Selection of Substitute Land

Substitute Village Development in Connection with Sanctuary and Park Project

This programme consists of a 10-year programme for acquisition of substitute land for villages and public facilities that have to be relocated in connection with the sanctuary and park projects and a 15-year programme for carrying out such relocation. All of the work other than the acquisition of the land itself and rough earthwork, however, will consist of related works to be carried out by local governments as a long term 20-year programme for improvement of the villages around the archeological parks.

Criteria for Selection of Suitable Substitute Land

— Such substitute land is to be located in Zone-3 areas in the case of both Borobudur and Prambanan, except in the case of relocation connected with sanctuarization outside this zone.

— Relocation of whole dukuh to new locations in the same kelurahan. If fewer than 25 households of a dukuh are to be relocated, the substitute land for them is to be selected in the vicinity of the same dukuh, and if the number of households to be relocated is greater than 25, substitute land should be selected for them near the center of the same village, with the relocated households forming a new dukuh in themselves.

— The substitute land is to have the same or comparable topographical and social conditions (road and public facility accessibility) as the original land or is to be provided with such conditions through the road development and other related projects.

— The facilities that are to be relocated are to be located at places suitable for their functioning as kecamatan center facilities.

— Although the substitute land is to be selected from what is presently private farmland, outstanding farmland is to be excluded from consideration if possible.

— The selection of the substitute land is to be based on the land use controls that will apply for Zone-3 areas.

— Land important for scenic preservation purposes is not to be considered for selection as substitute land.

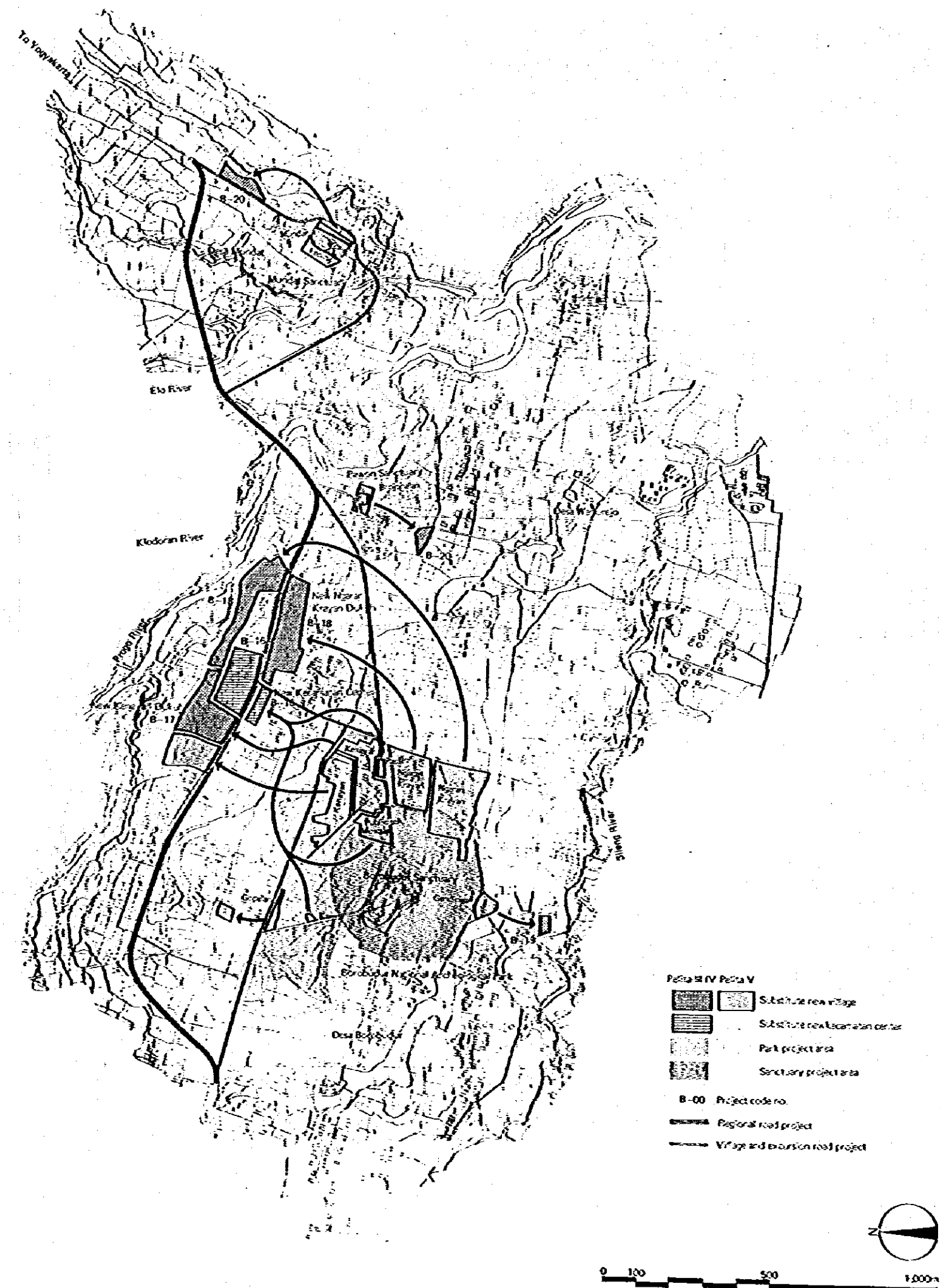### Criteria for Determination of the Amount of Substitute Land to be Provided

— Same as the original area in the case of public facilities.

— 10 — 20% more than the original area (open space excluded) in the case of village substitute land. The gross figures are 1 ha for each 15 households in the case of Borobudur and 1 ha for each 20 households in the case of Prambanan.

Schedules for Preparation of Substitute Land for Relocation

The schedules for designation of substitute land, its acquisition, its rough earthwork, the preparation of residential lots, the construction of roads and infrastructure for it, the construction of facilities for it, and the actual moving of the households to it will be planned on the basis of the sanctuary and park development project schedules.

As indicated below, in order to meet the schedule for the tentative opening of the park, it will be necessary to complete acquisition of that part of the land required for the initial opening in 1980 and the construction and relocation connected with it in 1981, such land representing about 50% of the total over fifteen years and about 60 — 70% of the total for the first ten years.

Since such works consist of both works included in the park development project and related works to be undertaken by local governments, their planning, coordination, and implementation will have to be based on cooperation between the park development entity, local governments, and the people that will be affected by them.

Name of Dukuh	Pop.	Households	Substitute land
Kenayan	655	104	6.9
Ngaran Krayan	852	165	11.2
Gendingan	15	3	0.2
Gopalan	15	3	0.2
Panon	55	11	0.7
Mundal	125	25	1.7
Kecamatan Center public sch. mosque, pasar and kantor			2.6
Karang Kidule	561	150	7.5
Karang Lor	69	14	0.7
Ringin Putih	59	21	1.1
Ngang Kruk	193	32	1.7
Klurak (Klaten side)	165	37	2.0
Klurak (Sleman side)	674	139	7.0
Kwenirejo, Bogem	174	35	1.7
Sari	35	7	0.4
Kalasan	55	11	0.5
Plaosan	145	29	1.5
Kraton Rato Boko	180	36	1.8
Kecamatan Center public sch. domitory			2.5

Legend: Designation / Land acquisition / Basic site work / Building construction

Borobudur / Prambanan

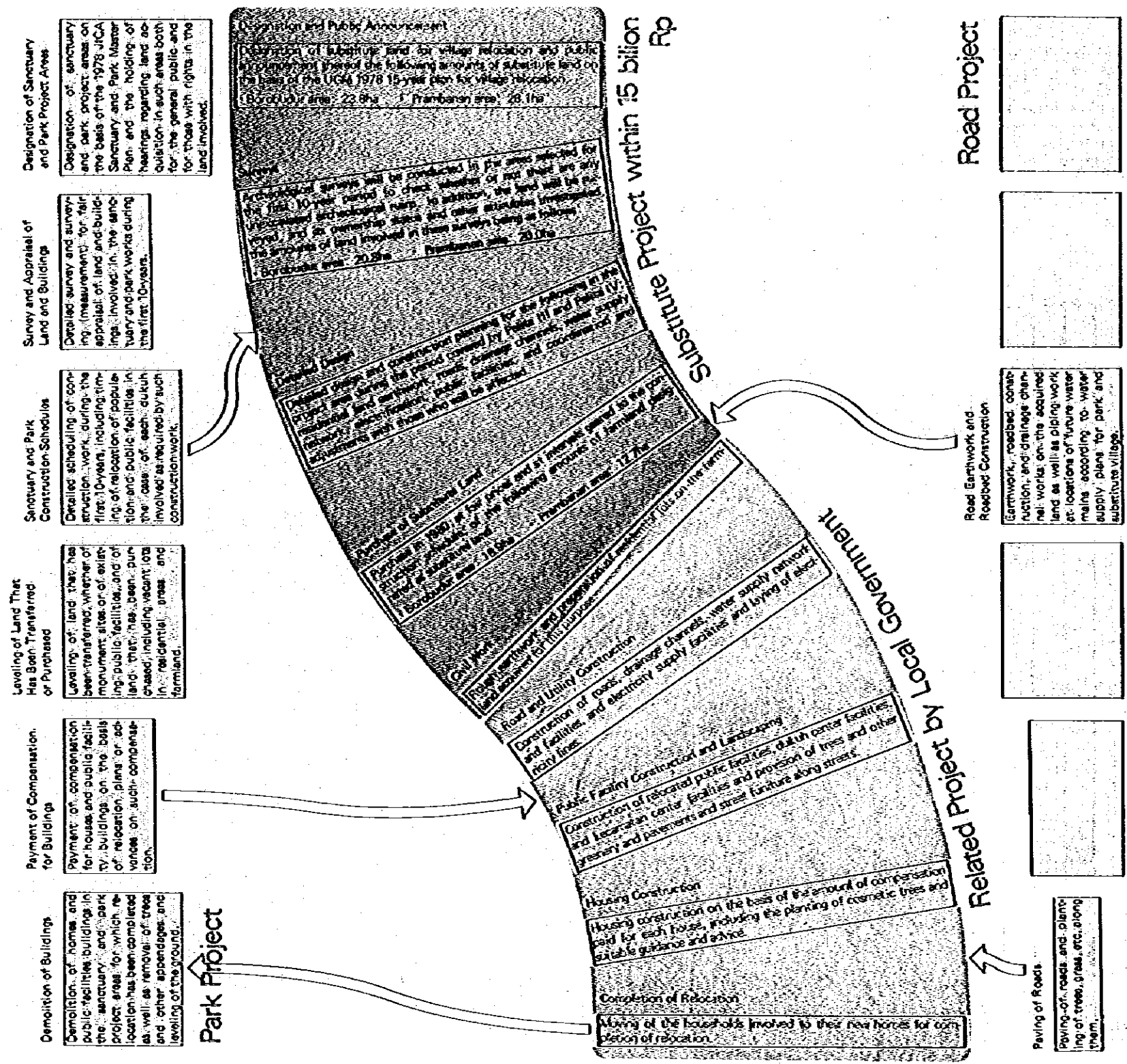Timeline: 1978 79 80 81 82 83 84 85 86 87 88 89 90 91 92

