(d) Summary of Evaluation

Foregoing evaluations are summarized in Table 2.4.1.(b).

Table 2.4.1(b) Summary of Evaluation

Alternative / Criteria	Establish-ment	Personnel	Fund	Credibility
Alternative - I	G	F	F	P
Alternative - II	P	G	G	P
Alternative - III	G	G	G	G

G : Good
F : Fair
P : Poor

2.4.3 Proposed Organization and Its Duties and Authorities

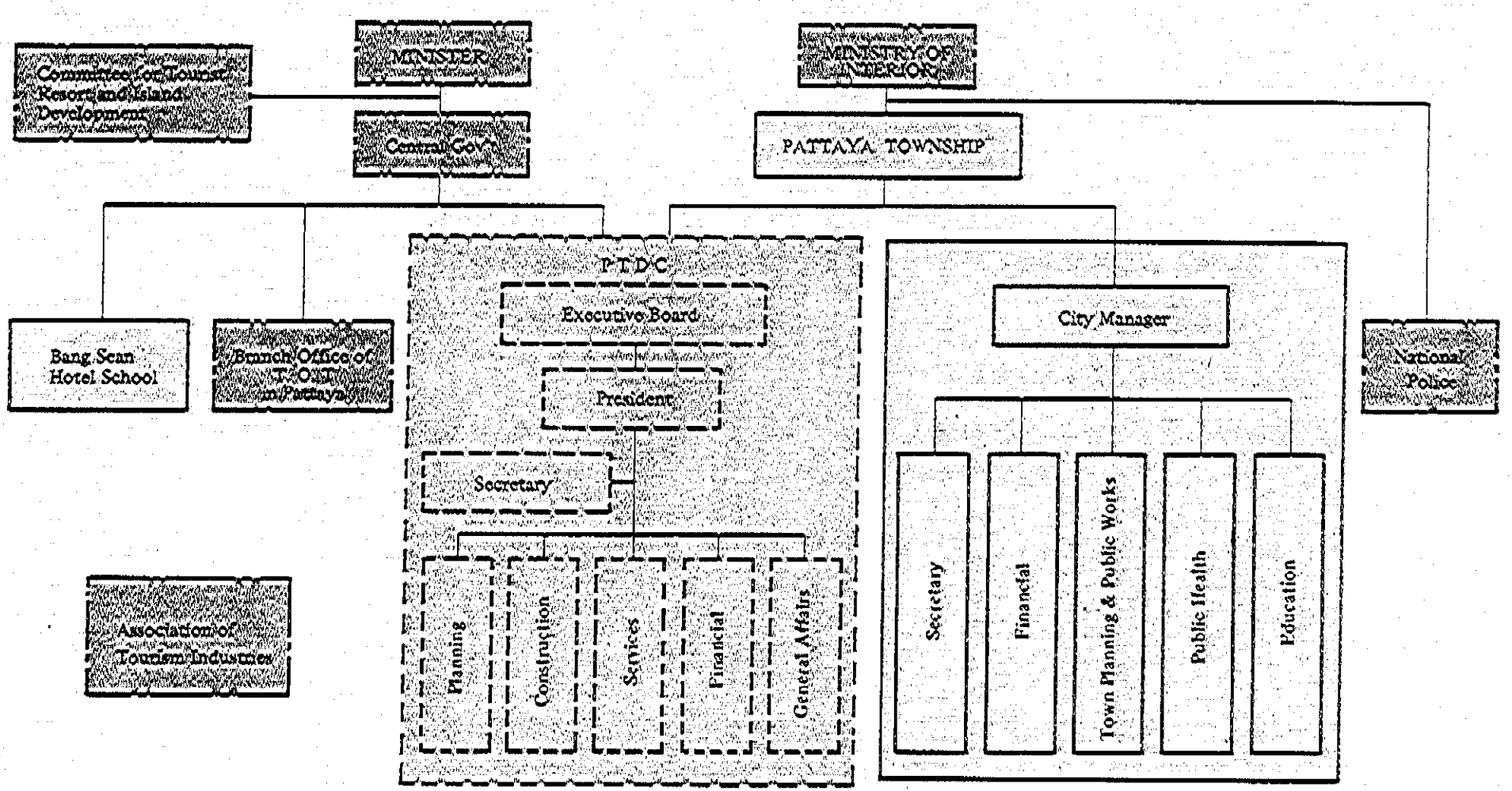
(a) Overall Organizational Structure

It will be important for the overall organization framework in the Pattaya area that its "vertical" structure offer administrative stability and its "horizontal" structure facilitate the fulfillment of the objectives, namely tourism development. Figure 2.4.4 shows the recommended overall organizational structure for the effective and orderly accomplishment of tourism development in the study area.

Under the recommended structure, the T.O.T. and other central government agencies, Pattaya Township, and private tourism industries (or their associations) will be able to participate and promote tourism development without organizational overlaps and in such a manner that they function complementarily to each other, and all of the functions necessary for tourism development projects will be satisfied as follows:

*T.O.T. and other central government agencies:	National tourism policy/promotion
*Bang Sean Hotel School:	Training of tourism industry employees
*Tourism industries (associations):	Tourism services/promotion
*Pattaya Tourism Development Corporation (a provisional name):	Construction of physical infrastructure, administration and operation of the facilities
*Pattaya Township:	Administration, social infrastructure development, recovery of benefits (tax collection)
*National Police:	Security

Fig. 2.4.4 Organization for Project Execution & Operation



Legend : Existing : Planned : Proposed

Note: PTDC would be established under the management of the Pattaya Township and Central Government following Article 73 of the Pattaya Township Act as well as relating law.

(b) Core Organization for Execution and Operation

In this report temporarily calling the organization which will perform the functions stated under 2.4.1 and be established by joint investment by the Central Government and Pattaya Township as recommended in 2.4.2 with regard to the Pattaya Project, the "Pattaya Tourism Development Corporation" (PTDC), the PTDC organization would consist of an executive board, a president, and a secretary, as well as planning, construction, services, financial, and general affairs departments.

Executive Board: This will blend national policies and local policies into PTDC activity policies; to be comprised of the PTDC President, two or three high ranking T.O.T. and other central government officials, and two or three high ranking Township officials, including the City Manager. Meetings should be held regulary under the chairmanship of the PTDC President.

President: He will be charged with the responsibility for implementing activity policies determined by the Executive Board.

Departments: These will perform the duties set forth in Table 2.4.2.

(c) Functions

Appropriate departments of the PTDC will be required to carry out the work stipulated in Table 2.4.2.

(d) Authority

To facilitate the effective accomplishment of the assigned duties, the PTDC will be equipped with the following areas of authority within the Pattaya area:

a. The authority to coordinate with other government agencies, Pattaya Township and private capital with regard to the execution of projects,

b. The authority to construct and operate each project,

c. The authority to obtain bank loans and to issue bonds,

d. The authority to set rates for charges on tourism as well as public facilities subject to the approval of the Central Government,

e. The authority to establish special charges subject to the approval of the Central Government,

f. The authority to plan and promote the establishment of cooperatives and

g. The authority to control and manage tourism industries.

(e) Dissolving the Organization

The organization of the PTDC should, by its very nature, be flexibly expanded or shrunk depending on the stage of development progress. That is, when future construction has been completed under the projects, the PTDC's development function should fade out: the experience accumulated within PTDC will probably be utilized for tourism development or infrastructure projects elsewhere. When the

Table 2.4.2 Functions of a Public Corporation (PTDC)

Departments	Functions
President	Every aspect of management
Secretariat	Public relations, coordination with other government agencies
Planning Department	Formulation of project execution plans, drafting of regulations, incentives, establishment of fee rates, tax proposals, special charge proposals
Construction Department	Designing, construction, contracts, procurement Preparation of tender documents, monitoring of water quality, construction projects, progress monitoring
Service Department	
- Water supply	Operation, maintenance, and administration of treatment plant, meter reading, and charge collection
- Sewerage	Operation, maintenance, and administration of treatment plant
- Roads and streets	Road repairing, administration of parking lots
- Storm water drainage	Mainenance, administration, surveillance against illegal development
- Solid waste disposal	Cleaning, trash collection, transportation, disposal, fee collection, and distribution of containers
- Port facilities	Pier administration, fee collection
Amenity core and Inland activities	Utilization plan, regulation, fee collection * Administration of thereafter, zoo, botanical garden, and inland facilities
Finance Department	Formulation of plans for the project fund generation, formulation of annual budgets, disbursements, revenue administration, collecton of special hotel charges, etc., auditing
General Affairs Dept.	Personnel affairs, training program formulation and execution

PTDC has fully recovered the construction costs, the fundamental objectives of the establishment of the PTDC will be considered to have been achieved and, therefore, the PTDC itself might be dissolved. The managemental duties and area of authority of the PTDC will be taken over by the Pattaya Township, or some other appropriate organization.

2.4.4 Manpower Planning

(a) PTDC manpower plan : summarized in Table 2.4.3

Staff and other personnel needed for the execution and operation of the first phase of the Pattaya project will be 188 personnel for the operation of infrastructure projects, 91 personnel for the operation of the amenity cores and inland activities, and 61 personnel for execution and management of the project for a total of 340.

(b) Of the 340, the recruitment of medium level staff and ordinary personnel will be very easy and this is expected to encounter no difficulty. Requirements for higher staff can be satisfied by dispatching the necessary manpower from the existing government agencies. But the quality of the staff secured will have to be improved through training, while the employment of consultants would be inevitable to satisfy certain needs.

(c) It is believed that technical staff training would be appropriately accomplished as follows:

- The emphasis would be placed on the training of higher staff for the improvement of their capabilities. In view of the small number of candidate trainees, no dedicated training facility will be needed for this purpose.
- Sewerage engineers, sanitary engineers, and others whose training will be difficult in Thailand are to be trained abroad, and the technical assistance programs of foreign countries are to be fully utilized in view of the cost of such overseas training.
- Another approach worth considering is to contract out the projects under a full turn-key agreement such as that which is often used in the construction of infrastructure, thereby accomplishing the training of higher and middle staff.

The importance should be stressed of having higher technical staff, when they have acquired full capabilities, then pass their capabilities on down to middle staff through on-the-job training programs.

- The adviser system should be applied to each of the Planning, Operation, and Finance Departments of the PTDC. The Construction Department should engage consultants from time to time when needed upon contracting out individual works.

Table 2.4.3 PTDC Manpower Plan

Function	Breakdown of Strength			
	Total Strength	Higher Staff	Middle Staff	Ordinary Personnel
1. Water Supply System				
Treatment Plant	18	2	16	0
Plumbing	5	1	4	0
Meter Reading/ Charge Collection	15	1	2	12
2. Sewerage System				
Treatment Plant	24	4	20	0
Plumbing	5	1	4	0
3. Streets and Storm Water Drainage				
Traffic Control	5	0	1	4
Facilities Administration	5	0	1	4
Parking Lots Administration	5	0	1	4
4. Solid Waste Disposal				
Dumping	8	2	4	2
Cleaning	35	0	3	32
Collection	35	0	3	32
Drivers	17	0	17	0
5. Port Facilities				
Harbor Master	1	1	0	0
Administrative Personnel	1	0	1	0
Miscellaneous Personnel	9	1	1	7
6. Amenity Core				
Superintendent	1	1	0	0
Clerks	7	0	7	0
Miscellaneous Personnel	18	0	0	18
7. Inland Activites				
Superintendents	4	4	0	0
Professionals	2	2	0	0
Clerks	10	0	10	0
Miscellaneous Personnel	49	0	0	49
8. Corporation Head Office				
President	1	1	0	0
Secretariat	8	2	3	3
Planning	8	2	3	3
Construction	8	2	3	3
Operation Service	8	2	3	3
Finance Budget	15	5	5	5
General Affairs	13	3	5	5
Total	340	37	117	186

2.4.5 Costs of Operation and Administration

The costs of operation and administration incurred by the PTDC can be largely broken down into (1) maintenance and operation costs for the infrastructure, amenity cores, inland activities, and other facilities, and (2) the administration costs for the execution and management of projects. The costs of (1) above has been estimated upon individual project planning and the calculated cost of maintenance and operation. So, only the costs of (2) will be estimated here.

(a) Direct Salaries and Wages

Direct salaries and wages needed for project management purposes are estimated together with the number of needed personnel on Table 2.4.4, which shows that such costs will come to a total of 1,808,000 baht per year.

Table 2.4.4 Number of Personnel and Personnel Expenses needed for Project Management

Unit: Thousand baht per year (Number of persons)

Assignment \ Class	Higher	Middle	Ordinary	Total
President	130 (1)	-	-	130 (1)
Secretariat	130 (2)	60 (3)	27 (3)	217 (8)
Planning	130 (2)	60 (3)	27 (3)	217 (8)
Construction	130 (2)	60 (3)	27 (3)	217 (8)
Operation Services	130 (2)	60 (3)	27 (3)	217 (8)
Budget Finance	325 (5)	100 (3)	45 (5)	470 (15)
General Affairs	195 (3)	100 (3)	45 (5)	340 (13)
Total	1,170 (17)	440 (18)	198 (22)	1,808 (61)

Note 1. Note 1. Grades of personnel are defined as below.

Higher: University graduates and those with higher educational backgrounds.

Middle: Senior high school graduates and those with higher educational backgrounds.

Ordinary: Draftsmen, messenger boys, etc.

Note 2. Salary calculations are based on the salaries of national civil servants as of 1976.

(b) Administration Costs

Overhead costs must be estimated in addition to the above direct personnel expenses. Assuming that the same management system as that of Pattaya Township (see Table 2.4.5.) will be adopted for the PTDC office, general administration expenses are estimated by applying a coefficient of 3.94 to the amount of direct personnel expenses.

General administrative cost = 1,808,000 baht/year x 3.94 = 7,123,520 Baht

Table 2.4.5 General Administration Cost
(Based on that of Pattaya Township)

Item	Index
Direct Personnel Costs	1.00
Office Maintenance	0.88
Materials	0.88
Office Furniture	0.59
Compensation	0.59
Total	3.94

(Source) Calculated from Table 2.2.4

2.4.6 Financial Soundness

Inasmuch as the PTDC chiefly provides for the construction and operation of projects which are generally of low profitability, it seems that the PTDC will be a fairly difficult financial condition during the initial decade. Efforts should be made to secure the financial soundness of the PTDC through the following measures:

(a) Procurement of Low Cost Funds

It will be crucial that low cost funds with lenient requirements as regards loan redemption be secured in generating the required development fund of about 1,400 million baht (of which 900 million baht are for construction and 500 million baht for land acquisition). From this viewpoint, it will be desirable that the PTDC's equity capital be made as large as possible and that, as for overseas loans, "soft loans" should be obtained.

(b) Increasing Revenue

In general the measures needed for the increase of revenue from fees and charges would eliminate idle capacity among the infrastructure as soon as possible. Moreover, it might also be necessary for the level of such fees and charges to be set as high as possible within the limits of the consumers' ability to pay. Both the rates of coverage and of utilization should be taken into full consideration before fee and charge rates are set.

