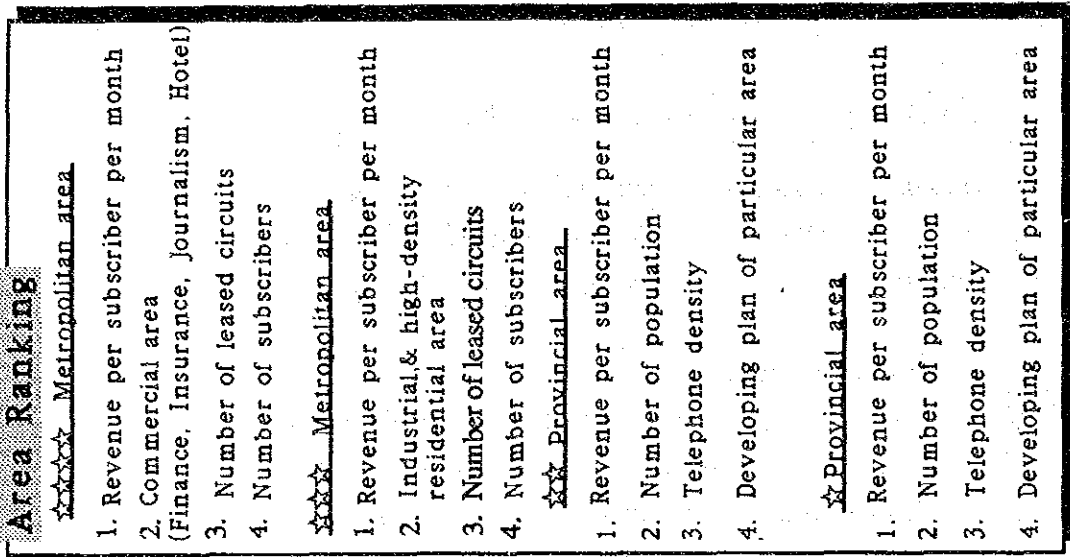


Table 13.1-2 List of Proposed Projects

Strategies and Items of Implementation	Phase-1 (1993 - 1997)	Phase-2 (1998 - 2002)	Phase-3 (2003 - 2007)
1. Fulfillment of National Telephone Demand			
☆ 1. Local cable project	Metro. 1,908,000 L Prov. 1,862,000 L	894,000 L 1,109,000 L	983,000 L 1,331,000 L
☆ 2. Switching pro.	Metro. 974,000 L Prov. 923,000 L	633,000 L 615,000 L	616,000 L 730,000 L
☆ 3. Rural Telecom. pro.	TDMA. 6,330 L Expansion 62,000 L	TDMA. 6,330 L 138,000 L	TDMA. 9,000 L 154,000 L
☆ 4. Cellular Mobile pro.	Long. 107 sys.	117 sys.	153 sys.
☆ 5. Transmission Network pro.	Metro. 130 sys.	63 sys.	63 sys.
2. Diversification of Services			
☆ 6. ISDN Introduction pro.	Introduction 9 Areas	Expansion 12 Areas	Whole country
☆ 7. Satellite Communication Introduction pro.	Installation 17 EST	Expansion 5 EST	Expansion 4 EST
3. Upgrade of Service Qualities			
☆ 8. Enhancement of outside plant O&M pro.	Modernized outside job Phase-1.	Phase-2.	Phase-3.
☆ 9. Total operation system pro.	Improvement of operation sys.	Introduction of integrated operation sys.	
☆ 10. Service grade up pro.	Upgrading service call		
(1) Upgrading successful call	Successful call ratio 60% New Engineering Std.	Successful call ratio 70%	Successful call ratio 75 %
(2) New Engineering Std.			
4. Improvement of Management			
☆ 11 Financial Management Pro.	Tariff review for existing and new services.		
(1) Tariff review	Consideration of remittance to the Treasury & review for accounting method of depreciation		
(2) Fund management			
(3) Cost control	Operation of QC. circles.		
☆ 12 Human resource Pro.	Establishment and implementation of staffing criteria		
(1) Staffing			
(2) Reorganization	Decentralization	Establishment of profit and cost center system	