Village Project List ; Borobudur

Project code no.	Project title	Dukuh and public facility name	Purpose	Original land (ha)	Population	No. of households	Substitute land (ha)	Substitute acquisition cost	Land site work	Sub-total	Related project	Development year
B-16 Borobudur Kecamatan center	Public school & mosque	Park and sanctuary project (B-01)		1.8	—	—	1.8	135.0	9.0	144.0		1979-80
	Pasar	Park project		0.7	—	—	0.6	48.0	3.2	51.2		1979-80
	Kantor	Park project		0.2	—	—	0.2	15.0	1.0	16.0		1983-84
B-17 New Ngaran Krayan village	Ngaran Krayan	Park and sanctuary project (B-01)		7.7	852	168	11.2	840.0	56.0	896.0		1979-81
B-18 New Kenayan village	Kenayan	Park project		2.6	400	06	4.4	330.0	22.0	352.0		1979-80
B-19 Other substitute village	Gopalan	Sanctuary project (B-01)		0.2	15	3	0.2	10.3	0.7	11.0		1981-82
B-20 Substitute village for sanctuary project	Mundal	Sanctuary project (B-03)		1.6	110	25	1.7	33.6	8.4	42.0		1982-83
	Srojonan	Sanctuary project (B-02)		0.7	50	11	0.7	14.0	3.5	17.5		1980-81
Totals				15.5	1,427	273	20.8	1,425.9	103.8	1,529.7		

Development cost (million Rp.)

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Substitute Village Project Plan: Borobudur

Legend:
- Substitute new village
- Substitute new kecamatan center
- Park project area
- Sanctuary project area
- B-00 Project code no.
- Regional road project
- Village and excursion road project

To Yogyakarta / Elo River / Klodoran River / Borobudur National Archeological park

0 100 500 1,000 m

183

Designation of Sanctuary and Park Project Areas

Survey and Appraisal of Land and Buildings

Sanctuary and Park Construction Schedules

Leveling of Land That Has Been Transferred or Purchased

Payment of Compensation for Buildings

Demolition of Buildings

Park Project

Substitute Project within 15 billion Rp.

Related Project by Local Government

Road Project

Road Earthwork and Roadbed Construction

Paving of Roads

Village Project List: Prambanan

Project code no.	Project title	Dukuh and public facility name	Purpose	Original land (ha)	Population	No. of households	Substitute land (ha)	Substitute land site acquisition cost	Land work	Sub-total	Related project	Development year
								Development cost (million Rp.)				
P-17 Prambanan Kecamatan center	Dormitory	Park project	1.9	—	—	1.9	92.0	9.2	101.2		1980-81
	Desa elementary school	Sanctuary project (P-01)	0.6	—	—	0.6	32.2	3.0	35.2		1980-81
P-18 New Narang village	Karang Kidul	Park and sanctuary project (P-01)	4.3	561	150	7.5	142.4	35.6	178.0		1980-81
P-19 Other substitute village	Ringin Putih	Park project	0.9	59	21	1.1	23.2	5.5	28.7		1980-81
	Karang Lor	Sanctuary project (P-01)	0.8	69	14	0.7	14.8	3.5	18.3		1979-80
	Ngang Kruk	Sanctuary project (P-02,03,04)	1.2	53	10	0.5	10.5	2.5	13.0		1981-82
P-20 New Klurak village	Klurak	Park and sanctuary project (P-01)	5.3	542	108	5.4	114.3	27.0	141.3		1983-86
P-21 Substitute village for	Plaosan Lor	Sanctuary project (P-06)	1.4	113	28	1.4	28.6	7.0	35.6		1981-82
sanctuary project	(Sari)	Sanctuary project (P-09)	0.3	32	8	0.4	8.2	2.0	10.2		1979-80
	(Kalasan)	Sanctuary project (P-10)	0.6	45	11	0.5	10.2	2.5	12.7		1980-81
Totals				17.3	1,474	350	20.0	476.4	97.8	574.2		

Pelita IV Pelita V

Substitute new village

Substitute new kecamatan center

Park project area

Sanctuary project area

P-00 Project code no.

Regional road project

Village and excursion road project

0 100 500 1,000 m

New Kecamatan Center
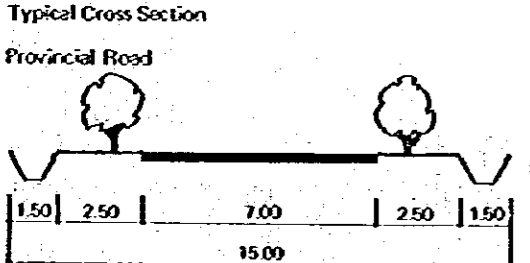
New Village (Dukuh)

Road and Bridge Project for Park Development

Outline of Project

This project is firstly for the substitute provision and improvement of roads and bridges during the 10-year period covered by Pelita III and Pelita IV as necessitated by the land acquisition program for the sanctuary and park development projects, secondly for the provision of access roads to the substitute village, which are to be constructed for relocation of population as, again, necessitated by the sanctuary and park development projects, and thirdly to provide better approach and excursion roads for the park over a period of twenty years as the number of visitors increase (to about 10,000 a day by 1998 in the case of Borobudur) and new and better roads for the future development and prosperity of the region.

Selection of Project Road

The selection of the project roads has been based on a combination of the above purposes and on the present condition of the roads. Bridges are also to be provided or improved where necessitated by such project road selection.

Road Project No. Purpose	Borobudur 19 20 21 22 23 24 25	Prambanan 26 27 28 29
Substitute roads	O ● O ●	● O
Access roads for substitute villages	△	●
Park access roads	△ O ●	O ●
Cardi excursion roads	△ ● ●	● ●
Park maintenance roads	●	●
Main interregional roads	● O O	O
Future Zone—3 village roads	△	O △ O O

● Chiefly for this purpose
O To a considerable extent for this purpose as well
△ For this purpose only to a minor extent
* Bridge construction or improvement also involved.

These road will be classified according to administrative body.

National road and provincial road : Bina Marga administration it.
National road and provincial road : Bina Marga administrative it.
Regional road : Local government administa
Regional road : Local government administrates it.
Park road . It is used for tourist traffic and also for regional traffic
Village road . It is mainly used for regional traffic.

Typical Cross Section

Provincial Road

| 1.50 | 2.50 | 7.00 | 2.50 | 1.50 |
| 15.00 |

Park Road A

| 1.00 | 6.00 | 3.00 |
| 1.00 | | 1.00 |
| 12.00 |

Park Road B & Village Road (2 lanes)

| 1.00 | 2.00 | 6.00 | 2.00 |
| | | | 1.00 |
| 12.00 |

Village Road (1 lane)

| 1.00 | 3.00 | 1.00 |
| 0.50 | 6.00 | 0.50 |

Design Criteria

The road planning and design are to be based on local standards. There will also have to be scenic landscaping, however, including the planting of trees and other greenery, along the park approach roads, promenades, and elsewhere.

Road classification

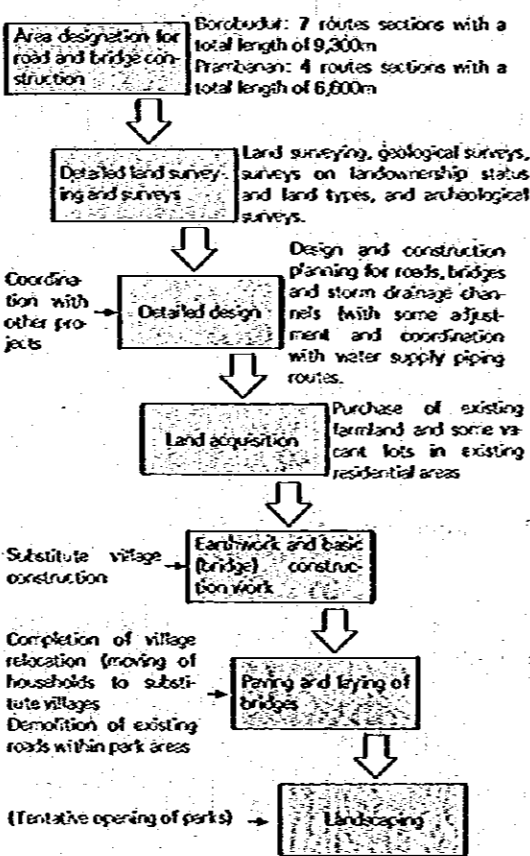|	Provincial road	Park road	Village road
Terrain	Flat	Flat	Flat
Design speed	60km/h	40km/h	20km/h
Pavement width	7m	6m	6m 3m
Usable shoulder (Pedestrian)	2.5	1m 2m 3m	2m 0.5m
Formation width	12m	10m	10m 4m
Reserve width min.	15m	12m	12m 6m
Maximum gradient	5%	7%	9%
Critical grade length	50m	35m	20m
Stopping sight dist. min.	75m	40m	20m
Passing sight dist. min.	350m	200m	150m
Minimum radius	200m	100m	30m
Transition curves min. L	50m	35m	20m
Widening	—	—	—
Superelevation	1/125	1/100	1/50
Camber cross fall	2%	2%	2%
Vert curves crest. min.	1,400m	450m	100m
Vert curves crest. min.	1,000m	450m	100m

Landscape Design Criteria

- Standard interval of 7—10m between trees planted and consideration of road traffic safety and tree growth conditions is deciding exactly where they should be planted.
- The trees should be of types with straight trunks and large crowns.
- Buildings or other structures or objects that seriously impair the view should be screened with groups of trees planted more densely.
- Planting of some shrubs, flowers, etc. for variation.