(c) Other Measures

If the financial soundness of the PTDC cannot be realized through the measures in (a) and (b) above, the PTDC may accept a part of the Township's financial sources as the PTDC's current revenue in view of the fact that some of the benefits derived from the projects to be executed by the PTDC would be earned by the Township as additional tax revenue. Such benefits can be reasonably deemed from sources which the project executing entity may recover its investment.

2.4.7 Establishment of Committee for Project Execution Study

As mentioned earlier, PTDC will be the major organization which will execute Pattaya Project, but further consideration is needed on the

detail of the organization set up. For example, solid waste disposal is already undertaken by local government as its routine job, and it might be more desirable if the newly established Pattaya Township will do this job. In any case, job allocation between Pattaya Township and PTDC concerning this project should be determined through discussion by Pattaya Township, TOT, and other government agencies.

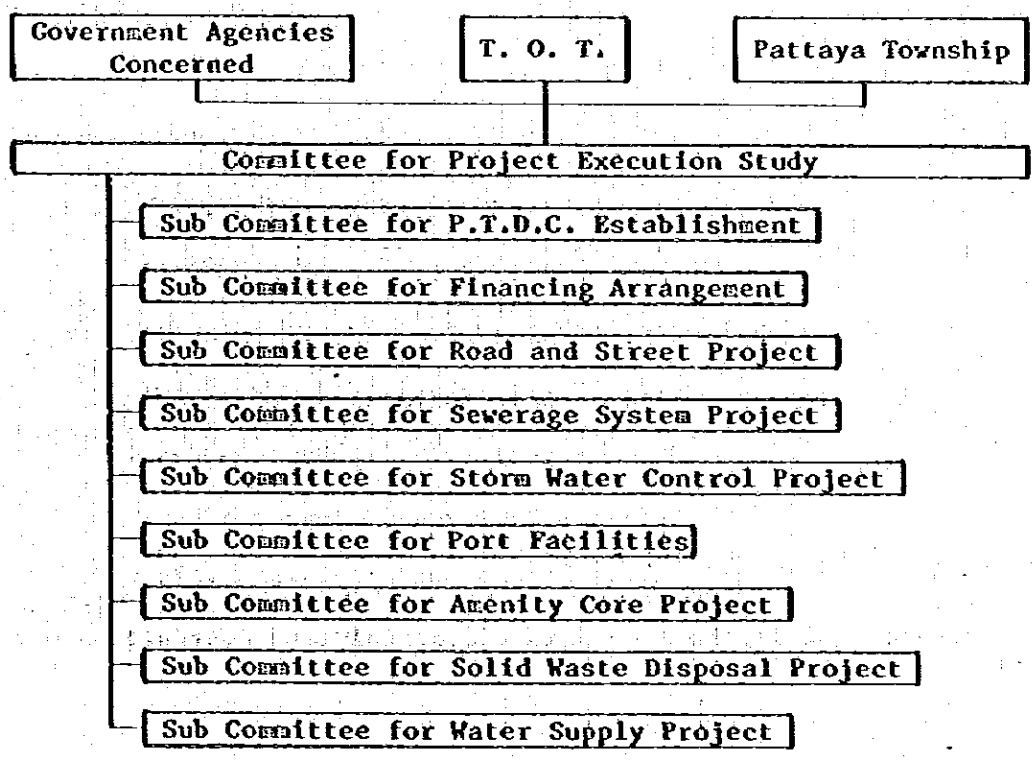
Preparation for the establishment of PTDC is an urgent job, also.

Taking these things into consideration, it is most recommendable to organize a committee for project execution study for the preparation of both project execution and inauguration of PTDC. The range of duties and authorities of PTDC which will be established in the middle of 1979 should be examined in detail and decided by this committee.

This committee for project execution study will consist of representatives from TOT, Pattaya Township, and government agencies concerned.

The chairman and the coordinator should be most appropriately assigned from the representatives of TOT. Under this committee, subcommittees will be organized for the preparation of executing each project, establishing of PTDC, and raising fund for the project construction works.

Fig. 2.4.5 Structure of Committee for Project Execution Study



2.5 Ancillary Preparations

2.5.1 Necessity

Simply started, the governmental role in general tourism development can be stated as follows. The government develops tourism resources, facilities and related infrastructure, thereby shaping the "skeleton" of tourist destinations, while the government offers certain incentives for the construction of the foundations for tourism industries and related activities in the early stages of development, thereby stimulating the expansion of the qualitative and quantitative capacity of tourist services. When a tourist destination has been developed through these measures, the government may now realize revenue from tourism industries within that destination area. In order for such a developmental mechanism to be shaped, the establishment of the following institutional systems is usually necessary:

- Those which pertain to tourism market development,
- Those which pertain to the supply of tourism products and services,
- Those which pertain to the protection and promotion of folk arts and culture,
- Those which pertain to nature protection and environmental preservation,
- Those which pertain to manpower development, and
- Those which pertain to research and study.

Pattáya has a peculiar history, in that development has been accomplished solely by investments made to seek individual benefits for private capital and the inhabitants, and, as a result, the phenomenon of so-called "random development" has taken place. A future problem will be the elimination of such random development and the accomplishment of orderly and well-balanced development. Toward this end, it is believed essential that a powerful organization such as the PIDC be established for project execution and operation, while an institutional system should be established in order that private capital and the inhabitants be appropriately guided or controlled.

2.5.2 Smooth Development and Control

The government should deal with the following three measures without delay so that development may be accomplished smoothly and controls enforced effectively;

(a) Measures for Effective Development

The Pattaya district has been developed to some extent. Various problems are liable to occur which will hinder the progress of development projects implemented in partially developed areas such as Pattaya. Such problems include the opposition of inhabitants to land expropriation, difficulties accompanying the evacuation of inhabitants from acquisitioned land, illegal construction of buildings, and other construction or commercial activities which are counter to the land or facility utilization plans.

In order to cope with such various problems comprehensively, it will be essential in the first place that the government take a full inventory of rights and concessions of land as they stand currently, thereby formulating a detailed program to overcome the said problems. While it is believed that such problems can be settled in most cases by the administration of current laws, the Township and the PTDC should take additional measures to cope with other cases within the scope of their authority so that development will be accomplished smoothly.

(b) Measures for the Utilization of Sea and Beach Areas

Implementation of this Project will result in substantial changes in the form of utilization of the sea and beach. But, in view of the fact that tourist ships and wagon shops have high mobility, the mere establishment of a marina and the designation of beach utilization will fall short of achieving the planned sea and coastal area utilization.

While enforcement by the exercise of police power in case of violation would be important in coping with this problem, it is more important to cultivate the understanding of boats and vendors operators and to solicit their cooperation with the execution of the plan. An effective means of accomplishing this end will be to have each industry organize its own association or cooperative which will have the members engaged in orderly utilization of sea and beach. The effectiveness of this means can be made even greater when such utilization is subjected to the approval of the PTDC and when membership in such an association or cooperative is made a condition of approval.

(c) Measures to promote the Utilization of Various Facilities

The current situation is that private enterprises are carrying on their businesses and inhabitants their lives without an adequate infrastructure. While the development of the infrastructure is to be naturally welcomed, it should be noted that the utilization of the infrastructure can result in a financial burden on the enterprises and the inhabitants and that an excessive burden can hinder the utilization and spread of the infrastructure. Such a burden may be mitigated by, for instance, providing a special loan to finance the cost of constructing a feeder facility for the utilization of the water supply or sewerage systems. But it appears almost impossible to the Thai Government to establish a system for such a loan under present conditions. Yet, it is possible to reduce the burden on the users to a fair degree by, for instance, allowing them to pay for the one-time cost of the feeder facility in installments to be added to monthly charges. Although this will naturally entail greater work in financial administration on the part of the Pattaya Township, such a disadvantage should be much preferred to the financial burden on the Township which can result from low levels of utilization.

2.5.3 Investment Promotion

It has been already pointed out that for the Government to offer certain incentives to tourism and related industries in the early stages of development would be a good strategy for accelerating investments in such industries. Investment incentives can be largely broken down into the following:

a. Preparation of land and infrastructure, incentives in terms of land prices, rents, and utility charges,

b. Facilitation of fund generation and the enhancement of the loan system for lower fund costs,

c. Reductions or exemptions of import taxes on materials, equipment and machinery,

d. Reduction or exemptions of corporate income taxes, and fixed property taxes,

e. Accelerated depreciation of fixed asset, and

f. Net loss carry-over.

It can be readily understood that these incentives would stimulate the growth and development of hotels, restaurants, tourist agencies, entertainment agencies, and other tourism related industries. Hotels are the major industry among the so-called tourism industries which currently receives benefits from investment incentives offered by the Board of Investment (BOI). They are not only enjoying various investment incentives from the BOI, but those particularly located in Bangkok and Pattaya are also heavily protected by the fact that no hotel is allowed to newly enter the industry to prevent over-competition among the existing hotels. In the Pattaya area, an adequate number of hotels has been constructed, but other tourist industries are lagging behind. One of the major reasons is that tourism-related industries other than hotels are being given few incentives by the Government. The TOT should realize that well-balanced development of all tourism-related industries is an essential ingredient of any first class tourist destination and should urge the BOI to expand the scope of the Investment Law in order that adequate incentives be offered also to other tourism-related industries in addition to hotels.

In this regard, it is crucial that standards be set for various tourism-related industries to achieve, and that a system be established under which incentives are available to the projects which satisfy the standards. Such a system has been established for hotels.

A defect of such a system, however, is that it can result in the preferential treatment of only big capital but small and medium businesses may not be able to enjoy the benefits, which hinders the basic objectives of the Pattaya Project. The fostering of small and medium businesses is the duty of the TOT, the Pattaya Township, and the PIDC.

The same incentives available to companies are also available to small and medium businesses when they have organized cooperative under the investment promotion program of the BOI. But according to the BOI, there has been no case in which a cooperative has enjoyed such incentives. The organization of cooperatives has been fairly difficult in Thailand.

But such organizations as Pattaya Township and the PIDC are now being established and conditions are becoming available for the Government to provide guidance on the establishment of cooperatives. It is believed that cooperatives can be established and be successful in their businesses, as long as the Government is willing to provide the leadership.

2.5.4 Training of Employees in Tourism Sector

The training of tourism employees in the Pattaya area has two large objectives: (1) improvement of the level of tourist services, and (2) promotion of participation by local inhabitants in tourism development. The necessity of training from the standpoint of (1) above was analyzed in detail in the master plan. In summary, a net increase of 1,050 in the number of hotel employees is necessary by 1986 and a net increase of 7,650 by 1996. If tourist guides, interpreters, and tourist agents can be supplied from Bangkok on a continual basis, they need not be supplied in Pattaya. In the case of restaurant and souvenir shop employees, training should concentrate on foreign languages and no specific training and development program is needed for them. From the viewpoint of (2) above, the training of tourism employees other than hotel employees should be desirable in principle. But, from the peculiarity of the Pattaya area as a tourist destination, there is little need for the training of tourist guides, interpreters, and tourist agents, and it is doubtful if the economy will justify such efforts. In other words, those who need to be trained are mostly hotel and restaurant workers.

In the Pattaya area at present, hotels and restaurants are engaged in the training of their own employees without coordination or cooperation with each other. Higher staff is recruited from Bangkok.

The Pattaya Tourist and Trade Promotion Association testifies that the following are the major difficulties in the training of tourism industry employees:

(1) Lack of instructors,

(2) Lack of training facilities,

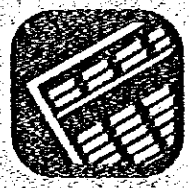
(3) Lack of adequate training materials,

(4) Lack of financial ability on the part of hotels to pay for the cost of training, and

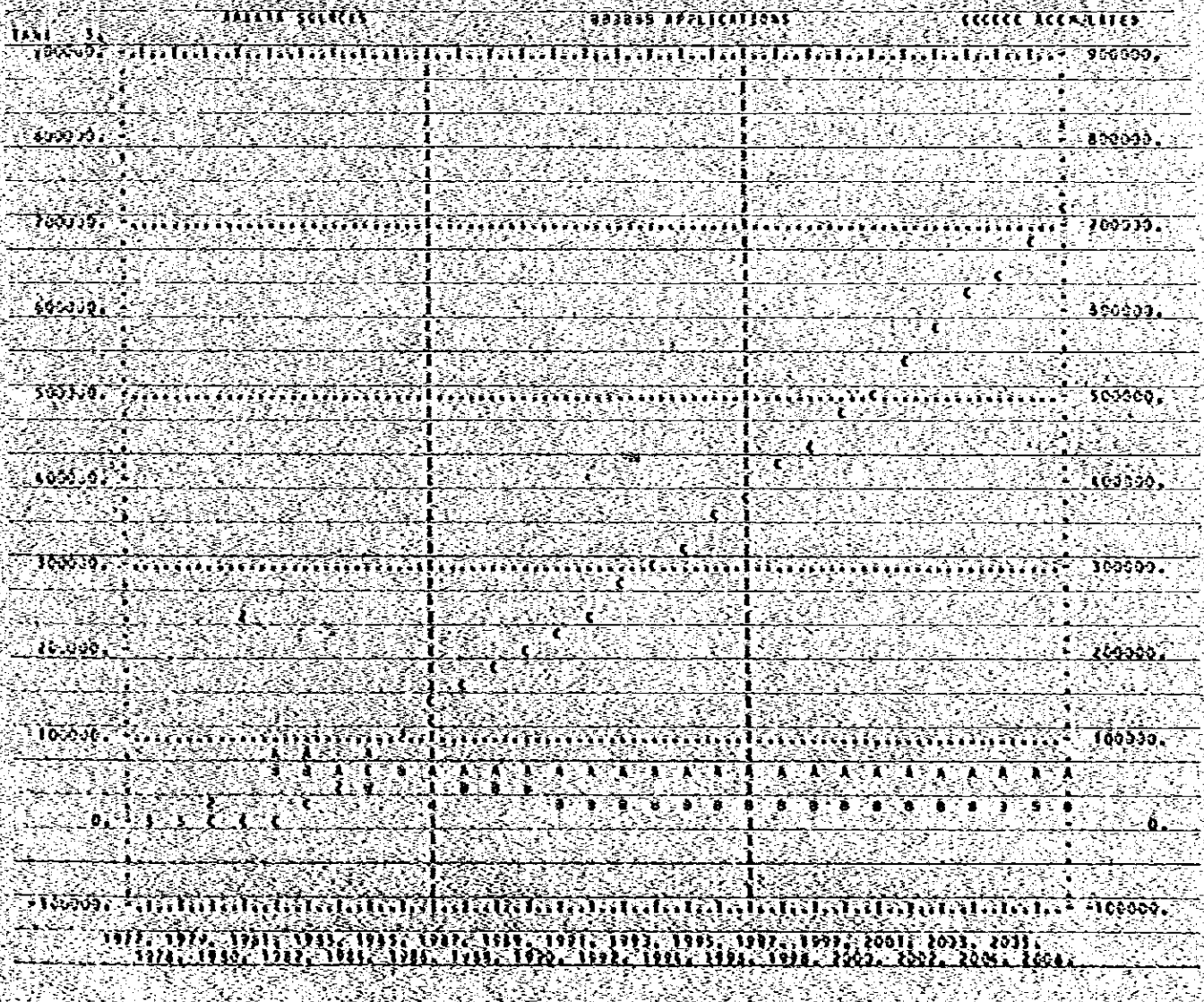
(5) Lack of effective training plans and programs