Note; L; Line Unit
EST; Earth Station

Table 13.1-3 Proposed Project in Phase-1

Area	No. of Pro. in Table 13.1-2	Name of Project	Criteria	Sub No. of Project	Priority	Contents of Project
Metropolitan area	1	Local Cable Project No. of lines 1,908,000	Reduction of waiting applicants	1-1-(1)	#2 P-1	#1 *1. Metro. main area (Commercial area, Big amount of leased circuits & subscribers) *2. Telcom. 163 area (Surawong, Phloen Chit, Phaholyothin and so on)
				1-1-(2)	P-2	*1. Metro. main area (High density of residential & industrial. Big amount of the revenue per month) *2. Telcom. 284 area (Chaichaphuruk, On nut, Ban Su, Lat Ya, Lak Si and so on)
	2	Switching Project No. of lines 974,000	Reduction of waiting applicants	2-1-(1)	P-1	*1. Metro. sub main. area (Commercial area, Big amount of leased circuits & subscribers) *2. Same area of the local cable project (Pro. No.1-1-(1))
				2-1-(2)	P-2	*1. Metro.sub main area (High density of residential & industrial. Big amount of the revenue per month) *2. Same area of the local cable project (Pro. No.1-1-(2))
		Expansion of Public Telephone No. of tel. sets 24,470	Reduction of waiting applicants	3-1-(1)	P-2	*1. The whole country *2. Objective Public tel. density 0.51 tel/1,000 persons
	6	ISDN and New Service Project	Diversification of service	5-1-(1)	P-2	*1. Metro. main area (Commercial area, Big amount of leased circuits & subscribers) *2. Telcom. 163 area (Surawong, Phloen Chit, Phaholyothin and so on)
		ISDN and New Service Project	Diversification of service	5-1-(1)	P-3	*1. Mainly Big amount of leased circuits area, and commercial area *2. (1)Telcom. 163 area (Surawong, Phloen Chit, Phaholyothin and so on) (2)Telcom. 284 area (Chaichaphuruk, On nut, Ban Su, Lat Ya, Lak Si and so on)
	5	Transmission Project No. of span 68 No. of System 130 No. of MUX 115	Reduction of waiting applicants	4-1-(1)	P-1	*1. Mainly expand according to switching facilities *2. 1st. Telecom. 163 area 2nd. telcom 2&4 area
	1	Local Cable Project No. of lines 862,000	Reduction of waiting applicants	1-2-(1)	P-2	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area, number of leased circuits and number of subscribers. *2. Chiang Mai, Khon Kaen, Nakhon Ratchasima, Chon Buri, Songkha(Hat Yai) and so on.
				1-2-(2)	P-3	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area *2. Phitsanulok, Nakhon Sawan, Udon Thani, Ratchaburi, Surat Thani, Phuket, Lampang Chachoengsao, Rayong, Petchaburi, Kanchanaburi, Nakhon Si Thammarat and so on.
	2	Switching Project No. of lines 917,000	Reduction of waiting applicants	2-2-(1)	P-2	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area, number of leased circuits and number of subscribers. *2. Same area of the local cable project (Pro. No.1-2-(1))
	3	Rural Telecom. Project No. of Sys. 6,330	Reduction of waiting applicants	3-2-(1)	P-3	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area *2. Same area of the local cable project (Pro. No.1-2-(2))
Provincial areas	5	Long Dis. Transmission Pro. No. of span 51 No. of System 51 No. of MUX 179	Diversification of service	4-2-(1)	P-2	*1. (1) link all Pcs by digital routes. (2) Connect Chiang Mai to BKK with 2 routes. *2. (1) Instal. CMI-MSN(34 Mb/s, 1+1 sys., 157 Km), HYI-STN(34 Mb/s, 1+1 sys. 67 Km) (2) Expand. 46 span, 46 sys, MUX 213 units (3) PLK-LPG-CM(565 Mb/s, 1+0 sys, 304 Km)
		Spur Route Transmission Pro. No. of System 56 No. of MUX 732	Reduction of waiting applicants	4-2-(2)	P-3	*1. Mainly install and expand according to switching facilities(Pro. No. 2-2-(1) & 2-2(2))
	6	ISDN and New Service Project No. of provinces introduced 9 areas	Diversification of service	5-2-(1)	P-4	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area, number of leased circuits and number of subscribers. *2. Chiang Mai, Khon Kaen, Nakhon Ratchasima, Chon Buri, Songkha(Hat Yai) and so on.
	4	Cellular Mobile Pro. No. of sub. 62,000	Diversification of service	6-(1)	P-1	*1. Big amount of revenue /month/subscriber, industrial & high density of residential area, number of leased circuits and number of subscribers. *2. Big sites along to the main high way
	7	Satellite Communication Pro. No. of earth station 17	Diversification of service	7-(1)	P-2	*1. Introduction for TV transmitting network, new services. *2. Earth stations (BKK, Nakhon Ratchasima, Phitsanulok, Surat Thani and other 7 sites)
	8	Enhancement of Outside Plan O&M Pro.	Upgrade of service	8-(1)		
	9	Total Operation Sys. Pro. (1) Centralizing operation	Upgrade of service	9-(1)		*1. Progress the operation sys. in each section.(Switching, Long distance and Metro. trans.) *2. Combine the Transmission operation sys.
	10	Service Grade up Pro. (1) Upgrade service call (2) New eng. standard	Upgrade of service Diversification of service	10-(1) 10-(2)		*1. Upgrade successful call ratio (objective 60 %) *1. Provide the TOT's telecom. service grade and service manu. *2. Engineering Standard . make up the new telecom. service menu
	11	Financial Management Pro. (1) Expert on tariff (2) Expert on total management (3) Cost control	Improvement of management	11-(1) 11-(2) 11-(3)		*1. Invitation of expert from outside for tariff *1. Invitation of expert from outside for Financial and human resource management.
	12	Human Resource Pro. (1) Staffing pro. (2) Re-organization	Improvement of management	12-(1) 12-(2)		*1. Establishment and implementation of staffing criteria *1. Establishment of profile and cost center sys. *2. Re-organization