- Some planting of landmark-type vegetation at different intervals along the roads for avoidance of monotony.
- In the case of park roads special attention should be given to variety in the roadside landscaping in terms of trees, shrubs, and other greenery to better emphasize their nature as promenades.
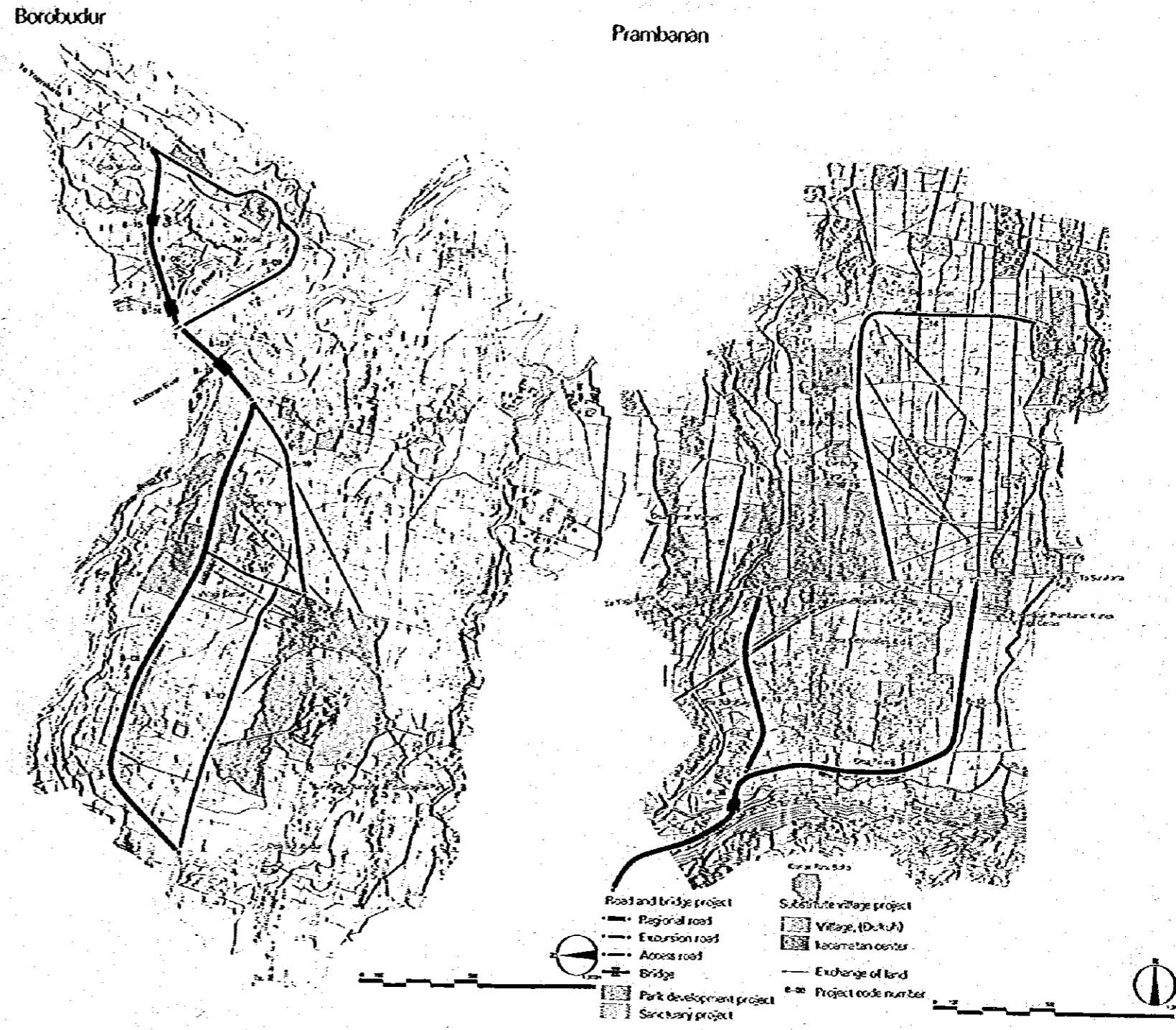
Road and Bridge Construction

The schedule for construction of the roads and bridges will have to be geared to those of the sanctuary, park, and substitute village construction, taking into account when the existing roads have to be removed and when access roads are needed for the construction work.

This first step in such road construction is the designation of road works areas on the basis of the present plan, to be followed by various surveys, including detailed physical surveying, surveys of landownership and land types, and archeological surveys with respect to the possible existence of unexcavated ruins. Next will come detailed road design and construction planning in coordination with the other project works, and then acquisition, by purchase, of the land needed for the road construction in the order that it is needed, and finally commencement of the road construction work itself.

Area designation for road and bridge construction → Borobudur: 7 routes sections with a total length of 9,300m. Prambanan: 4 routes sections with a total length of 6,000m.

Detailed land surveying and surveys → Land surveying, geological surveys, surveys on landownership status and land types, and archeological surveys.

Coordination with other projects → Detailed design → Design and construction planning for roads, bridges and storm drainage channels (with some adjustment and coordination with water supply piping routes.

Land acquisition → Purchase of existing farmland and some vacant lots in existing residential areas

Substitute village construction → Earthwork and basic (bridge) construction work

Completion of village relocation (moving of households to substitute villages) Demolition of existing roads within park areas → Paving and laying of bridges

(Tentative opening of parks) → Landscaping

Road Project List: Borobudur

Code no.	Project title	Category	Length (m)	Planned ROW (m)	Type of construction	Land acquisition	Construction Earthwork	Pavement	Landscape	Sub-totals	Totals	Development year
B-06	Mendut bypass	Regional road	1,100	15	New	33.0	61.1	22.0	5.9	89.0	122.0	1987-88
B-07	Pawon bypass	Regional road	800	15	Improve	20.0	4.0	5.6	4.2	13.8	33.8	1985-86
B-08	Borobudur bypass	Regional road	2,750	15	New	309.4	41.3	55.0	14.6	110.9	420.3	1980-81
B-09	Mendut park road	Excursion road	2,000	12	Improve	40.0	—	2.5	15.0	17.5	57.5	1984
B-10	Borobudur park road	Excursion road	1,050	15	Improve	9.4	—	1.8	11.3	13.1	22.5	1983
B-11	Kenayan road	Village road	500	12	New	30.0	—	7.5	1.8	9.3	39.3	1980
B-12	Gendingan road	Village road	1,100	6	New	36.0	—	3.2	3.1	6.3	42.3	1980
	Total		9,300			477.8	106.4	97.6	55.9	250.9	737.7	

Road and Bridge Project Plan

Borobudur

Prambanan

Road and bridge project
— Regional road
— Excursion road
— Access road
— Bridge
Park development project
Sanctuary project

Substitute village project
Village (Dukuh)
Recreation center
Exchange of land
Project code number

Road Project List: Prambanan

Code no.	Project title	Category	Length (m)	Planned ROW (m)	Type of construction	Land acquisition	Construction Earthwork	Pavement	Landscape	Sub-totals	Totals	Development year
P-12	Prambanan bypass	Regional road	2,400	15	New	72.0	26.6	48.0	12.7	87.3	159.3	1980-81
P-13	Prambanan road	Regional road	1,100	12	Improve	2.2	1.1	2.8	6.4	10.3	12.5	1980
P-14	Sewu-Plaosan park road	Excursion road	2,550	12	Improve	20.0	—	6.4	19.3	25.7	45.7	1982
P-15	West gate road	Access road	550	12	New	14.4	15.0	9.0	1.8	25.8	40.2	1983
	Total		6,600			108.6	42.7	66.2	40.2	149.1	257.7	

Bridge Project List

Code no.	Project title	Route	Structure type	Length (m)	Width (m)	Type of construction	Construction cost (million Rp.)	Development year
B-13	Progo bridge	Pawon bypass	PC box cantilever	75	8	New	228.0	1985-86
B-14	New Elo bridge 1	Mendut bypass	PC composite	75	8	New	190.0	1987-88
B-15	New Elo bridge 2	Mendut bypass	PC composite	25	8	New	64.0	1987-88
P-16	Gatak bridge	Prambanan road	RC slab	10	8	Improve	9.0	1981
	Total						491.0	

Who should Control Which Historical Scenery in Central Java and for What Purposes?

What is Historical Scenery?

There are approximately 60 identified remains each, presently in the two historical climate zones of Borobudur area and Prambanan area. Five remains in total are found in Borobudur area including Candi Borobudur, and fifteen remains including Candi Loro Jonggrang are found in Prambanan area. The surrounding environments of these remains are different in each other but both of them are surrounded by beautiful pastoral sceneries, and have harmonized nice sceneries.

The present pastoral sceneries are those that have been descended and maintained by the provincial inhabitants through various disasters and social changes ranging more than 10 generations. The whole union of both the sceneries of remains and the pastoral scenery, here we call Historical Scenery.

Why do We have to Safeguard the Historical Scenery?