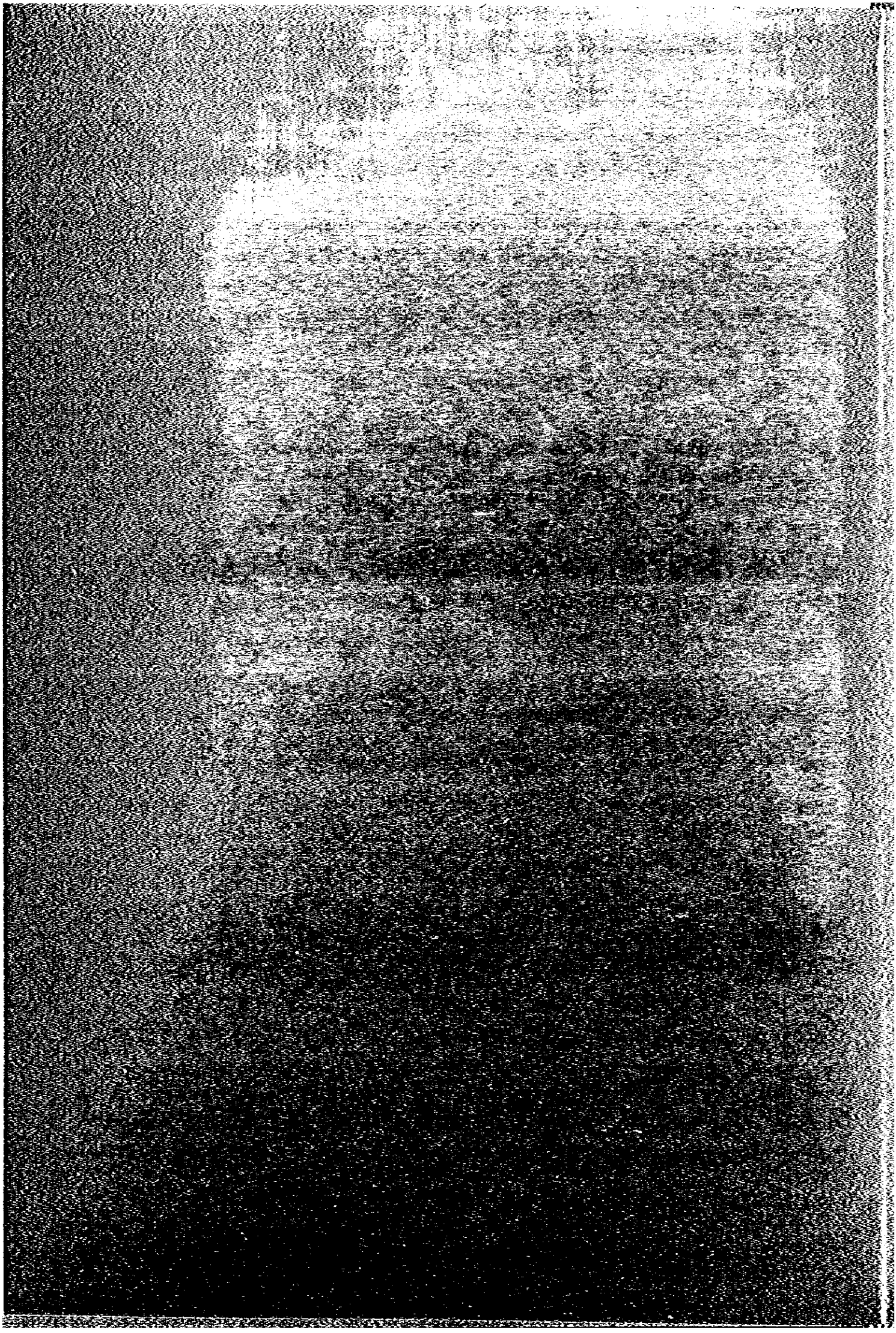
It is believed that these difficulties will be overcome in most cases by the establishment of the Bang Sean Hotel School by the TOT (now being planned). Bang Sean is but about 40 kilometers from Pattaya and is the closest of major tourist destinations. The key to the success of this Bang Sean Project will be upto degree of the utilization by industries in Pattaya and Bangkok.

CHAPTER 3
FINANCIAL ANALYSIS



1. INTRODUCTION
2. MODIFICATION OF MASTER PLAN
3. COST ESTIMATION
4. PROFIT AND LOSS STATEMENT
5. CASH FLOW
6. FINANCIAL INTERNAL RATE OF RETURN
7. ABILITY TO PAY UTILITY CHARGES
8. SENSITIVITY ANALYSIS AND ITS EVALUATION





CHAPTER 3. FINANCIAL ANALYSIS

C O N T E N T S

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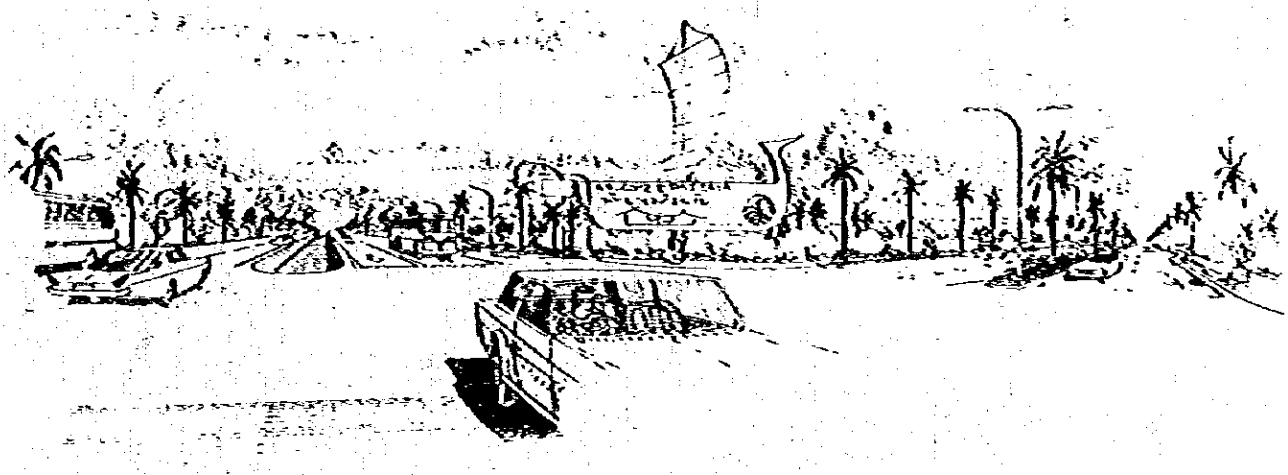
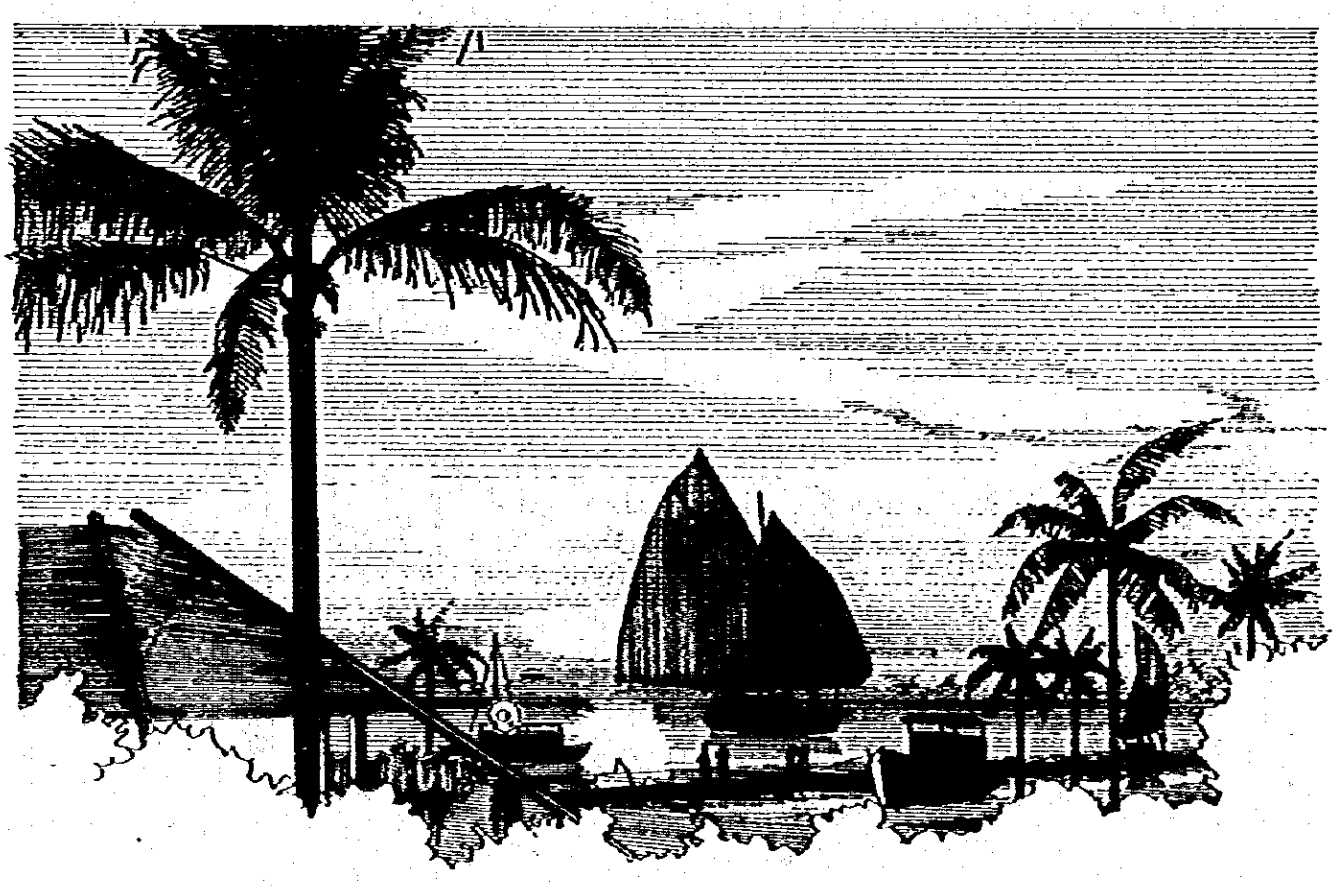
Note: Necessary data in details are provided in the Annexes next to Chapter 4. It shows the background of the financial and economic analysis.

Tables

Figures





CHAPTER 3. FINANCIAL ANALYSIS

3.1 Introduction

To evaluate this project, it is necessary to study the financial feasibility of the executive organization in charge of its execution; namely, the Pattaya Tourism Development Corporation (hereinafter referred to as the PTDC), as described in Chapter 2, Organization and Management.

These infrastructure systems were planned with the accuracy required for a feasibility study as demonstrated in Volume 2, Technical Aspects of the Project. However, the accuracy for the water supply system is still on the same level of the masterplan. Because of the scope of the study excludes a feasibility study on the water supply system. The project covers public infrastructures in regional and tourism zones in the study area.

The major works to be executed by the PTDC will be public infrastructures; namely, (a) the road and street system, (b) the sewerage system, (c) the storm water drainage system, (d) the solid waste disposal system, (e) the port facilities, and (f) the water supply system.

Financial analysis on these projects are concerned to these 6 items (refered as Category A), as a base case for the evaluation. It is informed that the construction and finance of the water supply system have been carried out by the Public Works Department of the Thai Government. Alternative analysis excluding the water supply system was made for the public infrastructures for reference purposes.

In calculating the Financial Internal Rate of Return (hereinafter referred as IRR), the whole initial investment cost was considered basically to evaluate the profitability of the project. Foreign loans were combined with the cash inflow as an alternative case of the PTDC's profitability.

The share of foreign loans was expected to reach 50% of the initial investment cost. The remainder was expected to be financed by the fiscal budget of the government. Subsidy by the Thai Government over the amount of interest payment was taken into consideration as an alternative case.

3.2 Modifications of Master Plan

Some modifications on technical matters from the master plan were made in the course of the feasibility study because of the detailed study in the field and office as well. These were, however, only of a minor nature, and the fundamental requirements of the master plan remain unchanged. The improvement items have been taken into account in the calculation of cost estimations here.

Modification items are summarized in Chapter 1 of Volume 1 and the detail relevant descriptions are explained in the Volume 2 of this report for cross examination.

Table 3.3.1 Total Project Cost by Infrastructure and Other Facilities Phase 1, up to 1986,

Unit: million Baht

Category	Land Acquisition *3	Civil Works and Equipment	Consulting Services	Total Physical Facilities	Project Administration	Total Project Cost	US$ million
A: Infrastructure *1	221.8	706.9	65.3	994.0 (34%)	98.2	1,092.2	54.6
B: Other Facilities *2	633.7	961.1	96.1	1,690.9 (57%)	30.8	1,721.7	86.1
Base Line Cost	855.5	1,668.0	161.4	2,684.9	129.0	2,813.9	140.7
Physical Increase	-	117.0	11.3	128.3 (4%)	-	128.3	
Price Increase	-	133.7	12.9	146.6 (5%)	-	146.6	
Contingencies Sub-Total	-	250.7	24.2	274.9	-	274.9	13.8
Total Project Cost	855.5 (29%)	1,918.7 (65%)	185.6 (6%)	2,959.8 (100%)	129.0	3,088.8	154.5

Notes: *1 : Public Infrastucture such as Road and Street System, Severage System, Storm Water Drainage System, Solid Waste Collection and Disposal, Port Facilities and Water Supply System. for Financial and Economic Analysis.

*2 : Other Facilities in Public Sector -- Tourism -- Amenity Core, Inland Activity Facilities.
-- Residential -- School, Hospital and Open space.

Other Facilities in Private Sector -- Tourism -- Hotels and Restaurants for Economic Analysis.

*3 : No contingecies put on the land Acquisition.

Table 3.3.2 Total Project

Table 3.3.2 Total Project Cost of Infrastructure by Major Project Components Category-A

Unit: million Baht

Major Project Components	Land Acquisition	Civil Works and Equipment	Consulting Services	Total Physical Facilities	Project Administration	Total Project Cost	US$ million
Road and Street System	182.5	129.1	11.5	323.1 (29%)	26.0	349.1	17.4
Severage System	18.1	159.3	14.7	192.1 (17%)	19.9	212.0	10.6
Storm Water Drainage System	18.4	22.9	2.4	43.7 (4%)	5.6	49.3	2.5
Solid Waste Disposal System	0.6	19.7	1.8	22.1 (2%)	13.1	35.2	1.8
Port Facilities	-	53.6	5.4	59.0 (6%)	6.2	65.2	3.2
Water Supply System *1	2.2	322.3	29.5	354.0 (32%)	27.4	381.4	19.1
Base Line Cost	221.8	706.9	65.3	994.0	98.2	1,092.2	54.6
Physical Increase	-	49.5	4.6	54.1 (5%)	-	54.1	2.7
Price Increase	-	56.6	5.2	61.8 (5%)	-	61.8	3.1
Contingencies Sub-Total	-	106.1	9.8	115.9	-	115.9	5.8
Total Project Cost	221.8 (20%)	813.0 (73%)	75.1 (7%)	1,109.9 (100%)	98.2	1,208.1	60.4

Note *1 Cost on Water Supply System was estimated tentatively based on the study output by the Masterplan.