Note1. #1 '1' reason Note 2. #2 P-1 : Priority 1
#2 rea name

13.2 Guidelines for Upgrade of Service Qualities

Maintaining the telecommunications facilities including the outside plant, switching equipment, transmission equipment, and power plant in good condition by means of an organized system is very important toward the future.

Especially, the outside plant is exposed to various environmental conditions such as temperature, wind, moisture, lightning, and other natural influences including, sunlight, birds and insects as well as social factors such as electric power lines and road traffic.

1) Present Situation of Outside Plant Facilities in Thailand

As described in Chapter 2, the fault ratio, namely the number of fault occurrences per month, is 4.7 per 100 subscribers as of 1987. This rate means that all subscribers served by TOT will have at least one fault over a two years period.

2) Necessity of Preventive Maintenance Activity

Through considering about the present situations mentioned above, it is necessary to be accurately carried out rehabilitating the deteriorated facilities. Consequently, it is effective to introduce maintenance control system and reinforce the preventive maintenance activities. The basic policy of preventive maintenance activity is not just to repair after a fault occurs but to replace deteriorated facilities for preventing further faults.

3) Maintenance Control System

The purpose of this system is to reflect the deteriorated facilities, which are to be picked up, to daily maintenance work and facility improvement plans in order to maintain the service quality in good condition. Consequently, the standards of judgement value should be established for deteriorated facilities.

4) Recommendation for Implementation of these Improvement Plan

To accurately carry out the improvement plan on the basis of the maintenance control system for outside plant, some important items will be recommended as following.

- a) Arrangement and update of plant record
- b) Prioritization of deteriorated plants for rehabilitation plans
- c) Examination of distribution system for subscriber network

d) Establishment of research and development center for outside plant

13.3 Traffic Promotion Activities

1) Present State of Successful Call Ratio

According to the statistics of TOT in the year of 1987, the successful call ratio is about 30 % in Bangkok and about 60 % in provincial areas.

2) Guidelines for Upgrade of Successful Call Ratio

The successful call ratio should be upgraded by carrying out the traffic promotion activities. These activities should be started as soon as possible. As a result, the more profits will be expected.

As a guideline for upgrading the successful call ratio, the following target should be set up as shown in Table 13.3.

Table 13.3 Target of Successful Call Ratio

Year	Actual	Target			
	1987	1992	1997	2002	2007
Successful Call Ratio in Metropolitan Area	30%	45%	60%	70%	75%

13.4 Further Preparation Studies for the Implementation

In this section, further studies, which should be carried out as soon as possible, are proposed for the preparation of the Master Plan implementation, in addition to the various matters to be done as described in this report.

13.4.1 Project Management Study

Having proceeded with the Master Plan Study, it seems that a project management study is necessary for TOT in order to assure smooth and efficient implementation of the Master Plan. The study should be conducted for a purpose of reviewing and restructuring the institutional framework of project implementation management systems. The sub-management systems that need studies are;

- 1) Construction,
- 2) Procurement
- 3) Operation and maintenance
- 4) Human resources,
- 5) Marketing and customer relations,
- 6) Budgeting and finance,
- 7) Management information.

The overall management system should further be studied for a purpose of clarifying role, authority and responsibility of the headquarters and regional offices, and designing the best organization structure to coordinate the sub-management systems for implementing the projects. Concepts mentioned above are shown in Figure 13.4.1.