It is necessary to safeguard and maintain to the future not only the remains but also the surrounding sceneries, as the constructed buildings themselves are not enough to satisfy for making out the sanctity of Candi in case of a number of remains. The remains can be maintained with the lives of inhabitants in the provinces. However, as a number of remains in each area have the characteristics fitting the national historical monument in its scale, structure, historical and artistic point of view, it is required to maintain them as an object that every mankind can enjoy for a long period of time.

Where are the Areas for the Preservation of Historical Scenery?

That which includes many of the remains of Borobudur area, is the Kedu Basin, whose radius is approximately 30–40km. The place from where one can enjoy the whole scenery of this basin is Candi Borobudur; the panoramic scenery spread in all directions is very beautiful.

There are a number of remains that the vast Kewu Plain are reserving of Prambanan area here and there; from the summit of Kraton Hill, one can command the sweepy view of this vast plain; The panoramic view towards the direction of Mt. Merapi is also wonderful.

On the other hand, to make a satisfactory environment for the remains currently existing from various points of view, it is required to control the scenery surrounding scenery of the remains and to enhance the sanctity of Candi. A number of people visit these remains in various vehicles. Accordingly, it is also urged to make the residential areas and agricultural area along the main access roads more beautiful by an appropriate control of them, and to make a more pleasant sequence design for the pastoral scenery. Thus, it is necessary to control and remodel such scenery as to be viewed from important places in the historical point of view and that of land quality.

Who should Safeguard the Historical Scenery?

The national historical environment area is the property of all people and therefore a satisfactory state of area will be formed with the safeguarding and a smooth relations between the agencies concerned in the national and provincial administration, and the inhabitants.

How to Safeguard the Historical Scenery?

Introduction of development permission system to all scenic preservation zones is desirable rules for safeguarding the historical scenery.

The important purpose of introduction is, to aim at the properness of the developing acts, and to secure better historical sceneries. Accordingly, it is necessary to take proper steps to arrange development plans; by controlling all acts that deteriorate historical sceneries not only made privately, but by public services.

A strict control for the scenery preservation area is not enough for the administrative activities. Such activities should be pursued so as not to disturb the lives of the inhabitants. Accordingly, it is necessary to adopt preference treatment system and the assistance system for an ideal harmonization between the legislation plan and administrative plans.
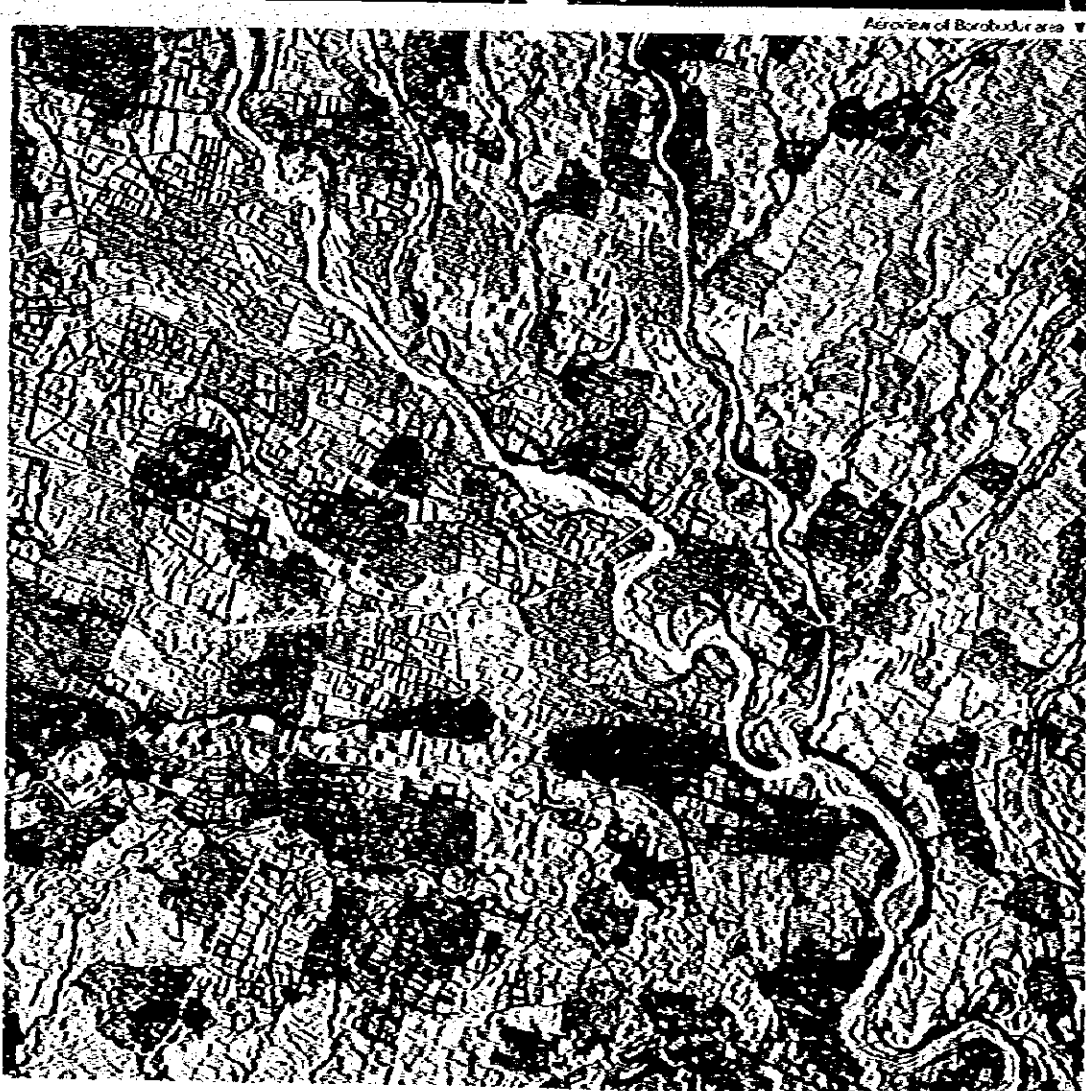

Roadside scenery ▲

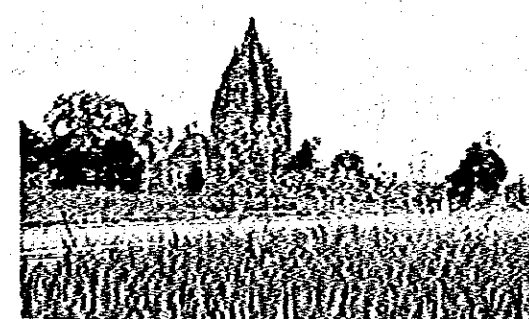Candi Pawon ▼
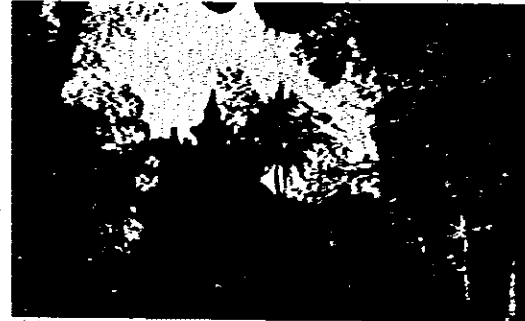
Candi Borobudur ▲

Candi Mendut ▼

Aeroview of Borobudur area ▼

Where is Scenery Preservation Zones?

Scenic preservation zones are divided into as follows;

(1) Panoramic Preservation Zone
The designated category is determined in such manner that one location where the panoramic historical view representing the two areas can be commanded from there is primarily determined, and the preservation of the developing beautiful view therefrom is aimed.

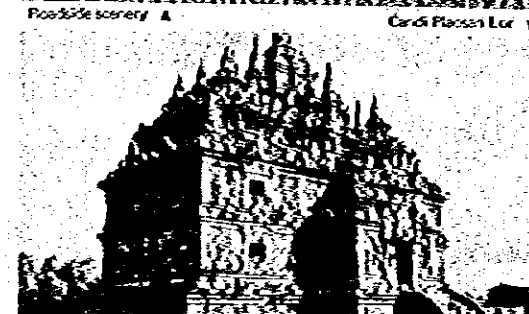**(2) Zone for Preservation of the Scenery around Monuments**
In this plan, the range is designated so as to preserve the beautiful scenery developed surrounding total of sixteen sanctuaries in this area.

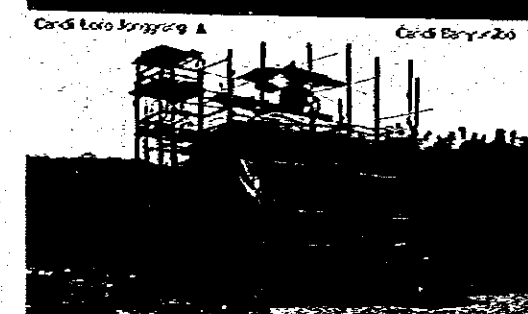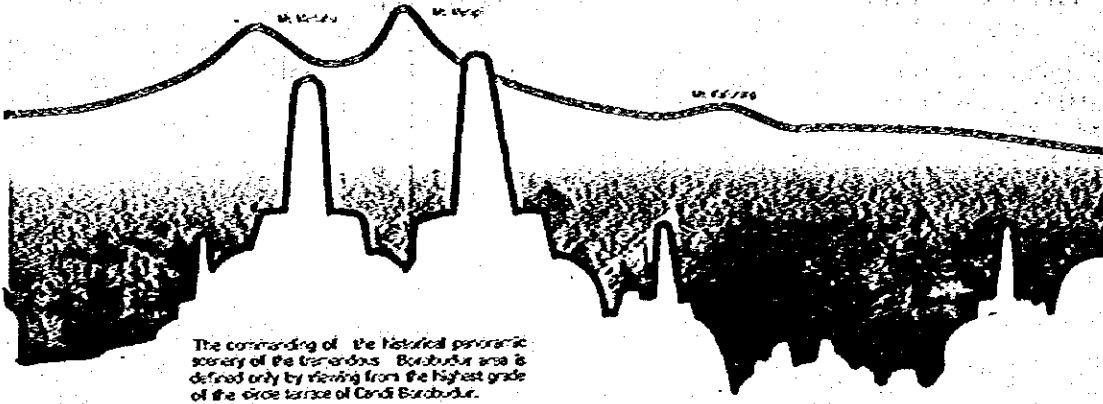**(3) Roadside Scenery Preservation Zone**
In this plan, the area range is designated with the purpose of preservation of the beautiful scenery developed on roadsides and along access roads connecting each sanctuary area of both areas.