3.3 Cost Estimation

- Criteria for Estimation

The prices in 1976 have been adopted as the base for cost estimations. International market prices in 1976 were also adopted for the cost estimation for imported goods. As the average charge for freight and insurance costs from foreign countries to Thailand, 9% of the F.O.B. price was adopted, with US$ being converted into Thai Baht at the exchange rate of US$1 = 20 Baht.

However, the land prices at the end of 1977 were adopted because of the sharp price incrases (5 to 10 times in the downtown area) from previous year which was adopted as the base in master plan.

- Initial Investment Costs

  - Construction Costs have been divided into two kinds of currencies, namely, local and foreign. Unskilled labor costs and the tax portion have been separately calculated for each item.

  - Consulting services, in this analysis, have been divided into design and supervision categories.

  - Price contingencies have been estimated at 8% and physical contingencies at 7% against the construction costs and total consulting service during the construction period up to 1986.

  - Land acquisition prices at the end of 1977 were adopted for land unit prices in the current market. No contingency was taken into consideration in land prices.

Total initial investment costs with contingency for the infrastructures (category A) are estimated at 1,109.9 million Baht (US$55.5 million) of which land cost is 221.8 million Baht, civil works and equipment, 813.0 million Baht and consulting services, 75.1 million Baht. On the other hand, the costs for other facilities (category B) are estimated at 1,849.9 million Baht (US$92.5 million) of which land cost is 633.7 million Baht and civil works and equipment, 1,105.7 million Baht, and consulting services, 110.5 million Baht.

The rates of land acquisition costs for infrastructures and other facilities are respectively 20% and 34% in the initial investment cost.

Note: Numbers were often counted fractions of 0.5 and over as units and cut away the rest. In case of inconsistency among numbers it would be understood that the figures were rounded.

Table 3.3.3 Maintenance & Operation Cost of Tourism and Residential Area

Category A

Unit: million Baht

No.	Year	Road	Sewerage	Storm Water	Solid Waste	Marine & Port	Water Supply	Total
1	1977	-	-	-	-	-	-	-
2	1978	-	-	-	-	-	-	-
3	1979	-	-	-	-	-	-	-
4	1980	-	-	-	1.7	-	-	1.7 (1.7)
5	1981	0.3	1.5	-	2.0	0.3	4.5	8.6 (4.1)
6	1982	0.5	1.6	0.3	2.3	0.3	4.6	9.6 (5.0)
7	1983	0.6	1.7	0.3	2.6	0.3	4.7	10.2 (5.5)
8	1984	0.7	1.7	0.3	2.7	0.3	4.7	10.4 (5.7)
9	1985	0.7	1.8	0.3	3.1	0.3	4.8	11.0 (6.2)
10	1986	1.4	1.8	0.3	3.2	0.3	4.8	11.8 (7.0)
11	1987	1.6	1.8	0.3	4.3	0.3	4.8	13.1 (8.3)
12	1988	1.8	↓	↓	↓	↓	↓	13.3 (8.5)
13	1989	1.9						13.4 (8.6)
14	1990	2.0						13.5 (8.7)
15	1991	2.1						13.6 (8.8)
16	1992	2.2						13.7 (8.9)
17	1993	↓						↓ ↓
18	1994							
19	1995							
20	1996				4.3			13.7 (8.9)
21	1997				5.7			15.1 (10.3)
22	1998				↓			↓
23	1999							
24	2000							
25	2001							
26	2002							
27	2003							
28	2004							
29	2005							
30	2006	2.2	1.8	0.3	5.7	0.3	4.8	15.1 (10.3)
	Total	45.6	45.1	7.5	117.6	7.8	124.1	349.7 (225.6)

Note: * Figures in the parenthesis show the cost excluding cost of water supply system.

Table 3.3.4 Administration Cost Tourism and Residential Area

Unit: million Baht

No.	Year	(1) Road	(2) Sewerage	(3) Storm Water	(4) Solid Waste	(5) Marine & Port	(6) Water Supply	(7) Amenity Core	(5-1-5) Total for FA*2	(7-1-7) Total for EA*3
1	1977	-	-	-	-	-	-	-	-	-
2	1978	-	-	-	-	-	-	-	-	-
3	1979	0.8	0.6	0.2	0.4	0.2	0.8	0.9	- *1	-
4	1980	1.0	0.8	0.2	0.5	0.2	1.1	1.3	3.0 (2.2)	3.9 (3.1) *4
5	1981	1.2	1.0	0.2	0.7	0.3	1.5	1.6	3.8 (2.7)	5.1 (4.0)
6	1982	1.4	1.1	0.2	0.7	0.3	1.6	1.8	4.9 (3.4)	6.5 (5.0)
7	1983	↓	↓	↓	↓	↓	↓	↓	5.3 (3.7)	7.1 (5.5)
8	1984								↓	↓
9	1985									
10	1986	1.4	1.1	0.2	0.7	0.3	1.6	1.8	5.3 (3.7)	7.1 (5.5)
11	1987	0.8	0.6	0.2	0.4	0.2	0.8	0.9	3.0 (2.2)	3.9 (3.1)
12	1988	↓	↓	↓	↓	↓	↓	↓	↓	↓
13	1989									
14	1990									
15	1991									
16	1992									
17	1993									
18	1994									
19	1995									
20	1996									
21	1997									
22	1998									
23	1999									
24	2000									
25	2001									
26	2002									
27	2003									
28	2004									
29	2005									
30	2006	0.8	0.6	0.2	0.4	0.2	0.8	0.9	3.0 (2.2)	3.9 (3.1)
	Total	26.0	19.9	5.6	13.1	6.2	27.4	30.8	98.2 (70.8)	129.0 (101.6)

Note: *1 figures in the parenthesis show the cost excluding cost of water supply system.
*2, FA: Cost for Financial Analysis *3, EA: Cost for Economic Analysis

- Maintenance and Operation Cost (hereinafter referred as M & O cost)

The M & O cost was estimated for the infrastructure of six components basing on the following factors; its capability for maintaining and operating the facilities and the appropriate average amount of money for preparing the incremental money to cater to the superannuation of facilities. The M & O cost is shown in Table 3.3.3.

The required number of manpower for full operation of all infrastructures was estimated about 300. The total cost is 349.7 million Baht for 27 years up to 2006 and is about 32% of the total initial investment costs. As civil works and equipment cost for the infrastructure, 706.9 million Baht is needed. The total M & O cost is about 50% of the previous cost. In other words, annual M & O cost is almost 2% of the initial construction cost (excluding land cost).

- Administration Costs

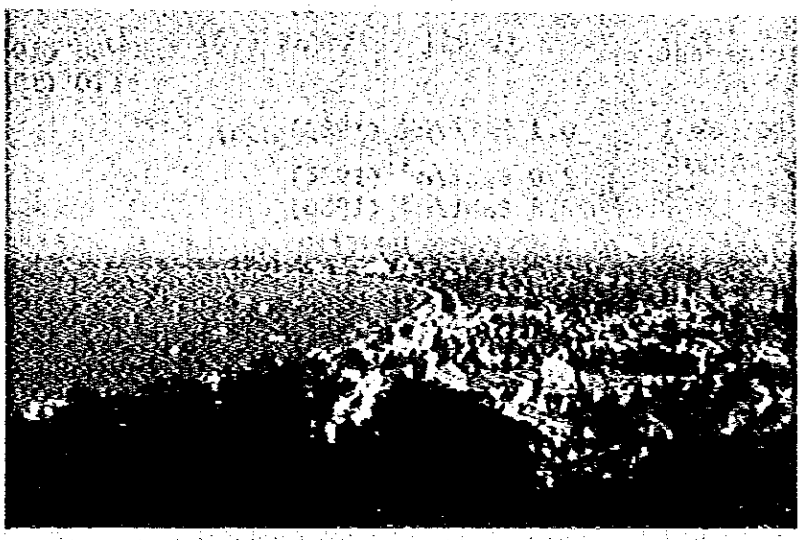
The administration costs cover the salaries and wages needed for project management in the headquarter of the PTDC. However, these costs have been subdivided in proportion to the scale of investment costs and apportioned into each area of the infrastructure items for the sake of convenience for calculation.

Administration costs allocated into seven work items of six infrastructure systems and amenity core administration. The total cost up to 2006 is 129 million Baht (7.1 million Baht a year during the execution of the project and 3.9 million Baht a year after completion of the implementation). Details of the cost are shown in Table 7 on Annex 8. Detailed description is presented in Chapter 2 Organization and Management.

- Depreciation Costs

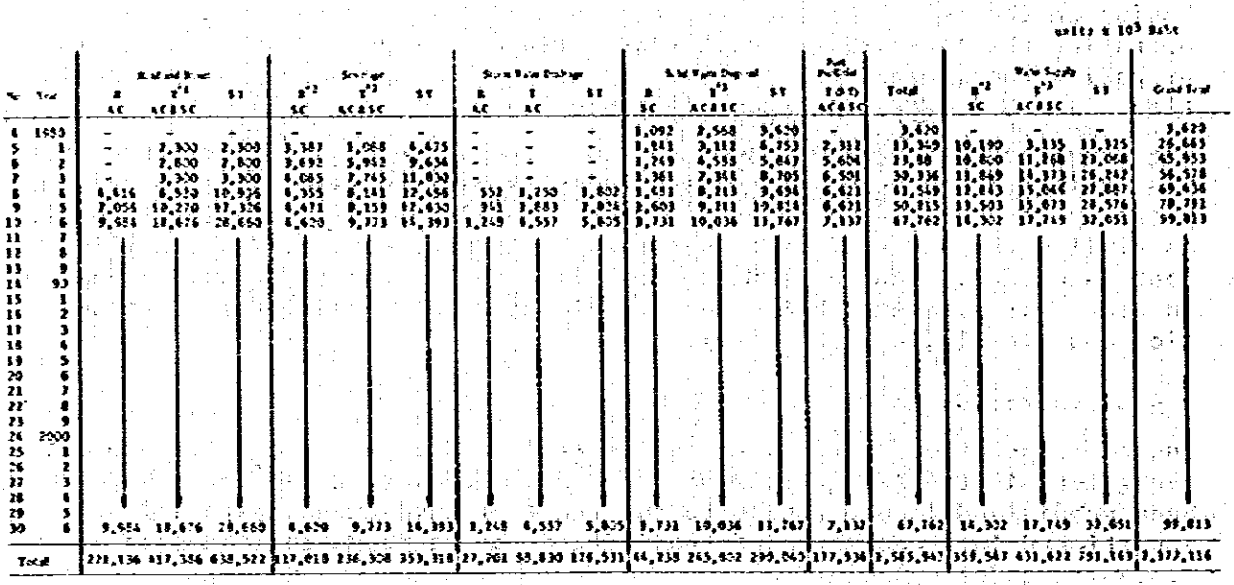
The average life duration of civil structures and equipments have been estimated respectively, and then the Sum of Year's Digits (SDY) Method has been applied with a 5% book value in order to calculate the annual amount of depreciation.

As the depreciation cost is the cost without cash flow, the depreciation costs are added to the sources of the cash flow table.



General View of Pattaya from Pattaya Hill

Table 3.4.1 Total Revenue Residential, and Tourism Area, by Type of Works



Notes: R : for Residents T : for Tourism Industries
S.T.: Sub total A.C.: Annual charge S.C.: Service Charge

*1: Including revenue from parking and concession on Rama-9.
*2: Including revenue from other industries such as Toyota factories.
*3: Including revenue from residents in Salaya Island.

Table 3.4.2 Unit Price of Charges for Households in Residential Areas (per household)

Unit: Baht

Item	Service Charges	Annual Charges
Road and Street	-	480 (1984)
	-	960 (1986)
Sewerage	1.0 Baht/m^3 (1981)	-
Storm Water Drainage	-	60 (1984)
	-	120 (1986)
Solid Waste Disposal	0.1 Baht/kg. (1980)	-
Water Supply	2.0 Baht/m^3 (1981)	-
	2.8 Baht/m^3 (1986)	-

After the Phase I (1977-1986), the income is assumed to be constantly same for the reasons that supplying capacity of each infrastructure becomes constant and that no price hikes in these infrastructures are considered after 1987.

The operation and maintenance cost of the solid waste collection and disposal system is expected to increase after 1997 due to the re-investment plan for a new landfill site.

3.4 Profit and Loss Statement for Infrastructure

Revenues from charges are divided into two kinds of categories; namely, "service charge" and "annual charge".

- "Service charge" has been established by harmonizing to current service charges such as for the water supply system in Pattaya and other areas in Tahiland. A basic concept for "service charge" is to cover enough the M & O cost and administration cost of the each component of infrastructure. "Service charge" will be levied on the utilized quantities.
- "Annual charge" is a special charge for the utilization of public facilities to coyer the initial investment in the project where "service charge" cannot be collected or where "service charge" revenue is expected to be more effective in covering the initial investment cost if combined with "annual charge". The annual charges are fixed charges, such as the basic charges for telephone services, and are levied on per room of hotels and per household of residents, etc.

Unit prices of service charges and annual charges are shown in Table 3.4.2 and Table 3.4.3. The estimates of the number of hotel rooms and residents which are necessary for the calculation of charge revenue from each type of infrastructure are based on the figures in the master plan and are shown in Annex 8, Revenue by Infrastructure.

Table 3.4.3 Unit Price of Charges for the Hotel Industry

Unit: Baht

Item	Service Charges	Annual Charges
Road and Street	-	1,200 (1984)/room
	-	4,800 (1986)/room
Sewerage	10.0 Baht/m^3 (1981)	1.0 Baht/m^3 (1981)
	10.0 Baht/m^3 (1986)	4.0 Baht/m^3 (1986)
Storm Water Drainage	-	600 (1984)/room
	-	1,800 (1986)/room
Solid Waste Disposal	0.3 Baht/kg. (1980)	0.3 Baht/kg. (1980)
Port Facilities	-	1,200 (1982)/room
Water Supply	10.0 Baht/m^3 (1981)	1.0 Baht/m^3 (1981)
		4.0 Baht/m^3 (1986)

Note: Annual charges will be converted in the fixed rate as shown in Annex 8, Revenue by Infrastructure.

According to the profit and loss statement, the net operating profit after the completion of facilities in tourist and residential areas will be both positive and incomes from these areas exceed running costs including depreciation cost. The gross operating profit (G.O.P.) of tourism area will be 2.7 times that of the residential area after the completion of the facilities. From this, it is easily understood that the main income source is from the tourism area rather than the residential area in spite of the fact that the amount of initial investments are greater in the residential area (58%) than in the tourism area (42%).

The estimations of consumption are obtained by multiplying the design capacity specified in the technical studies with the efficiency factor for revenue generating for each system.

Total revenue will be about 2.4 billion Baht up to 2006; that means, about 1.4 times of the total cost of six infrastructure components including the initial investment, M & O cost, administration cost and contingencies.