13.4.2 Further Study for the Metropolitan Area

Needless to say, the Bangkok metropolitan area is the most important area for telecommunications development project in Thailand, not only from the quantitative viewpoint of telephone installation but also from the qualitative viewpoint of introduction of enhanced services.

The Master Plan Study of this time has been performed covering the whole country on the macroscopic basis according to the scope of work. Therefore, as the next step toward implementation of the 7th ESDP, it may be useful to carry out another study for the metropolitan area on the microscopic basis, including field survey for telephone demand forecast in each area, further study of facility expansion plan and market research on the enhanced services such as ISDN and non-voice services, etc.

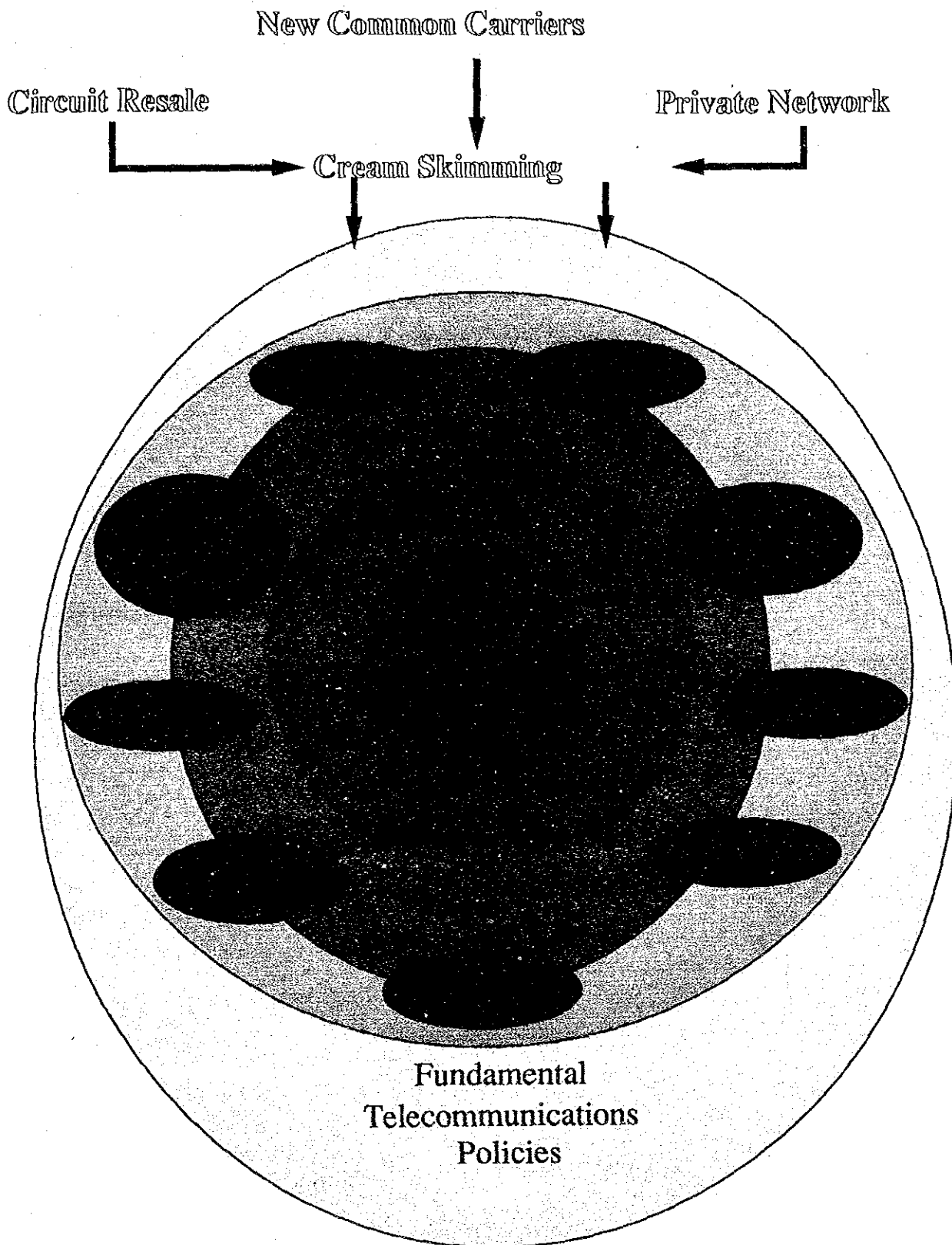


Figure 13.4.1 MasterPlan and Further Studies