Roadside scenery ▲

Candi Loro Jongrang ▲

Candi Plaosan Lor ▼

Candi Banyunibo ▼

Aeroview of Prambanan area ▼

Evaluation of Panoramic Scenery

The two pictures of panoramic views as you see on the right, are the only historical sceneries, representing Borobudur Area, and Prambanan Area each. To evaluate the panoramic sceneries plays an important role in drawing up plans of the controlling policies and regulation items. It is necessary to make a prompt activity after a satisfactory review from the aesthetic, religious and historical point of view, characteristic of each area.

Panoramic view: Borobudur area

From Candi Borobudur, on the only hill in the whole Kedu Basin, one has a fine view of the mountains forming the ridge of the basin and of the vast sea of trees covering it. The mountains to the north, south, east, and west seem to embody the universe of ancient Hindu philosophy and still breathe the breath of the culture that reigned at the time Candi Borobudur was built. At present count, the number of candi in the basin stands at five, and this figure will no doubt rise in the course of future archeological investigations.

Panoramic view: Prambanan area

The frontal view of Mt. Merapi from Kraton Hill is characterized by the form and texture of villages and farmland and the uniquely beautiful pattern woven by them as well as the prominent figure of the Siva temple of Candi Loro Jonggrang.

At present count, there are thirteen candi on the Kewu Plain besides the palace ruins on Kraton Hill, and much still remains to be discovered in the vicinity of them in future archeological exploration.

East view from Candi Borobudur (above)

West view from Candi Borobudur (under)

North View from Kraton Hill

Mt. Merapi

Evaluation of Streetscape

The following is an evaluation of roadside scenery from five points along the access road to Candi Borobudur. Evaluation of roadside scenery is very important in the making of a guideline of controls and its regulation items. Described regulation items are adaptable for not only the access road to Borobudur Park but also the access road to Prombanan Park. Needless to say, the purpose of roadside scenery preservation satisfies the historical scenery along the road to both the archeological parks.

Outline of Sequential Analysis

The objects of roadside scenery preservation are firstly, to protect and to maintain the existing historical scenery or pastoral scenery so as to inherit to the future. Secondly, to enrich the sequential scenery of the archaeological parks in two areas. The characteristics of the present sequential scenery is the pastoral scenery that is formed by agricultural area and residential areas. In agricultural area, it is possible to get an open view,

and therefore, it is necessary to maintain the parts that have great importance in making a sequential scenery and to make good use of them for the sequence design.

In residential area, however, along with the flourishing of greenery, it is also necessary to uniform the setback of buildings to form a beautiful the visual corridor.

Roadside furnishings, for example, commercial sign boards, traffic signs, etc., should be reduced as possible, as they deteriorate the sequential scenery a lot.

Point 1

Point 2

Point 3

Point 4

Point 5

Never Destory Sanctity!

The following is an evaluation of scenery around the monuments in the Borobudur and Prombanan areas. Regulation items consist mainly of buildings and it's roofs, walls, windows, and all other artificial elements, perimeter green of villages, agricultural areas and so on. Evaluation in the landscape elements, finding of problems are very helpful to making control measures for creating "a beautiful scenery environment" around the monuments.

What is Sanctity of Candis?

The object of scenery preservation around the monuments is primarily to protect and maintain the existing historical scenery to the future, and secondly, to improve the quality of historical scenery.

In the present scenery around the monument, the sanctity Candi itself has to keep, is lost as there is not enough sanctuary area secured, and in addition, the proper steps for the renewing and intensifying of historical

scenery are not taken.

The only principle of Sanctity is that it is formed by Candi itself, and a beautiful surrounding pastoral scenery. No other visible element should be included.

The evaluation of historical scenery that needs to be preserved can be made from two points of view: The scenery of Candi viewed from outside the sanctuary, and the view of surrounding scenery from inside the sanctuary (including the scenery viewed from Candi). The evaluation should be made from both viewpoints.

Scene-1

Scene-2

Scene-3

Scene-4

Scene-5

Scene-6

Scene-7

Scene-8

Scene-9

Scene-10

Administrative Guideline for Safeguarding of Historical Scenery

It is necessary that a number of people endeavor for the preservation and guarding of the present historical scenery through many years.

Here we are going to describe the concrete setup of the guarding of historical scenery in Borobudur area, and Prambanan area by establishing the Historical Scenery Preservation Review Council" and by proposing the introduction of development permission system.

Responsibility of all Inhabitants for Safeguarding of the Historical Scenery

A strict control for the scenery preservation area is not enough for the administrative activities. Such activities should be pursued so as not to disturb the lives of the inhabitants. Accordingly, it is necessary to adopt preference treatment system and the assistance system for an ideal harmonization between the legislation plans and administrative plans.

By performing an appropriate safeguarding administration, every provincial inhabitant becomes to understand the importance of historical scenery safeguarding and spontaneously cooperate such moves.

One of the most difficult problems that local residents and local governments face in their efforts for the preservation of historical scenery is that of procurement of funds for accomplishing this purpose. It is not only archeological monuments but also the scenery around them that are of outstanding historical value. Needless to say, a considerable amount of funds must be available if such historical scenery is to be properly preserved. The main questions that must be asked in connection with procurement of such funds are the followings:

(1) Who is to pay for such preservation?
(2) What is the best way that the cost of such preservation be borne?

And in this connection, the following possibilities should be considered:

(1) The appropriation of national, prefectural, and municipal or other local funds for this purpose.
(2) The establishment of a foundation for the preservation of cultural assets.
(3) The purchase of land to make public property of threatened cultural assets.

(4) Encouragement of preservation efforts on the part of owners or those in charge of land on which historical assets are to be found, perhaps by means of a system of loans or subsidies.
(5) Achievement of economic effect through efforts to utilize such cultural and historical assets for tourism purposes.
(6) Inclusion of the cost of preservation and relief of such assets in the budgets for the construction work for such tourism utilization.

For the preservation of historical scenery it is also important that the administrative authorities concerned have a cultural orientation and that they be aware of the basic fact that, the ultimate source of creation of cultural value being the creative activity of the people, their role should be one of providing the conditions that will favor such cultural creativity.

Preservation Work

The following are the basic kinds of work in this category that might be undertaken in the future:

- Management Work : By this is meant the setting up of disaster prevention facilities, signs, placards, boundary markers, etc. as required for the running of buildings and structures in preservation areas.
- Repair Work : By is meant repair of traditional buildings in addition to the archeological restoration work that is already underway.
- Landscaping Work : By this is meant work aimed at improving the outward appearance of buildings or structures other than traditional buildings or improving the natural view around traditional buildings for better harmony with them. Particular care must be taken so as not to introduce any landscaping elements that are not suitable to the area in question, and it will be necessary to grasp the particular features of the traditional buildings involved as well as the scenic features of the area to ensure that the landscaping will be compatible with them.
- Recovery Work : By this is meant repair of the land and natural objects, such as the relaying of stones on stone walls that have become delapidated, supplementary planting at withered or damaged sections of hedges, and so on.

Another possible kind of preservation work is the acquisition of land for the protection and preservation of traditional buildings and structures.
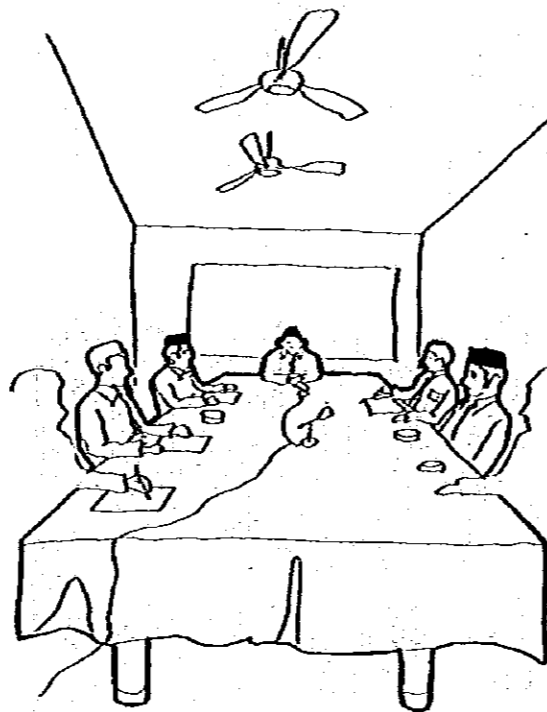
Function of Central Government

Cooperation with the central government and local governments is essential if the safeguarding of the historical climate is to be successful, the following being ways in which the central government can help:

(1) Legal measures are absolutely necessary for smooth cooperation between local governments and local residents in the implementation of programs for this purpose. Furthermore, they must be carefully formulated as basic principles for all aspects of such programs and facilitate other measures for this purpose on the part of both the central government and local governments.

(2) The central and local governments should share the expense of programs for safeguarding the historical climate, with national subsidies being provided for the management, repair, landscaping and recovery works.

(3) It is advisable to establish a regular council within the central administrative apparatus with the necessary authority to coordinate the efforts of various government agencies for the purpose of safeguarding the historical climate on the basis of surveys and studies, including the authority to require national and local government agencies to submit pertinent information. The membership of such a council should consist of officials representing the various government agencies concerned, the heads of the local governments involved in such efforts to safeguard the historical climate, and other persons with knowledge and experience that can be put to good use in connection with the council's activities.

Function of Local Governments

The role of local governments will be that of providing appropriate administrative guidance and promoting programs for the safeguarding of the historical climate as an intermediary between administrative agencies of the central government and the local residents. Local governments should therefore define the limits of the areas in which particular administrative measures for this purpose are to apply in such a way as to ensure that the measures can be effectively enforced, fully consulting the government agencies concerned before making any decisions in this respect or any subsequent changes in area designation.