Table 3.4.4 Profit and Loss Statement
Refer to Table 3.6.1 : million Baht.

Area	Revenue	Expenditure			Gross Operating Profit
		M & O Cost	Administration Cost	Total Cost	
Tourism and Residential Area	2,376.9 (1,585.8)	349.7 (225.6)	98.2 (70.8)	447.9 (296.4)	1,929.0 (1,289.4)
Residential Area	769.5 (410.0)	201.1 (121.2)	49.4 (28.9)	250.5 (150.1)	519.0 (259.9)
Tourism Area	1,607.4 (1,175.8)	148.6 (104.4)	48.8 (41.9)	197.4 (146.3)	1,410.0 (1,029.5)

Table 3.4.5 Profit and Loss Statement for Infrastructure:

Unit: million Baht

No.	Year	Revenue			Expenditure			Gross Operating Profit (A) - (B)
		Service Charge	Annual Charge	Total (A)	M & O. Cost	Administration Cost	Total (B)	
1	1977	-	-	-	-	-	-	-
2	1978	-	-	-	-	-	-	-
3	1979	-	-	-	-	3.0	3.0	-3.0
4	1980	2.2	1.4	3.6	1.7	3.8	5.5	-1.9
5	1981	24.2	2.4	26.6	8.6	4.9	13.5	13.1
6	1982	36.1	9.8	45.9	9.6	5.3	14.9	31.0
7	1983	38.5	18.1	56.6	10.2	↓	15.5	41.1
8	1984	41.4	28.1	69.5	10.4		15.7	53.8
9	1985	43.7	35.1	78.8	11.0		16.3	62.5
10	1986	49.6	51.3	99.9	11.8	5.3	17.1	82.8
11	1987	↓	↓	↓	11.1	5.0	16.1	83.8
12	1988				11.3	↓	16.3	83.6
13	1989				11.4		16.4	83.5
14	1990				11.5		16.5	83.4
15	1991				11.6		16.6	83.3
16	1992				11.7		16.7	83.2
17	1993				↓		↓	↓
18	1994							
19	1995							
20	1996				11.7		16.7	83.2
21	1997				11.1		16.1	81.8
22	1998				↓		↓	↓
23	1999							
24	2000							
25	2001							
26	2002							
27	2003							
28	2004							
29	2005							
30	2006	49.6	51.3	99.9	11.1	5.0	16.1	81.8
Total		1,206.7	1,172.2	2,378.9	349.7	98.2	447.9	1,931.0

In case of the project excluding a water supply system, the net operating profits both of the tourism and residential areas will be reduced by the amount equal to the income from a water supply system. Nevertheless, the net operating profit is estimated to be positive and will remain almost the same at the case of including the water supply system. Figures in Table 3.4.6 show a profit and loss statement in case of the project excluding a water supply system.

Table 3.4.6 Profit and Loss Statement for Infrastructure:
(excluding Water Supply System)

Unit: million Baht

No.	Year	Revenue			Expenditure			Gross Operation Profit (A) - (B)
		Service Charge	Annual Charge	Total (A)	M.&O. Cost	Administration Cost	Total (B)	
1	1977	-	-	-	-	-	-	-
2	1978	-	-	-	-	-	-	-
3	1979	-	-	-	-	2.2	2.2	-2.2
4	1980	2.2	1.4	3.6	1.7	2.7	4.4	-0.8
5	1981	11.2	2.1	13.3	4.1	3.4	7.5	5.8
6	1982	15.9	7.9	23.8	5.0	3.7	8.7	15.1
7	1983	16.3	14.0	30.3	5.5	↓	9.2	21.1
8	1984	17.7	23.8	41.5	5.7	↓	9.4	32.1
9	1985	19.4	30.9	50.3	6.2	↓	9.9	40.4
10	1986	21.5	46.3	67.8	7.0	3.7	10.7	57.1
11	1987	↓	↓	↓	8.3	2.2	10.5	57.3
12	1988	↓	↓	↓	8.5	↓	10.7	57.1
13	1989	↓	↓	↓	8.6	↓	10.8	57.0
14	1990	↓	↓	↓	8.7	↓	10.9	56.9
15	1991	↓	↓	↓	8.8	↓	11.0	56.8
16	1992	↓	↓	↓	8.9	↓	11.1	56.7
17	1993	↓	↓	↓	↓	↓	↓	↓
18	1994	↓	↓	↓	↓	↓	↓	↓
19	1995	↓	↓	↓	↓	↓	↓	↓
20	1996	↓	↓	↓	8.9	↓	11.1	56.7
21	1997	↓	↓	↓	10.3	↓	12.5	55.3
22	1998	↓	↓	↓	↓	↓	↓	↓
23	1999	↓	↓	↓	↓	↓	↓	↓
24	2000	↓	↓	↓	↓	↓	↓	↓
25	2001	↓	↓	↓	↓	↓	↓	↓
26	2002	↓	↓	↓	↓	↓	↓	↓
27	2003	↓	↓	↓	↓	↓	↓	↓
28	2004	↓	↓	↓	↓	↓	↓	↓
29	2005	↓	↓	↓	↓	↓	↓	↓
30	2006	21.5	46.3	67.8	10.3	2.2	12.5	55.3
Total		534.2	1,052.4	1,586.6	225.6	70.8	296.4	1,290.2

Fig. 3.4.1 Profit and Loss Statement for Infrastructure: Base Case, without Loan, Unit: Hundred thousand Baht.

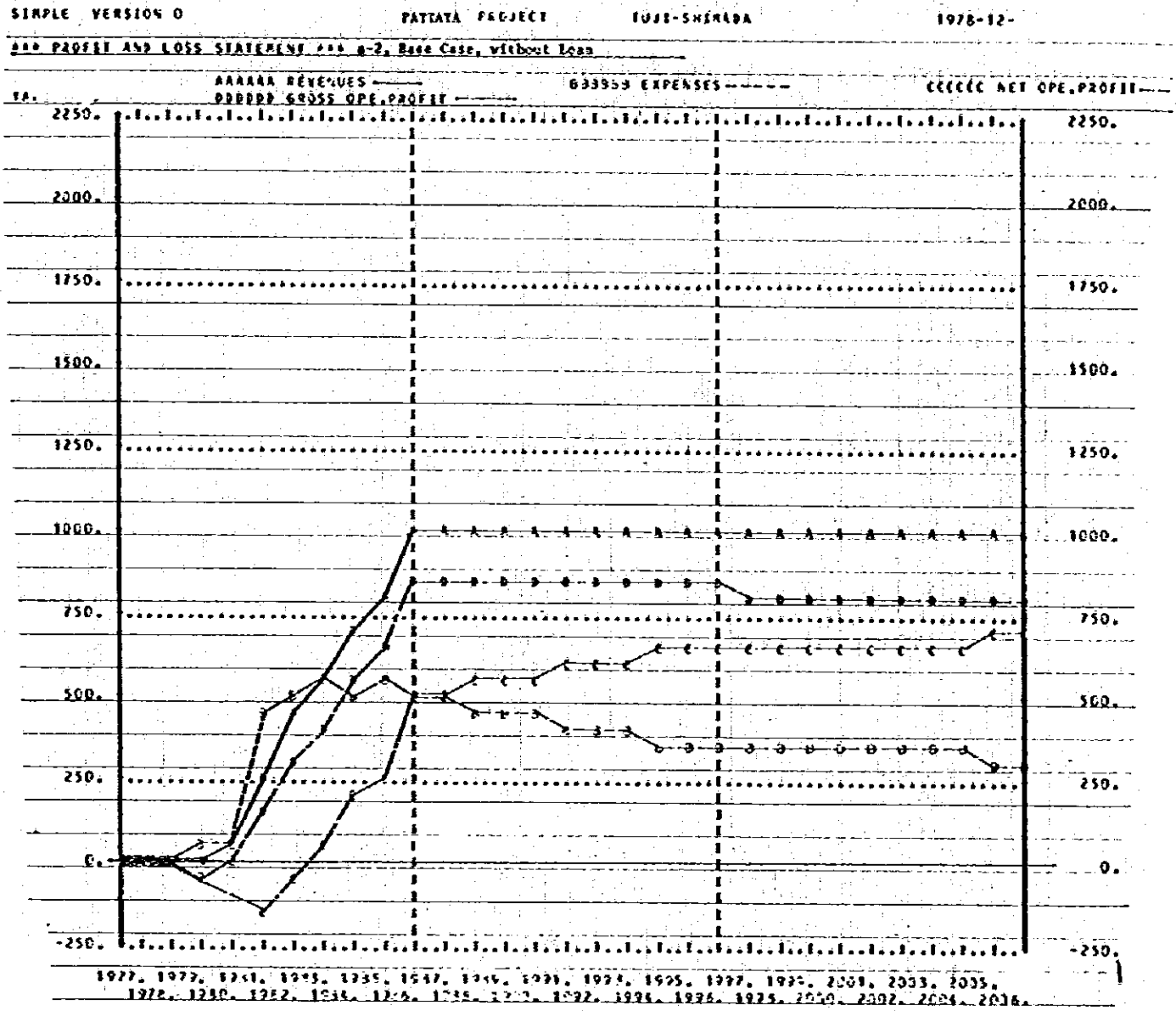


Fig. 3.4.2 Profit and Loss Statement for Infrastructure without Loan (excluding water supply system)

Unit: Hundred thousand Baht

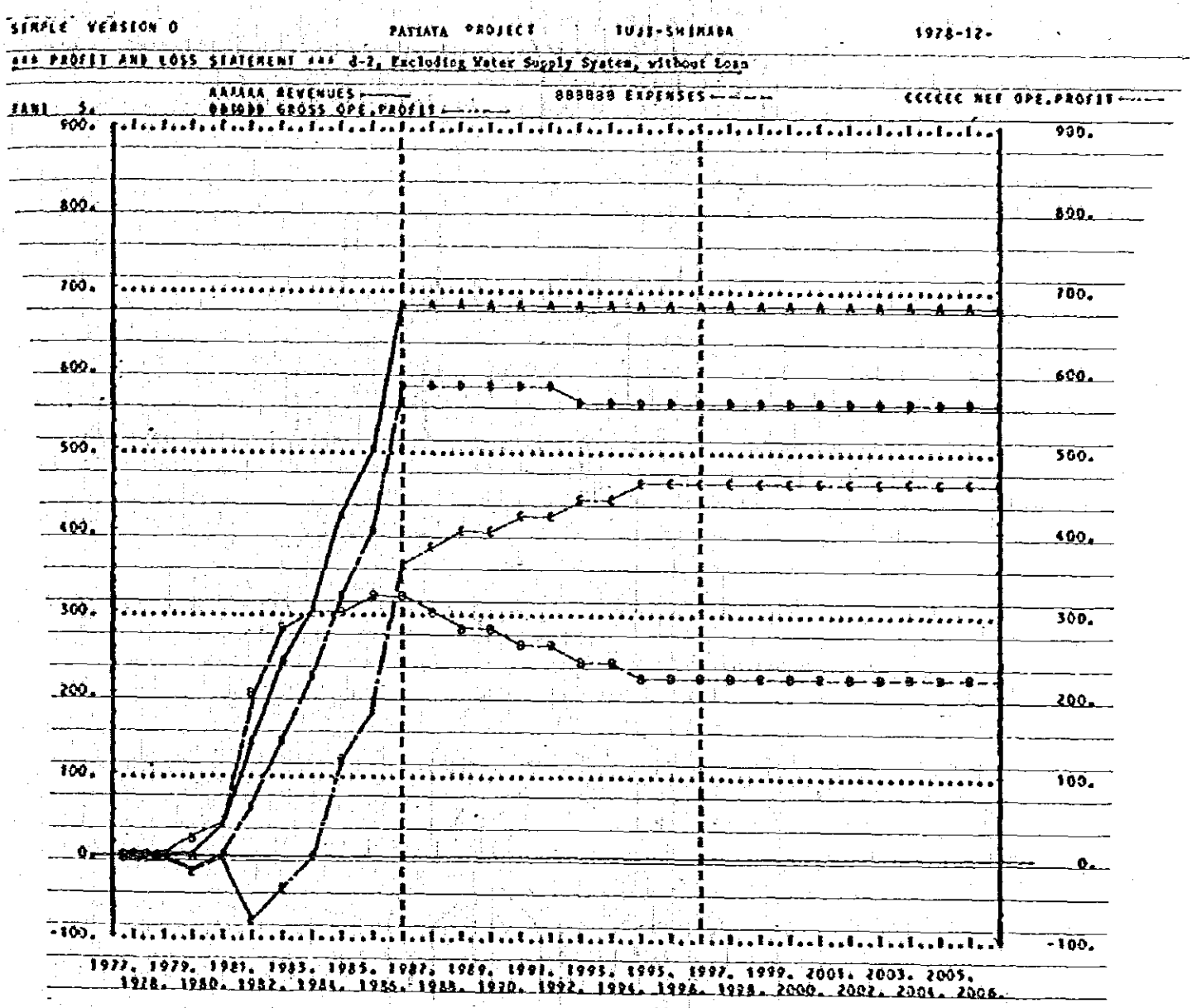
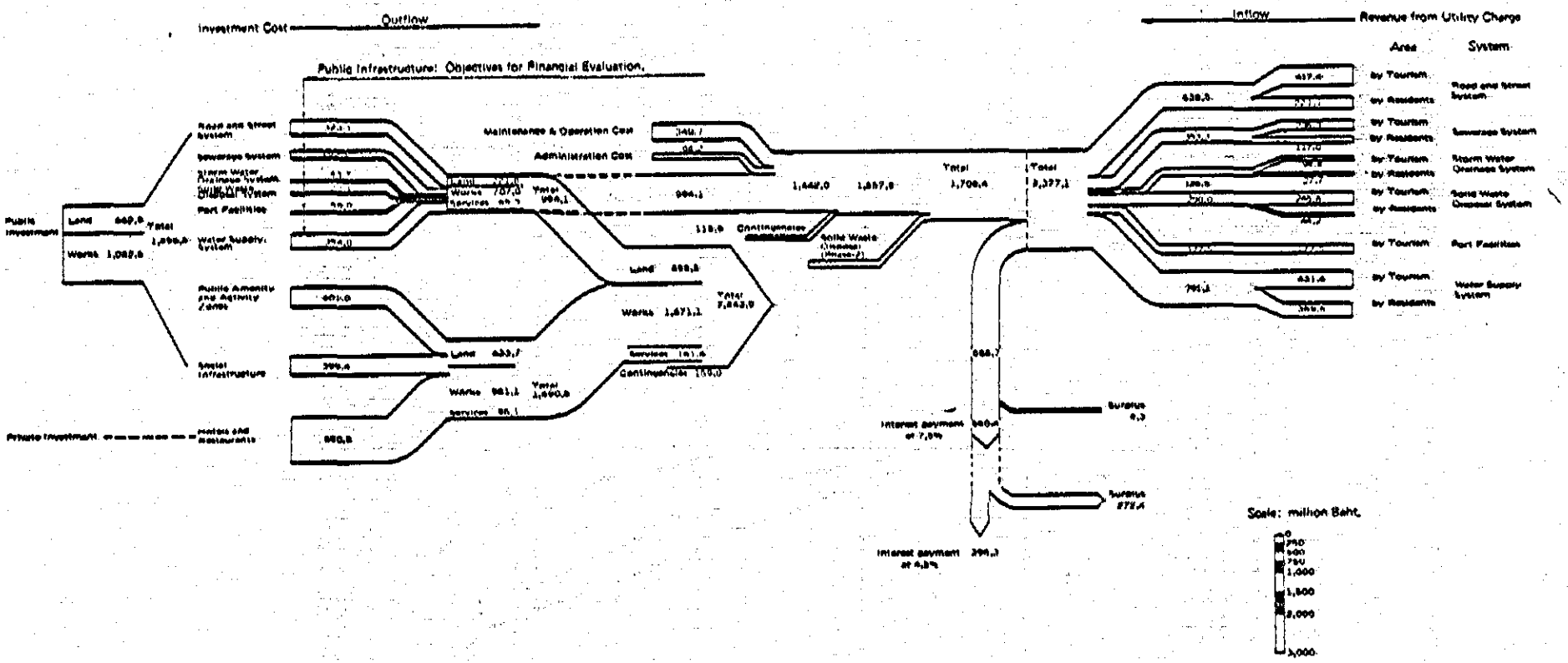


Fig. 3.5.1 Project Inflow and Outflow On Pattaya Tourism Development Project: Phase 1. (1986)



3.5 Cash Flow

The sources of the cash inflow consist of the net operating profit and the depreciation which are calculated in the profit and loss statement. And if the foreign loans are obtained specifically for this project, the total amount of loans are considered as the sources of the cash flow.