Besides administrative guidance with respect to development activities in historical climate preservation areas, local governments will conduct historical climate safeguarding programs, patrols, publicity, and so forth. With respect to private development activities in such areas, local governments are to administer a licensing system, and the application, counselling, historical climate preservation planning, scenery survey sections should be established to handle the various local government activities for safeguarding the historical climate.

(1) Application Section:

This section will be responsible for consideration of applications for permission to erect buildings or other structures in such areas on the basis of clearly defined assessment criteria.

(2) Counselling Section:

This section will give advice to developers or builders prior to submittal by them of development permission application as well as advice on such matters as greenification and beautification of the environment.

(3) Historical Climate Preservation Planning Section:

This section will formulate specific preservation plans and administrative guidance guidelines as well as promote the actual programs of the various areas with respect to safeguarding of the historical climate.

(4) Scenery Survey Section:

This section will check the preservation areas on a regular basis to ensure that the programs and regulation for this purpose are in fact having the desired effect.
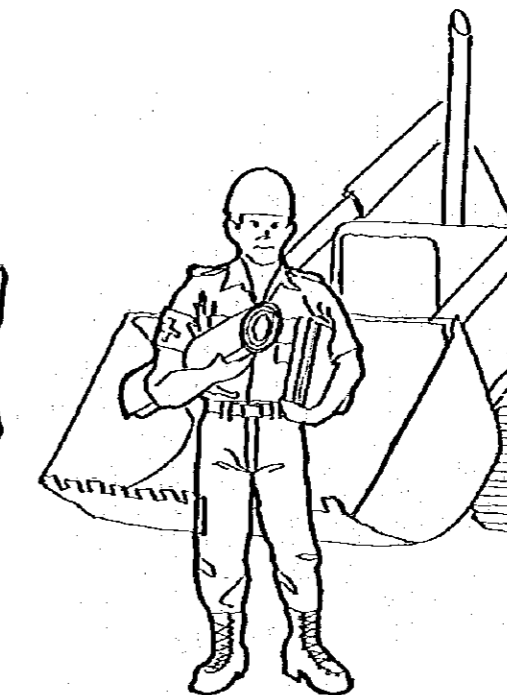
The Role of Developers

Active efforts must be made to ensure that the areas in question are adequately protected from adverse effects and particularly any form of pollution arising from inappropriate use of such areas or unnecessary changes in them. Accordingly, developers should not only be careful not to impair the scenery viewed from such areas and the scenery in such areas as viewed from outside them but also fulfill the following obligations:

(1) Before erecting, extending, or repairing any buildings or other structures in the areas in question, they should submit applications for permission to do so and fully comply and cooperate with whatever administrative guidance is received as a result of such application. This means that it will be prohibited to start and building work prior to receipt of permission to do so.

(2) If any unexcavated archeological monuments or artifacts are discovered during such buildings work, the proper administrative office should be immediately informed, and the work should be suspended so as to ensure that the discovered monuments or artifacts are not affected by it. Nor can the work be resumed before permission to do so is granted.

As for development activities on the part of public entities, they must be approved in advance by the special council referred to in the section above on the role of the central government.

Participation of Local Residents

Not only appropriate administrative measures but also the spontaneous will of local residents to do what they can to help are necessary for the purpose of ensuring that efforts to safeguard the historical climate are successful. In order to foster such an attitude on the part of local residents, it is necessary that their wishes and the collective decisions made by them be given priority consideration in connection with efforts of this kind so as to ensure that their interests are not prejudiced. In this connection it is worth considering the establishment of an informal forum in which the views of local residents can be freely expressed and communicated to the authorities in charge of such the efforts for safeguarding the historical climate as well as the formulation of an informal declaration or agreement that gives adequate expression to the principles that are to be applied in this respect as a consensus between the local residents and the authorities.

The following is an example of such a declaration that has been adopted in Japan:

(1) We will first of all take every opportunity to become better acquainted with the outstanding history of our locale and foster an attitude of love and affection toward it.

(2) Proud of the history and nature of our locale, we will strive to continue to protect them.

(3) We are resolved to continue to protect our beautiful locale from disorderly development and excessive tourism.

(4) We will continue to make every effort to preserve the present image of our village and the natural scenery around it.

(5) We will continue to protect the natural environment and archeological and historical monuments in our locale as the common legacy of the whole nation.

(6) We are resolved to cooperate with one another in abiding by this Community Charter for the purpose of creating an ideal locale rich in historical, cultural and natural attributes.

	Obligations	Newly established or gains	Contents of main activities	Others
Central Government	- Designation of areas for preservation. - Enactment of historical scenery preservation law. - Drawing up of historical scenery preservation plans.	Historical Scenery Preservation Council	- Planning and arrangement of public services in the designated areas. - Discussion of items not settled by provincial gov'ts	- Administrative guidance of local governments. - Induction of government subsidy system.
Local Government	- Drawing up of preservation service plans. - Enforcement of preservation services. - Enactment of provincial ordinances, (prefectures, and counties)	"Development Requests Section" "Counselling Section" "Preservation Planning Section" "Preservation Services Section"	- Deliberation and confirming the submitted books. - Answering the questions by public relations, service traders and inhabitants. - Investigation of scenery and drawing up preservation plans. - Enforcement of patrol and preservation services plans. - Planning and arrangement of public services.	- Investigation of scenery - Execution of public relations activities. (campaigns and propaganda etc.) - Securing preferential treatment system. - Securing subsidy system.
Developers	Submitting of confirmation request forms before starting construction.			
Local Residents	Obligation of obeying the law.	"Historical Scenery Preservation Review Council"	Holding regular conferences to aim at the unification of preservation consciousness among inhabitants.	Drawing up and the execution of the chart for preservation of historical scenery among inhabitants and its execution.

Scenery Control Plan : Borobudur

There are three applicable scenic preservation zones for safeguarding the historical scenery, panoramic preservation zone, zone for preservation of the scenery around monuments and roadside scenery preservation zone. The following is a designation area and designation criteria of each scenic preservation zone.

General Outline of Safeguarding of Historical Scenery

The safeguarding of the historical climate involves not only the historical monuments themselves but also their surroundings and the environment of whole areas formed by groups of monuments. In the case of the present project the focus of the safeguarding of the historical climate is placed on the numerous candis in the Borobudur and Prambanan areas in the context of the sanctuarization and park development programs.

Only at certain points and places in the two areas, however, is it still possible to experience the historical climate through the scenery that unfolds there and thus get a deeper impression of the monuments and a better understanding of the particular cultural features of the two areas.

It must therefore be resolved, here and now, to do all that can be done to ensure that such outstanding scenery can continue to be enjoyed far into the future.

Three Types of Safe Guarding Zones

The areas around archeological monuments of which there are still ruins today and of some the only trace of which remains is their names are to be areas in which not only the historical climate but also the historical scenery are to be preserved, such preservation involving both prevention of detriment to the scenery and harmony with the living environment of the people in the area. It is therefore necessary to designate historical scenery preservation areas as those included in the view from points that are particularly important in historical and geographical terms, including the following types:

(1) Panoramic Preservation Zone

The designated category is determined in such manner that one location where the panoramic historical view representing the two areas can be commanded from there, is primarily determined, and the preservation of the developing beautiful view therefrom is aimed.

The outstanding focal points of the Borobudur area are Candi Borobudur's circle terrace and the top of Dagi Hill.

While the panoramic views from both of these two places have virtually the same scenery, that from Candi Borobudur is especially outstanding for its inclusion in view of the remains. In the background is the skyline of volcanic mountains 30 km distant (Mt. Merapi, Mt. Merbabu, and Mt. Sambing).

Drawing a straight line between Candi Pawon and Candi Mendut, this extends out to white-smoking Mt. Merapi.

The main components of the scenery commanded from Candi Borobudur's circle terrace area Kedu Basin which is encircled by the big sea with surrounding forest, the surrounding mountains.

This explains the spatial point of view of Kagenkei, who used to be the religious background in the construction of Candi Borobudur.

Accordingly, the radius of 3 km area is designated as a principle starting from Candi Borobudur.

The designated range is broadened into radius 4 km area, however, because the agricultural area and residence are in sight as the slopes in the east-west direction are soon so close.

In addition, in the north-eastern direction, the scenery is obstructed by Dagi Hill, and should be removed from this zone. However, the view from the top of Dagi Hill is the next valuable to that from Candi Borobudur's circle terrace.

Therefore, it is designated within the range of approximately 1 km from this hill and 2 km radius area from Candi Borobudur. The designated total area is, therefore, approximately 30 square meters.

The panoramic view from Kraton Hill is one of the most attractive features of this area.

Almost directly north is the majestic spectacle of white-smoking Mt. Merapi.

Moreover, the beautiful foothills slope down to the base of Kraton Hill, contrasting with the estate groves and paddies around the villages for an extremely beautiful scene.

Spreading from medium-range to close-range is a vast sea of large trees for palm orchards and estate groves.

The main components of the panoramic view from Kraton Hill are the villages scattered here and there, the beautiful patterns made by agricultural area, and Mt. Merapi and the panoramic Kewu Plain is developed herewith.

Accordingly, the range is designated so that the horizontal angle from Kraton Hill is 180 degrees to the direction of Mt. Merapi and the distance is 4 km.

Between 3 km and 4 km distance in the directions of northeast and northwest, however, there are not any important remains existing, valuable to look at. Therefore, the range was diminished to 3 km. Furthermore, in the directions of east-northeast and east-southeast, the scenery is obstructed by the plants planted on the slopes of this hill, the radius is diminished to the range of 2 km. The designated total area is approximately 17.8 square kilometers.

(2) Zone for Preservation of the Scenery around Monuments

In this plan, the range is designated so as to preserve the beautiful scenery developed surrounding total of sixteen sanctuaries in this area. However, the temples in the following items are excluded:

- Candi's within the Archaeological Park Zone (ex. Candi Borobudur, Candi Loro Jonggrang, Candi Sewu, etc.)
- Candis within the Landuse Regulation Zone (ex. Candi Pawon, Candi Plaosan, Candi Sojiwan, etc.)
- Such sanctuaries that are thought not to have the possibility of a rapid change of scenery surrounding them. (ex. Candi Gnung Ukir, Candi Ngawen, Candi Sambisari, Candi Banyunibo, etc.)

Accordingly, Candi Sari, Candi Kalasan built along Solo Avenue, are the only objects of this plan, and the radius of 300 meters is designated starting from Candi. The sum total of the designated area is approximately 56.5 ha.

(3) Roadside Scenery Preservation Zone

In this plan, the area range is designated with the purpose of preservation of the beautiful scenery developed on roadsides and along access roads connecting each sanctuary area of both areas.

In Borobudur area, the area is designated within the range of 8.2 km distance, from the T-type roads of the National Road (Magelang Avenue), to Borobudur Archaeological Park area.

In case of Prambanan area, on the other hand, the designation is the 6.0 km distance, from R. Opak in the National Road (Solo Avenue) to R. Borongan.

In addition, 500 m each of both sides in both areas, and 500 m radius areas of the both tips are also designated. The total designated areas are 8.7 km² in Borobudur area, and 6.5 km² in Prambanan area.

	Borobudur	Prambanan
(1) Panoramic preservation zone	30.0 km²	17.8 km²
(2) Zone for preservation of the scenery around monuments	—	56.5 ha
(3) Roadside scenery Zone	8.7 km² (8.2 km)	6.5 km² (6.0 km)

A-A'
Since buildings in the expanse of forest stand out as looked down upon from Candi Borobudur, attention will have to be given to their height, size, color, materials, roof inclination, and other aspects. Furthermore, the trees should harmonize with other vegetation around them in terms of kind, height, density, and so on. As for trees in agricultural areas, efforts should be made to protect them from destruction, including the existing coconut palms.

C-C'
Although the scenery is very mixed, unless by large scale development due to the fact that its components are readily visually assimilated, and there, is simple and, ... the area should be considered to be a mixed area with respect to the safeguard of the scenery.

Preservation Area of Panoramic Scenery: Borobudur

The panoramic view in all directions from Candi Borobudur, which encompasses the entire Kedu Basin as decked in forest greenery, merits protection as the most outstanding scenery that the area has to offer. This being the case, the area within a radius of 4,000m of the candi has been designated as a scenery preservation area in terms of the terrain and vegetation.

Scenery Control Plan : Prambanan

The following is a regulation criteria for three types of scenic preservation zones and detailed regulation items by five types of scenic control areas. The five types of scenic control areas are as follows;

Classification of Scenic Preservation Zones

Although scenic preservation zones are divided into the following three: 1) Panoramic preservation zone, 2) Zone for preservation of the scenery around monuments and 3) Roadside scenery preservation zone, taking into consideration the scenic regulation items for each scenic preservation zone, especially panoramic preservation zone, they should be divided more precisely by a visual analysis.

Accordingly, the five Types of scenic control areas are as follows:

Type-1: Super-distant view range area within the panoramic preservation zone.

Type-2: Distant view range area within the panoramic preservation zone.

Type-3: Intermediate view range area within the panoramic preservation zone.

Type-4: Scenery preservation area around monuments.

Type-5: Scenery preservation area along the road.

The following elements can be pointed out as the acts that outstandingly ruin the scenery within all the scenic preservation zones. A thorough control and the administrative guidance are needed.

(1) Rebuilding, restoration, extension, moving or removal or buildings.

(2) The change of outward appearance of buildings (including repairment and remodelling)

(3) The change of outward appearance of buildings (change of colors etc.)

(4) Quality change of the ground soil (preparation of the housing site etc.)

(5) Planting of trees, bamboos and coconut palms.

(6) Extracting of minerals.

(7) Exposing of advertisements

(8) Reclamation or filling up of water surface.

(9) Increase or decrease of water quantity of rivers and lakes

(10) Pasturage of cattle

(11) Fire lighting or bonfire

(12) Throwing or leaving of refuses out or assembling

Introduction of Development Permission System to all Scenic Preservation Zones

The important purpose of introduction is, to aim at the properness of the developing act, and to secure better historical sceneries. Accordingly, it is necessary to take proper steps to arrange development plans; by controlling all acts that deteriorate historical sceneries not only made privately, but by public services.

The main elements of acts asking for improvements can stand for the following five types of scenery preservation areas.

Type-1 Super-distant View Range Area

For this area, it is required to introduce the system of permission for the development of such large elements as iron towers, bridges etc., and of a large scale housing site or of agricultural development.

This type of development acts are made more often by public services than the inhabitants or private development traders, and it is necessary to urge each relevant authorities to make plans for an enough arrangement for it.

Type-2 Distant View Range Area

In this area, the quality-changing elements of the scenery can be felt easily when engineering works such as buildings are constructed in groups by tens.

For agricultural areas, the developing acts ranging the area of approximately 20ha are the elements of scenery-deteriorating elements. Accordingly, it is requested to urge the relevant owners or construction traders to apply for development requests when they are planning such development act. Needless to say, for such acts deteriorating the surrounding sceneries described in Type-1, the construction is forbidden.

Type-3 Intermediate View Range Area

Among panoramic scenery preservation zones, this area is where the control should be done most strictly for the protection and maintenance of the historic scenery.

In this area, the form, color, material, texture etc. of each work or constructed building is in sight and becomes the scenery-deteriorating element. For agricultural area, the development acts ranging to approximately 10ha becomes the scenery-deteriorating element. Accordingly, the control such as the followings is to be adapted for the engineering works of constructed buildings and it is obliged to apply confirmation requests when such development acts against them are planned.

Furthermore, the large-scale development in agricultural area, is mostly made by public services, and the relevant authorities should hold a satisfactory conference for the planning and the arrangement.

Needless to say, the construction is forbidden to those scenery-deteriorating deeds against the control described in Type-1 and 2.

Type-4 Scenery Preservation Area around Monuments

This plan is for Candi Sari and Candi Kalasan in Prambanan area. The deteriorating of scenery around these two Candis, as both two are located along Solo Road, is thought to take place along with the construction of the commercials facilities and housings.

Accordingly, it is urged to forbid positively such construction and equipments which outstandingly deteriorate the surrounding scenery, in order to maintain the open view area formed by agricultural area surrounding the Candi.

It is also necessary to endeavor for the protection and maintenance of edge green (B.B.C.) of each village that forms the surrounding scenery of Candi, by a positive control so that the laundries or fences do not deteriorate the scenery.

When such development acts are going to be made in the area, it is obliged to ask for a confirmation.

In this area, it is necessary to protect and maintain the scenery surrounding Candi by a stricter control for visible element described by Type-3.

Type-5 Scenery Preservation Area along the Road

In this area, buildings along the roads, fences, commercials signs, street lights, trees alongside, street signs, guard rail, other street furnishings, and the construction works in agricultural area are the objects of control for scenery.

It is obligatory, therefore, to ask for a confirmation in case such development acts are to be made.

Visual elements Control items	Roof	Well	Door	Window	Front yard	Gate door	Fence	Street lights	Commercial sign	Electric pole	Town gate
Orientation	●										
Position				●				●	●	●	
Volume	●	●								●	
Proportion										●	
Order										●	
Structure			●	●	●					●	
Height	●		●	●				●	●	●	
Material			●	●	●						
Texture	●		●	●	●						
Color	●	●	●	●	●					●	
Color balance	●	●	●	●							
Glitter	●		●							●	
Slope	●										
Size	●		●	●						●	
Detail			●	●	●						