On the other hand the item of the cash outflow is the investment cost. If the foreign loans are expected, the loan repayment and the interest payment are considered as the applications of cash flow.

The difference between the sources and the applications is the annual cash balance, and the required years for turning the accumulated annual cash balance to the possitive value from the negative value are defined as the pay-back period of investment cost.

3.5.1 Cash Flow of the Project: for 30 years by 2006

The accumulated cash balance for the project of the tourism area is 885 million Baht in the surplus, but that of the residential area is 218 million Baht in the deficit. The total accumulated cash balance of both areas is thus 667 million Baht in the surplus. In short, the income generated by the project for the residential area covers all of the running cost of the infrastructures and 75% of the initial investment cost for the residential area. Consequently the tourism industry is anticipated financially to supplement the deficit of the outflow generated from the project in the residential area.

Undertaking of the burden on the tourism industry, namely as of about 25% of initial investment for the residential area, may be justified on the ground that the industry will be able to carry on their profitable business on the expenditure by tourists who will enjoy the days staying in the beach resort of good environment in the tourism area and the residential area as well.

It is estimated about US$2.8 (or 56 Baht) for daily utility charge per hotel room by the industry. The details are described in Section 3.7, Ability to Pay Charge and Annex 10.

At any event the total cash flow is generally same regardless of with or without inclusion of the water supply system in the project.

The total accumulated annual balance clearly shows the recovery period of the initial investment is 21 years (1997).

Fig. 3.5.2 Financial Cash Flow (Graph) without Loan

Unit: Hundred thousand Baht.

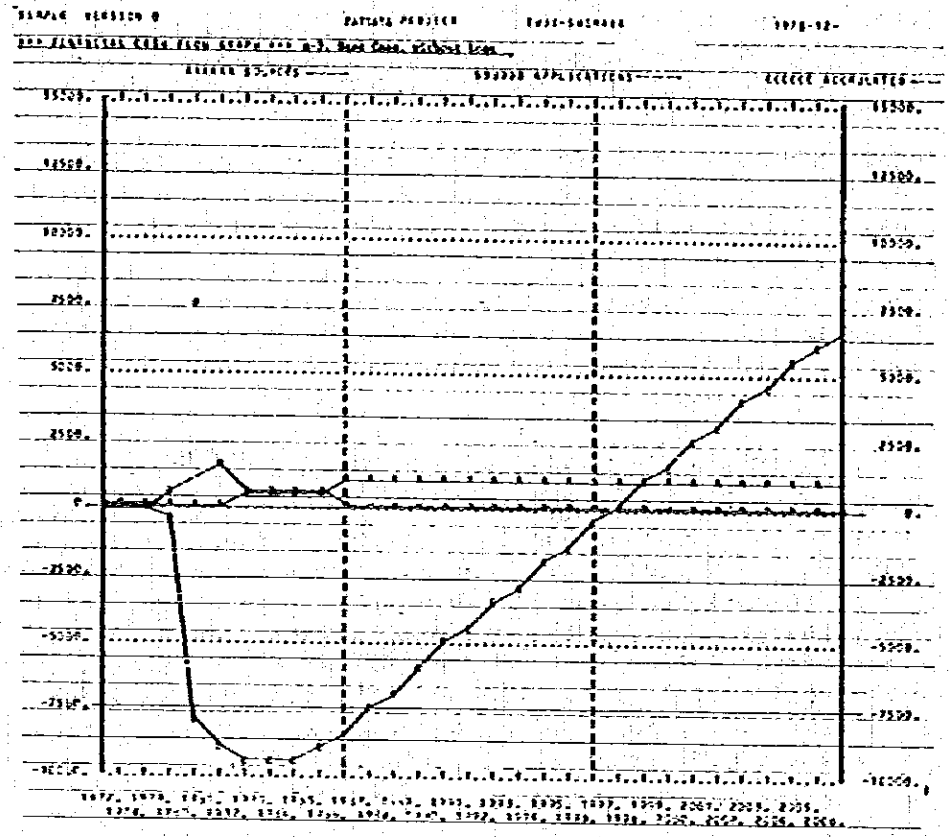


Fig. 3.5.3 Financial Cash Flow (Graph), (excluding water supply system) without Loan

Unit: Hundred thousand Baht.

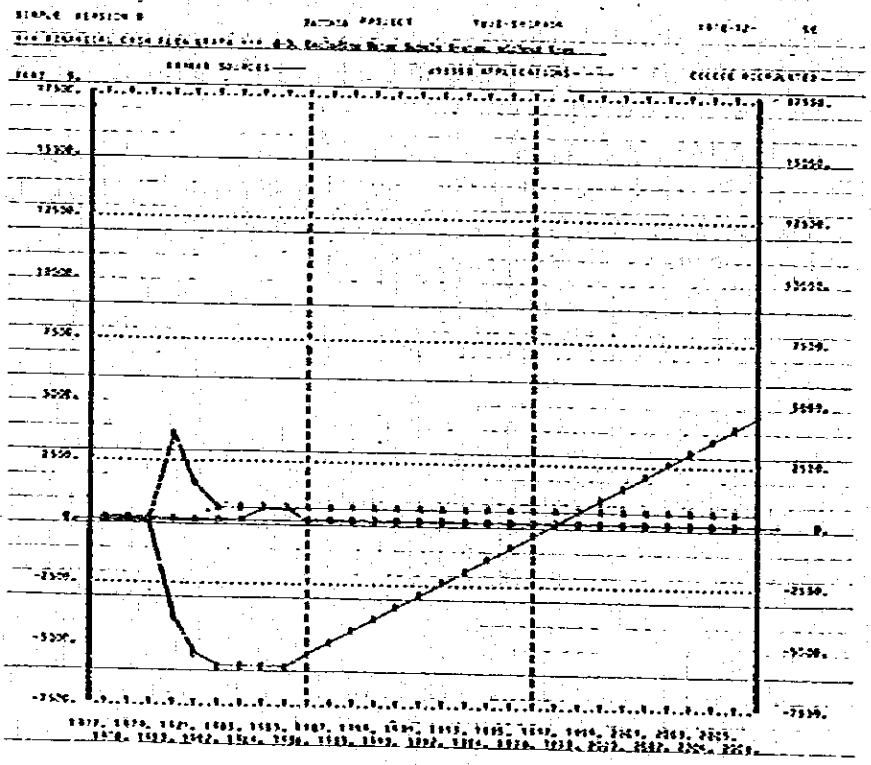


Table 3.5.1 Financial Cash Flow

(a) Financial Cash Flow: Tourism and Residential Area for Infrastructure

unit: million Baht

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977			
2	1978			
3	1979		36.1	-36.1
4	1980	3.6	746.4	-742.8
5	1981	26.6	167.8	-141.2
6	1982	45.9	85.7	-39.8
7	1983	56.6	45.6	11.0
8	1984	69.5	54.0	15.5
9	1985	78.8	54.8	24.0
10	1986	99.9	22.1	77.8
11	1987		23.9	76.0
12	1988		22.7	77.2
13	1989		22.8	77.1
14	1990		22.9	77.0
15	1991		23.0	76.9
16	1992		23.1	76.8
17	1993			
18	1994			
19	1995			
20	1996			
21	1997		28.4	71.5
22	1998		26.4	73.5
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	99.9	26.4	73.5
Total		2,378.9	1,709.3	669.6

(b) Financial Cash Flow: Tourism Area for Infrastructure

unit: million Baht

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977			
2	1978			
3	1979		15.4	-15.4
4	1980	2.5	260.3	-257.8
5	1981	11.9	132.0	-120.1
6	1982	30.2	36.1	-5.9
7	1983	39.2	15.5	23.7
8	1984	45.8	22.0	23.8
9	1985	51.3	20.4	30.9
10	1986	67.9	10.0	57.9
11	1987		10.1	57.8
12	1988		9.7	58.2
13	1989			
14	1990			
15	1991		9.8	58.1
16	1992			
17	1993			
18	1994			
19	1995			
20	1996			
21	1997		11.7	56.2
22	1998		11.2	56.7
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	67.8	11.2	56.7
Total		1,606.8	722.2	884.6

(c) Financial Cash Flow: Residential Area for Infrastructure

unit: million Baht

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977			
2	1978			
3	1979		20.5	-20.5
4	1980	1.1	485.9	-484.8
5	1981	14.7	37.7	-23.0
6	1982	15.7	50.1	-34.4
7	1983	17.3	30.7	-13.4
8	1984	23.7	31.9	-8.2
9	1985	27.6	34.1	-6.5
10	1986	31.9	12.0	19.9
11	1987		13.8	18.1
12	1988		12.8	19.1
13	1989		12.9	19.0
14	1990		13.0	18.9
15	1991		13.1	18.8
16	1992			
17	1993			
18	1994			
19	1995			
20	1996		13.1	18.8
21	1997		16.5	15.4
22	1998		15.0	16.9
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	31.9	15.0	16.9
Total		770.0	985.5	-215.5

Table 3.5.2 Financial Cash Flow (excluding water supply system)

(a) Financial Cash Flow: Tourism and Residential Area (excluding Water Supply System

unit: million Baht

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977		-	-
2	1978		-	-
3	1979	-	20.5	-20.5
4	1980	3.6	369.6	-366.0
5	1981	13.3	156.9	-143.6
6	1982	23.8	74.5	-50.7
7	1983	30.3	37.5	-7.2
8	1984	41.5	46.5	-5.0
9	1985	50.3	45.7	4.6
10	1986	67.8	15.1	52.7
11	1987		18.3	49.5
12	1988		17.1	50.7
13	1989		17.2	50.6
14	1990		17.3	50.5
15	1991		17.4	50.4
16	1992		17.5	50.3
17	1993			
18	1994			
19	1995			
20	1996		17.5	50.3
21	1997		22.8	45.0
22	1998		20.8	47.0
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	67.8	20.8	47.0
Total		1,586.6	1,151.1	435.5

(b) Financial Cash Flow: Tourism Area (excluding Water Supply System)

unit: million Baht

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977		-	
2	1978		-	
3	1979		11.2	-11.2
4	1980	2.5	163.5	-161.0
5	1981	8.8	126.0	-117.2
6	1982	19.0	31.1	-12.1
7	1983	24.9	12.6	12.3
8	1984	30.7	18.9	11.8
9	1985	36.2	17.7	18.5
10	1986	50.1	7.3	42.8
11	1987		8.2	41.9
12	1988		7.8	42.3
13	1989			
14	1990			
15	1991		7.8	42.3
16	1992		7.9	42.2
17	1993			
18	1994			
19	1995			
20	1996		7.9	42.2
21	1997		9.8	40.3
22	1998		9.3	40.8
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	50.1	9.3	40.8
Total		1,174.2	560.7	613.5

(c) Financial Cash Flow: Residential Area (excluding Water Supply System)

No.	Year	(1) Inflow	(2) Outflow	Net Cash Flow (1) - (2)
1	1977		-	
2	1978		-	
3	1979		9.1	-9.1
4	1980	1.1	205.8	-204.7
5	1981	4.5	32.5	-28.0
6	1982	4.9	44.1	-39.2
7	1983	5.4	25.4	-20.0
8	1984	10.8	27.7	-16.9
9	1985	14.1	28.1	-14.0
10	1986	17.6	7.7	9.9
11	1987		10.1	7.5
12	1988		9.1	8.5
13	1989		9.2	8.4
14	1990		9.3	8.3
15	1991		9.4	8.2
16	1992			
17	1993			
18	1994			
19	1995			
20	1996		9.4	8.2
21	1997		12.8	4.8
22	1998		11.3	6.3
23	1999			
24	2000			
25	2001			
26	2002			
27	2003			
28	2004			
29	2005			
30	2006	17.6	11.3	6.3
Total		410.4	589.0	-178.6

3.5.2 Cash Flow in Considering Foreign Loans

In considering foreign loans, the loans have been calculated as the cash inflow at the time of disbursement, and corresponding loan repayments and interest payments have been added to the cash outflow.

(a) Loan Conditions

The cash flow has been studied taking into account of financing from overseas for the whole public infrastructure. The amount of foreign loans has been assumed to be 50% of the initial investment. The rest of the initial investment has been assumed to be financed by the fiscal budget of the Government of Thailand. Domestic private loand will not be applicable because this project may be regarded as the relatively low profitability due to the public infrastructure.

- Loan Amount; 50% of the initial investment, namely a sum of construction costs, consulting services, contingencies for these two items and land costs,
- Interest Rate; deferred payment at 7.5%, and when the Government subsidizes the amount of money equal to the sum of the interest,
- Disbursement; for 6 - 7 years during the construction period for the first phase,
- Repayment Period; a grace period of maximum 7 years, and equal repayment to be paid back by installments over 20 years from 1987 to 2006.

(b) Cash Flow

In case of using loaned money, the cash flow shows that one half of the investment goes to cash inflow accompanied by the interest payment. The burden of the interest and principal payment from 1987 are very large. It is after 30 years (2006) from the starting point of calculation (1977) when the accumulated annual balance turns from negative to positive.

Main Beach

Table 3.6.1 Financial Cash Flow, Base Case, without Loan

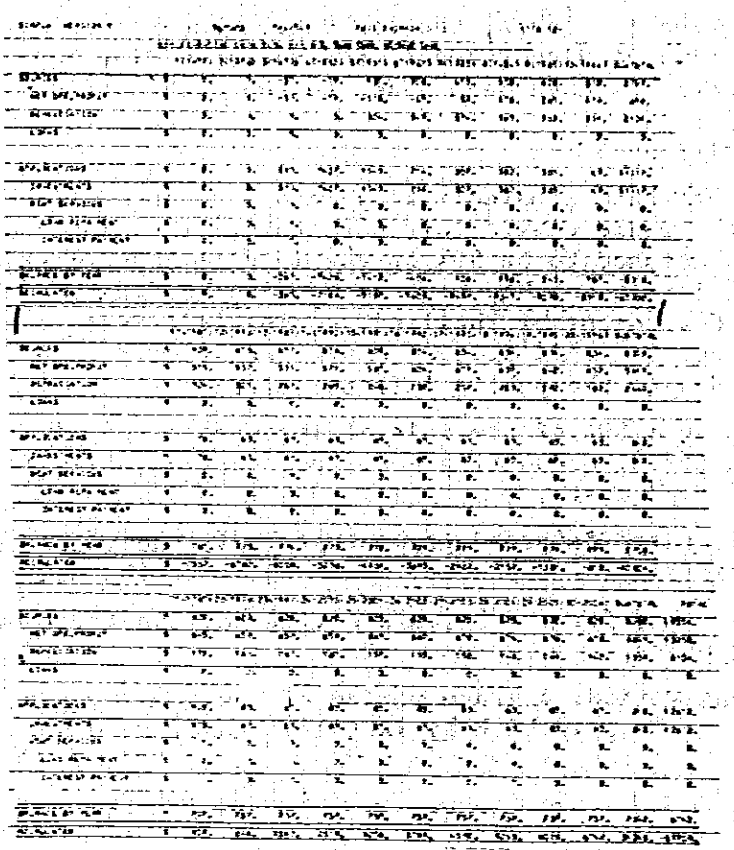
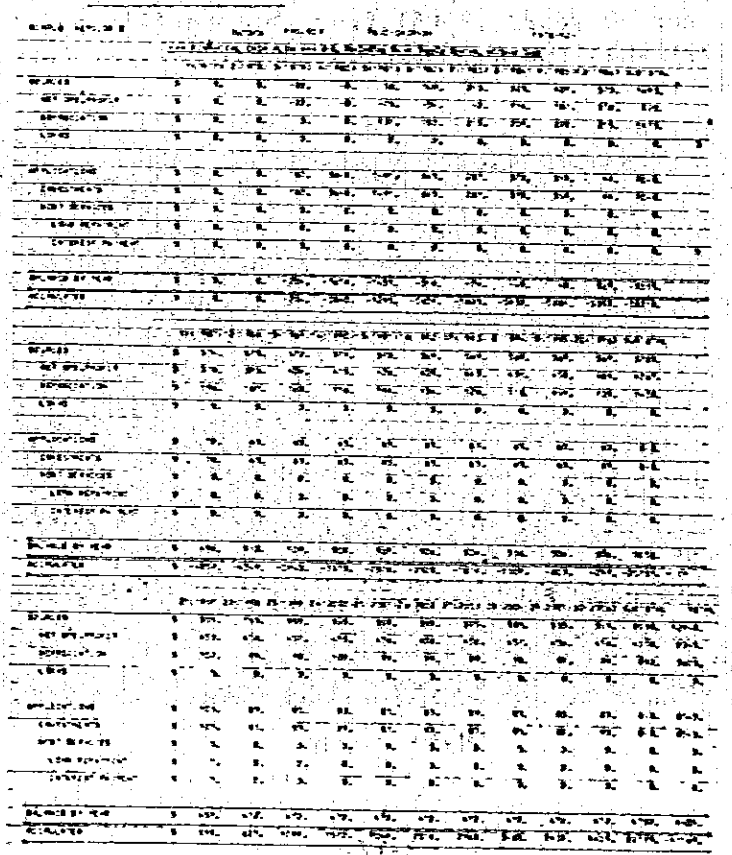


Table 3.6.2 Financial Cash Flow, excluding water supply system, without Loan



3.6 Financial Internal Rate of Return (IRR)

Separate rates of return are calculated for each project areas, namely the tourism area and the residential area. To prevent any arbitrary estimation, the following two policies were taken into account for the necessary allocation of cost and planning of a possible utility charge.

a. The cost allocation was made basically in consideration of the location of facility. If the facility is utilized by both areas, in the case of the sewege treatment plant for Pattaya, the costs are allocated proportionally to the rate of utility demand or estimated user's consumptions.

b. Utility charges were proposed mainly in consideration of the ability to pay the charges. Different charge methods are adopted for the residential area and the tourism area.

In addition the combined rates of return are also calculated as well to obtain the overall true picture of this project.

On the basis of the above described assumptions and with an estimated economic life of 30 years, the financial internal rate of return is obtained. The rate of return under each key variable is shown in Section 3.8 Sensitivity Analysis and in Annex 14.

(a) Profitability of the Project Itself

The IRR for the total investment cost obtained indicates the profitability of the project itself.

Table 3.6.3 Financial Internal Rate of Return

Area	Base Case	Alternative
Tourism	9.5%	9.0%
Residential	negative	negative
Combined	3.8%	4.0%

Base Case ; for the six components of the infrastructure
Alternative; for the five components of the infrastructure excluding the Water Supply System

In case of the base case, the results of the analysis show that the accumulated annual balance of inflow (revenue) from the residential area is negative and this deficit is covered by the surplus of inflow from the tourism area. That is, the rate of the revenue to the cost on the tourism industries is larger than that for the residential area.

Obtained rate of return for combined is 3.8%. This figure must be justified as the project involves public infrastructures not only for the establishment of and improvement to the sophisticated infrastructure in the beach resort but also for the features of a rural development of the neighbouring area, namely the residential area. It must be remained that the required investment cost (0.74 billion Baht or US$37 million) for the neighbouring area is about 58% of the total investment cost (1.26 billion Baht or US$63 million).

(b) Profitability of PTDC's Equity

The rate of return with the foreign loans in the cash flow is shown below.

Table 3.6.4 Financial Rate of Return for PTDC's Equity

Area	Base Case	Alternative
Tourism	10.9%	9.9%
Residential	negative	negative
Combined	0.2%	0.6%

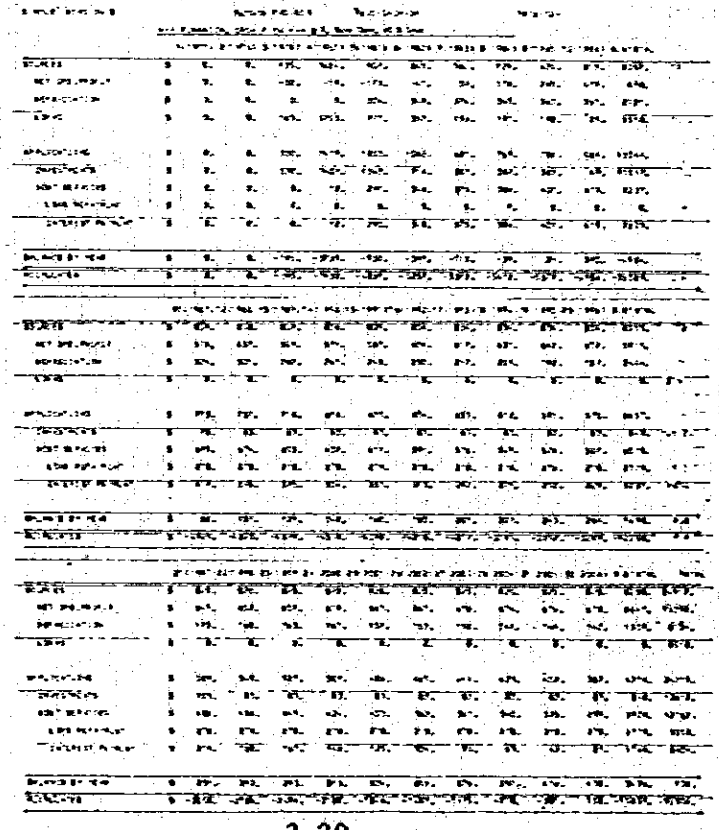
Base Case ; for the six components of the infrastructure,
Alternative; for the five components of the infrastructure excluding the water supply system

In case that loaned money is used, it should be noted that the profitability of the project will be recognized if the profitability is in excess of the real term interest rate and that the reversed conditions worsens the profitability.

The profitability of the investment for the tourism area is higher than the real term interest rate and, thus, introduction of the loan to the tourism area projects pushes the profitability slightly upward. On the other hand, loaned money greatly worsens the profitability of the investment for the residential area. The overall profitability of the entire projects becomes worse if loaned money is used.

An overall combined rate of return in use of foreign loans falls down to 0.2% and therefore the rate might become a negative figure in case that there should be generated unfavorable changes in estimated income and operating costs, etc.

Table 3.6.5 Financial Cash Flow, Base Case, with Loan



(c) Subsidy from the Government

If a subsidy from the central or local government is taken into acount as much as the equal amount of the interest payment for foreign loaned money, the return will rise considerably at high level as 7.5%. The total amount of subsidy is estimated about 700 million Baht, that is 35 million Baht a year.

According to the study, total amount of the incremented business tax and corporate income tax generated from the tourism industry will reach respectively more than 1,500 million Bahts and 800 million Baht in total by 2006.

As the total amount of subsidy of 700 million Baht or 35 million Baht a year is equivalent with about 30% of the incremental amount of tax, thus the government may be able to subsidize an amount for the interest payment on foreign loaned money.

According to the government draft on the Pattaya Township Revenue Plan shown in Chapter 2, the revenue is estimated 38 million Baht a year by tax on house and land, etc., also 30 million Baht a year as a special subsidies from the Central Government of Thailand is appropriated in 1979.

Some portion of these amount of 68 million Baht a year may be applied for the interest payment.

The I.R.R. in case of Subsidies from Governments will be as follows.

Base Case : for the six components of the infrastructure, will be IRR = 7.5%

Alternative : for the five components of the infrastructure excluding the Water Supply System
IRR = 7.7%

Table 3.6.6 Financial Cash-Flow: Base Case, with Loan, by Government Subsidy

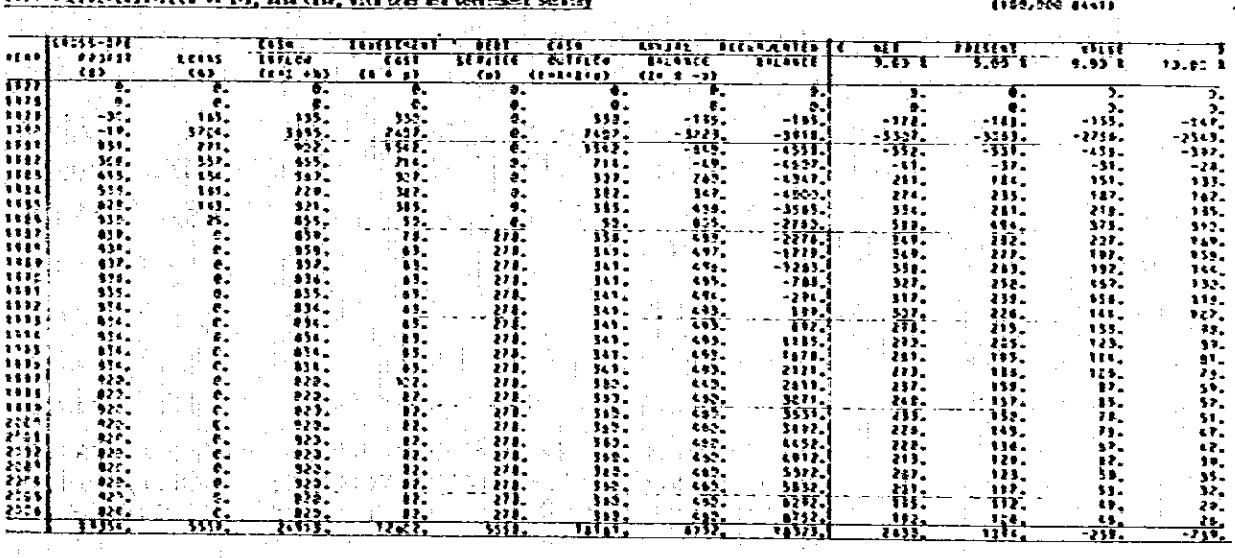


Table 3.6.7 Cash Balance of the Project

unit: million Baht

System	Inflow	Outflow				Net Cash Flow
		Investment Cost	Administration Cost	M & O Cost	Total	
Road and Street System	638.5	345.3	26.0	46.6	417.9	220.6
Sewerage System	353.3	219.7	19.9	46.1	285.7	67.6
Storm Water Drainage System	126.5	48.2	5.6	7.5	61.3	65.2
Solid Waste Disposal System	290.0	174.0	13.1	117.6	304.7	-14.7
Port Facilities	177.5	68.2	6.2	7.8	82.2	95.3
Water Supply System	791.1	406.4	27.4	124.1	557.9	233.2
Total	2,376.9	1,261.8	98.2	349.7	1,709.7	(667.2)
	(1,585.8)	(855.4)	(70.8)	(225.6)	(1,151.8)	(434.0)

Note: Figures in parentheses show case of the project excluding a water supply system.

Table 3.6.8 Cash Balance of the Project for Residential Area

unit: million Baht

System	Inflow	Outflow				Net Cash Flow
		Investment Cost	Administration Cost	M & O Cost	Total	
Road and Street System	221.1	182.0	13.0	15.3	210.3	10.8
Sewerage System	117.0	142.7	6.9	33.2	182.8	-65.8
Storm Water Drainage System	27.7	10.9	2.8	2.5	16.2	11.5
Solid Waste Disposal System	44.2	105.4	6.2	70.2	181.8	-137.6
Water Supply System	359.5	296.1	20.5	79.9	396.5	-37.0
Total	769.5	737.1	49.4	201.1	987.6	-218.1
	(410.0)	(441.0)	(28.9)	(121.2)	(591.1)	(-181.1)

Table 3.6.9 Cash Balance of the Project for Tourism Area

unit: million Baht

System	Inflow	Outflow				Net Cash Flow
		Investment Cost	Administration Cost	M & O Cost	Total	
Road and Street System	417.4	163.3	13.0	31.3	207.6	209.8
Sewerage System	236.3	77.0	13.0	12.9	102.9	133.4
Storm Water Drainage System	98.8	37.3	2.8	5.0	45.1	53.7
Solid Waste Disposal System	245.8	68.6	6.9	47.4	122.9	122.9
Port Facilities	177.5	68.2	6.2	7.8	82.2	95.3
Water Supply System	431.6	110.3	6.9	44.2	161.4	270.2
Total	1,607.4	524.7	48.8	148.6	722.1	885.3
	(1,175.8)	(414.4)	(41.9)	(104.4)	(560.7)	(615.1)

3.7 Ability to Pay Utility Charges

No matter how useful the systems and facilities may be, if the charges are beyond the paying ability of the users, no-one can expect them to use the facilities.

(a) By Residents

The ability to pay charges has been found in the recent records of the Thai National Census (Statistical Yearbook Number 31, 1974-1975), and the study team uses the figures in this analysis. The census covers the 5 main regions of Thailand during 1971 to 1973.

In the Pattaya region, expenditure in the 1973 statistics was 1,800 Baht/month for one household each month. As the consumer price index has risen approximately to 6.5%, average expenditure by a household in the Pattaya Area estimated to be about 2,300 Baht as of 1977.

The limit of the new charges (service charges and annual charges) for a household should be kept in the range of allowable for them. After taking an evaluation on the available data, an allowable rate has been judged to less than 7.5% of household expenditure.

The annual increase in expenditure and estimated charges is shown below:

Table 3.7.1 Annual Increase in Expenditure and Estimated Charges

Year	(A) Monthly Expenditure *1	(B) Charges Upper limit *2	B/A	(C) Charges Estimated *3	C/A	C/B
1977	2,300	170	7.5%	-	-	-
78	2,420	180	7.5%	-	-	-
79	2,540	190	7.5%	-	-	-
80	2,660	200	7.5%	12	0.5%	6%
81	2,800	210	7.5%	75	2.7%	36%
82	2,940	220	7.5%	76	2.6%	34%
83	3,080	230	7.5%	82	2.7%	35%
84	3,240	240	7.5%	133	4.1%	55%
85	3,400	260	7.5%	161	4.7%	63%
86	3,570	270	7.5%	189	5.3%	71%

*1 Monthly expenditure after 1977 is assumed to increase at a rate of 5% a year.

*2 Charges here do not include charges for existing facilities (infrastructure i.e. solid waste disposal, water supply etc.)

*3 Refer to Annex 9 and Annex 10.

Most of the infrastructures will start operating after 1980, and monthly charges per household will rise from 0.5% (12 Baht) to approximately 5% (189 Baht) of monthly expenditure in 1986.

Percentage of the amount of charges to the monthly expenditure will increase year after year, however the public charge expenditure in 1986, when it is the peak, will be 189 Baht/month, which is equivalent to 5.3% of the total expenditure (3,570 Baht/month). This rate being lower than the estimated maximum allowable percentage of 7.5%, it is expected for the residents to accept the infrastructure with the proposed utility charges.

Table 3.7.2 Incremental Utility Charges: Hotel Industry

unit: thousand Baht/room/year

Year	Room Occupancy Rate (R)	Annual Fixed Charges	Service Variable Charges	Total Charges (A)	Total Sales 253.1R *3 (B)	% in Charges in Sales (C)=A/B	Current Utility Cost in Sales *1 (D)	Incremental Utility Cost in Sales *2 (E)=A-D
1977	31.2%	-	-	-	79.0	-	5.2	-
1978	34.0	-	-	-	86.1	-	5.4	-
1979	40.0	-	-	-	101.2	-	5.6	-
1980	45.4	0.7	0.3	1.0	114.9	0.9%	5.8	-
1981	50.3	1.8	5.5	7.3	127.3	5.7	6.0	1.3
1982	55.3	4.5	6.1	10.6	140.0	7.6	6.2	4.4
1983	58.3	7.6	6.4	14.0	147.6	9.5	6.3	7.7
1984	65.7	9.4	7.2	16.6	166.3	10.0	6.6	10.0
1985	72.6	10.9	8.0	18.9	183.8	10.3	6.9	12.0
1986	80.0	14.2	8.8	23.0	202.5	11.4	7.2	15.8

Notes 1) Current utility charge: assumed about 3% of sales as follows.

- average expenditure : 433 Baht/guest night = 693 Baht/room night.
- current utility cost: Water Supply, 10 Baht/a room night
  Sewerage, 10 Baht/a room night.
  Solid waste, etc. 2 Baht/a room night

  Total 22 Baht/a room night
- Rate: 22 ÷ 693 = 0.03 = 3%
  (1.5% of fixed, 1.5% of variable with (R))

2) Incremental utility charge/a room day.

New charge	US$2.7/room day
Current charge:	US$1.1/room day
Incremental	US$1.6/room day

when: Room Occupancy rate is 50%.

3) Total sales from the model study in Annex 4.

Foreign tourist	150.7 x 0.74 (share for 30 years)
Domestic tourist	106.0 x 0.26 (share for 30 years)

139.2 million Baht/550 rooms·year
= 253.1 thousand Baht/room·year
= 693 Baht/room·day
= 433 Baht/guest day

(b) By the Tourism Industries

The ability to pay utility charge by the tourism industry was evaluated in consideration of the affects of the charges to the gross operating profit for their business. At first, the charges are estimated based on the financial feasibility of the project considering a relatively low ability to pay charge by the residents. Secondly, the proposed charges were evaluated by the capability of paying charges by the tourism industry.

As shown on Section 3.4, Profit and Loss Statement, unit price of utility charges for the industry are proposed as "service charge" and "annual charge" for each utility provided.

For the hotel industry, these utility charges are estimated as shown in Annex-10, Table-1. The fixed annual charge is 14.2 thousand Baht a year-room and a variable service charge is 11 thousand Baht a year-room in case of full room occupancy through a year.

At the end of phase 1, 1986, new utility charge will become 23 thousand Baht/room year and the gross operating profit will 47.7 thousand Baht/room year. On the other hand, the current low gross operating profit as 10 thousands Baht/room year in deficit will continue if the project will not be implemented. Refer to Annex 4 and Annex 11.

Therefore incremental profit by the project is estimated 57.4 thousands Baht/room year as a differential amount of both cases.

In other words, the hotel industry will gain the incremental profit of about 2.5 times of an amount of the utility charge.

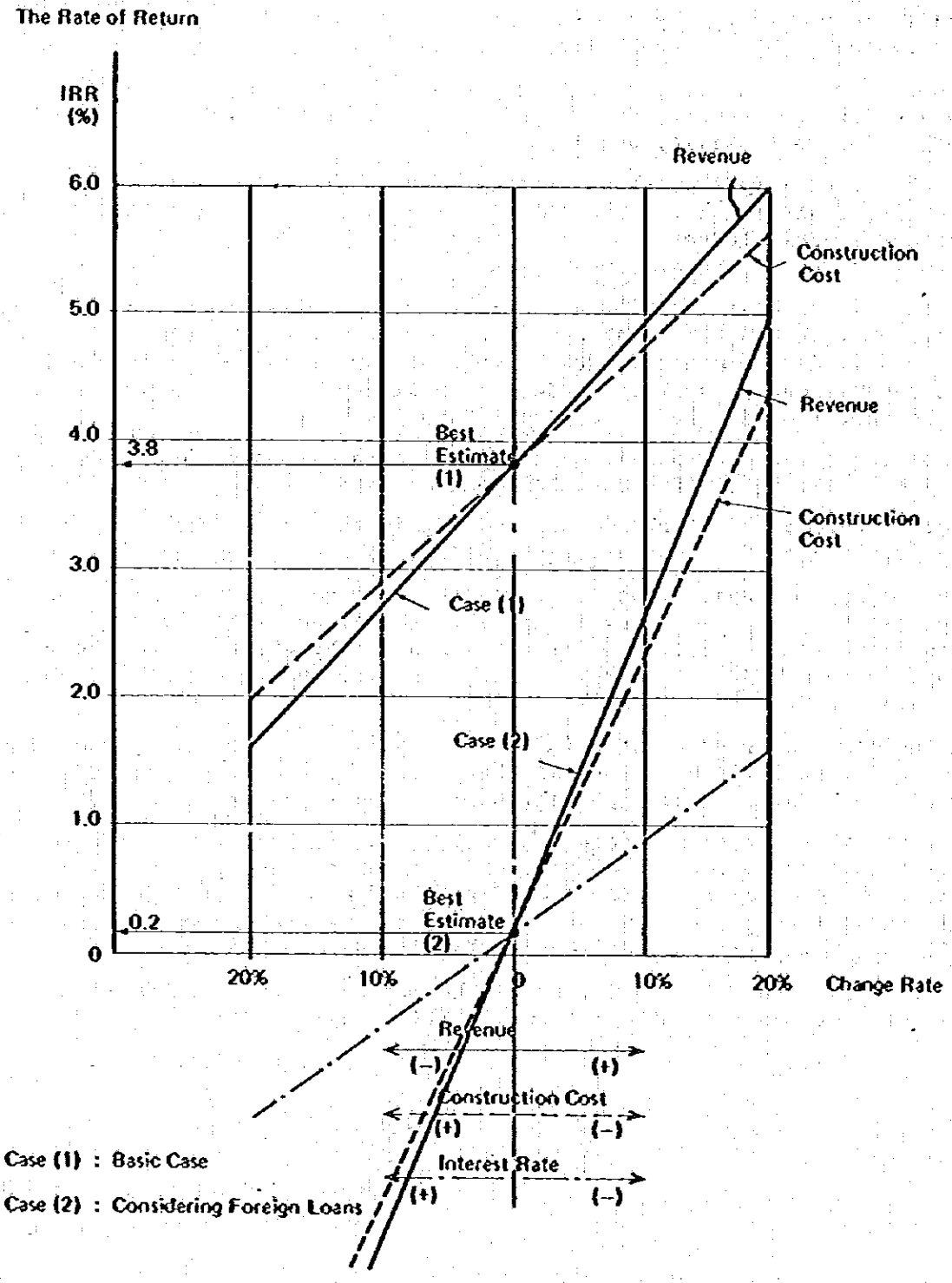
When the room occupancy rate is lower than the rate of break even point of profit the hotel industry is not able to pay an utility charge. The hotel business activity will be maintained by about 50% of the room occupancy rate. Annual increase of the utility charge will be as shown on Table 3.7.2.

For the other tourism related industries utility charges are proposed as shown on Annex 9. A same rate of charge for the hotel industry will be levied to the other industry such as shops, restaurants and etc..

The rate of net profits before tax will be 18.7% and 3.4% in 1986 for the hotel industry and for the other tourism industries respectively. Without the project the rate of net profits for the hotel industry will be at lower level some of minus 30%. The details are shown on Annex 12, Profit and Loss Statement of Tourism Industries.

From the fact mentioned above, it can be concluded that the tourism industries are able to afford to pay utility charges.

Fig. 3.8.1 Sensitivity Test Results in Graph



3.8 Sensitivity Analysis and Its Evaluation

On the basis of the described assumptions and with an estimated economic life of 30 years, the financial internal rate of return of the investments in the project area, both areas of the tourism and residential, would be 3.8% in the basic case and 0.2% in the return on equity with a foreign loan.

Key variable items for the sensitivity analysis are the construction costs, the revenue from utility charges and the interest rate. The results are shown in Table 3.8.1.

Table 3.8.1 Sensitivity Tests (in %)

		Basic *1 Case	Return on *2 Equity
Bast Estimate		3.8	0.2
Change			
Construction Costs	+10%	2.9	negative
	-10%	4.7	2.3
Prices (revenues)	+10%	4.8	2.5
	-10%	2.6	negative
Interest Rate *3	+ 1%	-	negative
	- 1%	-	1.1

Notes: 1) Basic case shows a profitability of the project as a whole.
2) Return on Equity shows a profitability of the PTDC.
3) Interest Rate 7.5 ±1%.

The rate of return would be particularly sensitive to changes in the revenue from utility charges. However, the risk of the revenue decreasing more than 10% is considered small. Because of the unit price of utility charges are under the chargeable level, namely within the ability of users to pay. And also efficiency on revenue gaining was taken consideration for estimating the chargeable consumption by each user. Refer to Annex 9 and 10.

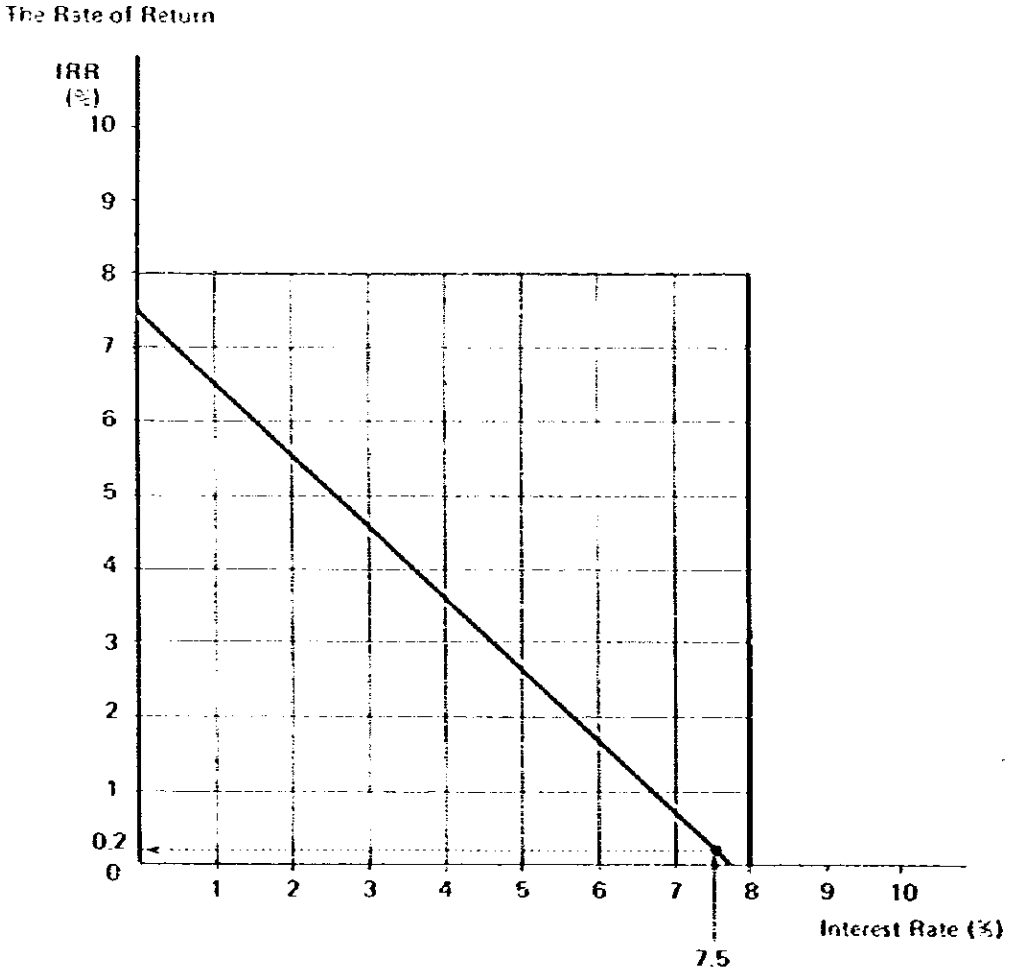
The rate in the case when the water supply system is excluded from the project will become in similar to the results for the project including the system.

The rate in the sensitivity test in the basic case are all positive. A rate of 3.8% would be considered sufficient level for the return considering the nature of the project. It can be concluded that this project is financially feasible.

The rate on the equity by the PTDC with use of foreign loan would be 0.2% in the best estimate. It is considered very low so that the rate would be declined to the negative level by 10% increase of the construction cost or by 10% decrease of the revenue from the utility charges. However, if a subsidy from the government for the amount of interest payment is secured, the rate of return would rise up to 7.5%.

Sensitive of the interest rate to the rate of return is shown in Fig. 3.8.2.

Fig. 3.8.2 Sensitive of the Interest Rate to the Rate of Return



CHAPTER 4
ECONOMIC ANALYSIS

1. INTRODUCTION
2. SCOPE OF ECONOMIC ANALYSIS
3. ECONOMIC COSTS AND BENEFITS
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