West view from Candi Loro Jonggrang ▼
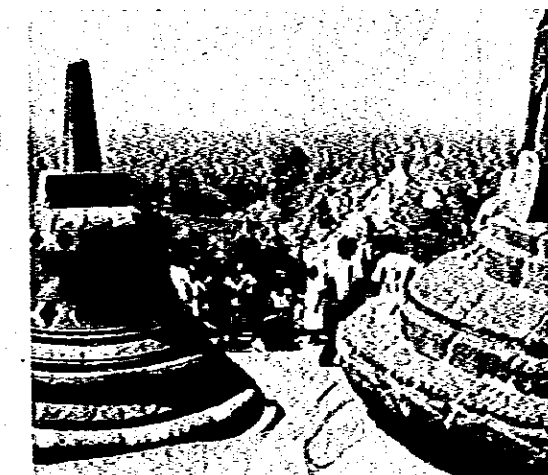
▲ East view from Candi Borobudur
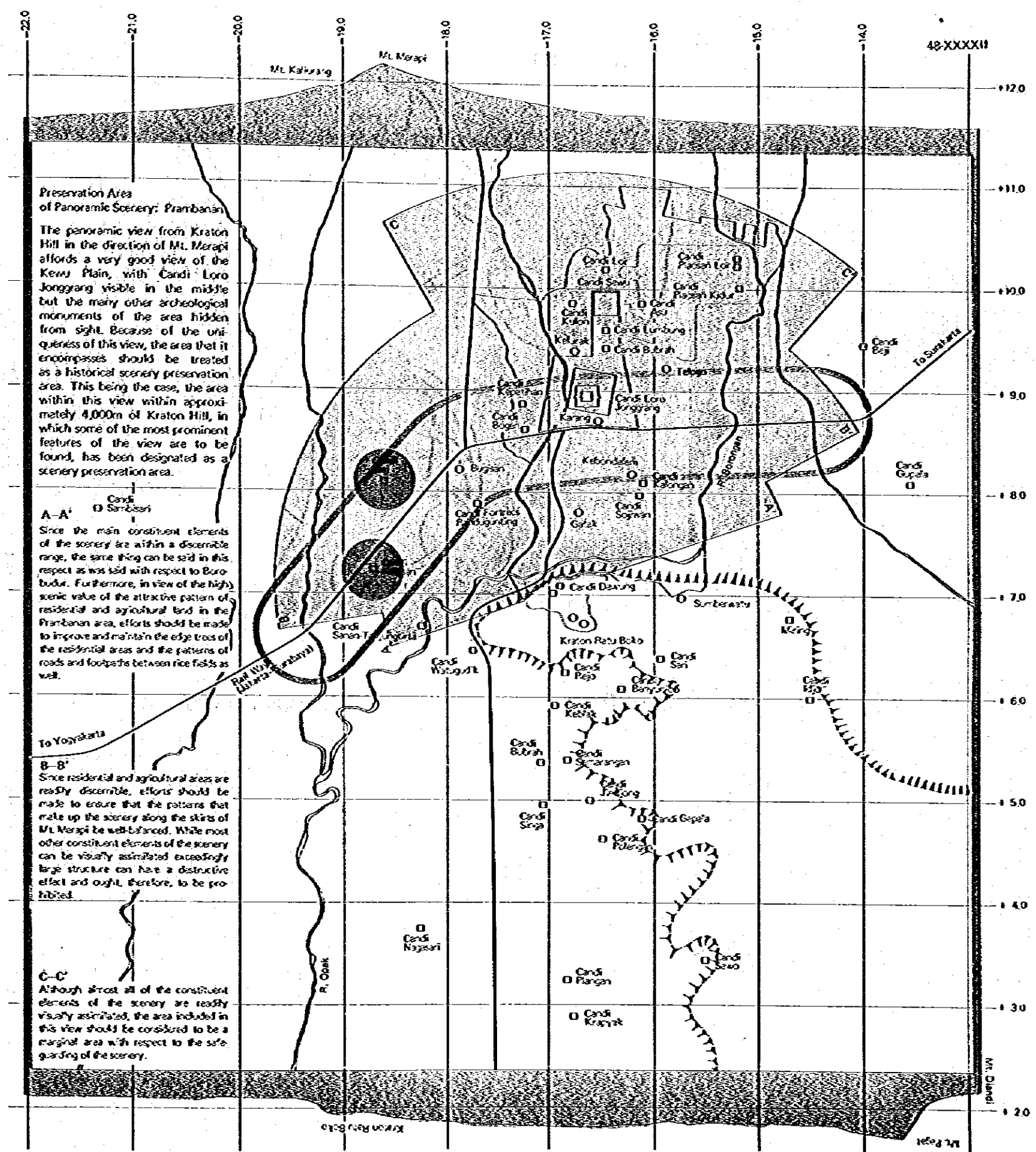
Preservation Area of Panoramic Scenery: Prambanan

The panoramic view from Kraton Hill in the direction of Mt. Merapi affords a very good view of the Kewu Plain, with Candi Loro Jonggrang visible in the middle but the many other archeological monuments of the area hidden from sight. Because of the uniqueness of this view, the area that it encompasses should be treated as a historical scenery preservation area. This being the case, the area within this view within approximately 4,000m of Kraton Hill, in which some of the most prominent features of the view are to be found, has been designated as a scenery preservation area.

A–A'

Since the main constituent elements of the scenery are within a discernible range, the same thing can be said in this respect as was said with respect to Borobudur. Furthermore, in view of the high scenic value of the attractive pattern of residential and agricultural land in the Prambanan area, efforts should be made to improve and maintain the edge trees of the residential areas and the patterns of roads and footpaths between rice fields as well.

B–B'

Since residential and agricultural areas are readily discernible, efforts should be made to ensure that the patterns that make up the scenery along the skirts of Mt. Merapi be well-balanced. While most other constituent elements of the scenery can be visually assimilated exceedingly large structure can have a distinctive effect and ought, therefore, to be prohibited.

C–C'

Although almost all of the constituent elements of the scenery are readily visually assimilated, the area included in this view should be considered to be a marginal area with respect to the safeguarding of the scenery.

Study Method

As stated in the scope of work, the purpose of the present study is that of reviewing the previous JICA study, which was a financial analysis in terms of both character and content. This time again the same basis thinking has been followed as the basis for the financial analysis model. In the process of determining the budgetary scale the previous model has been applied without change, and comparison has been made between the UGM, new JICA, and other studies as a feedback process. The method applied has been that of calculating the rates of return, excess ratios, etc. separately for construction and operation as well as making a sensitivity analysis of the construction.

In the course of this process the contents of the project were made more concrete, and the problems such as that of land prices were pinpointed for feedback to those concerned. As for the funding plan, the specific draft plan presented by the Indonesian side at the time of the draft final report has been adopted in this final report, with revision of calculations as required. Furthermore, unlike the case of the draft final report, the economic internal rate of return in a preliminary fashion has been calculated this time.

MARKET STUDY

Domestic Visitors Forecasting to the Parks

Foreign Visitors Forecasting to the Parks

Estimation of Daily Expenditure and Length of Stay of Foreign Visitors in the Region

Operation Revenues of the Parks
- Estimation of Concession Fees
- Estimation of Admission Fees
- Estimation of Parking Fees

Operation Costs of the Parks
- Financial Costs
- General Operation Costs
- Maintenance Costs

FINANCIAL AND ECONOMIC ANALYSIS

Tourist Expenditure

Government Consumption

Government Investment

Income Increment

Tax Receipt

Development Revenues

Economic Analysis Components

Design Engineering and Survey Costs

Real Estate Acquisition Costs

Construction Costs

Development Cost of Whole Project

Tangible Effects
- Income Effect
- Investment Inducing Effect
- Balance of Payment Effect
- Employment Effect

ECONOMIC EFFECTS STUDY

Intangible Effects
- Demand Effect
- Production Effect
- Acceleration of Development of Regional Infrastructure
- Enhancement of Economic Mobility and Related Industries
- Distribution of Economic Activity
- Nation's Unity

General Procedure of Internal Rate of Return

Project Identification | Project Formulation & Reshaping | Project Appraisal

Confirmation and Probing → Planning and design improvement → Demand forecast → Financial forecast → Financial analysis → Economic analysis → Consideration of technology management, organization, systems & fund procurement → Comprehensive evaluation

Repeated feedback for project improvement

Study Conclusion

As already mentioned, the two main analyses of this economic study have been a financial analysis from the standpoint of the Central Government, which is undertaking the project and which is the entity concerned with the costs and income that it will involve, and an economic analysis for evaluation of the project from a social and national standpoint. The many assumptions that have been made in the course of the study have all been conservative. Although the financial analysis has spotlighted the need to control land prices, the project can be said to have a high enough feasibility from an overall social point of view.

The items covered are as follows:

Financial analysis:	Income	Expenditures at market price
	* Admission fee	* Survey and design cost
	* Parking fee	* Land acquisition cost
	* Rental income from concession	* Construction cost
	* Tax income	* Operation and maintenance cost
		* Interest cost

Economic analysis:	Benefits	Costs
	* Increase in income in proportion to foreign tourist expenditures	* All of the above items except interest as measure of potential price (opportunity cost)

Goals Conservative Assumptions and Possible Improvements

	This project (conservative)	Possible improvement
Budgetary Scale:	Rp. 15 billion	Less than Rp. 15 billion through cost reduction
Number of Visitors to the Parks	Based on Rp. 415/$ (Case I of financial analysis)	Based on Rp. 625/$ (Case II of financial analysis)
Admission Fee:	Rp. 130 – Rp. 300	Rp. 500 for foreigner
Length of Stay:	2.5 days (in 1977)	More than 2.5 days
Per Diem Expenditure:	$40	At least equivalent of $40 after devaluation

Conclusion Internal Rate of Return:

Financial IRR (at Rp. 415 to the US$)	6.2%
Financial IRR (at Rp. 625 to the US$)	9.3%
Economic IRR (at Rp. 415 to the US$)	17.6%

Most to the different between the financial internal rate of return and the economic internal rate of return can be ascribed to the difference between the market and social prices of land. In any case, in terms of its initial goals the present project can be considered not only technically feasible but also very valid in economic terms.

Market Study

Roles of the Market Study

Functional Role of the Study

This market study has two main functions: (i) to forecast the number of visitors to the parks to serve as a basis for determining the scale of the parks and (ii) to estimated the benefits that will be derived from the park development, chiefly in terms of tourism expenditures on the part of visitors to the parks, so as to be able to demonstrate the feasibility of the project in comparison with the total cost of direct and related investment for construction of the parks on the proposed scales.

Historical Role of the Study

The functional role of the study described above is the same as it was in the 1976 JICA study, and going back still further to the OTCA (Overseas Technical Cooperation Agency, the predecessor of JICA) report of 1974, one sees that this role is an extension of the basic philosophy set forth in it. What this study does is review, check, and revise as realistically as possible the previously derived estimates, particularly those made in the 1976 JICA study, so as to be of assistance in improving the project plans as developed to date, such review and revision being based principally on the JICA report of 1976, the PATA Development Authority report of 1978, and interviews and discussions with the DGT staff, members of the UGM team, and officials in Indonesian government offices.

Previous JICA Study

The figure below gives the lower (Case 1) and upper (Case 2) limits of the combined projection made for the two parks in the JICA study of 1976. (See pp. 86–88 of that report for a detailed account of the model on which this projection is based.)

(unit: 1,000 persons)

	Borobudur Park		Prambanan Park	
Year	Case 1	Case 2	Case 1	Case 2
1975	367	367	224	224
76	416	443	265	238
77	472	533	314	357
78	535	642	372	452
79	607	771	412	571
1980	689	932	526	723
81	782	1,123	628	915
82	888	1,353	750	1,159
83	1,010	1,630	900	1,470
84	1,149	1,964	1,083	1,851
1985	1,307	2,367	1,307	2,367
86	1,381	2,490		
87	1,459	2,620		
88	1,543	2,758		
89	1,632	2,905		
1990	1,727	3,060		
91	1,829	3,225		
92	1,938	3,400		
93	2,054	3,586		
94	2,179			
1995	2,312			
96	2,454			
97	2,606			
98	2,768			
99	2,942			
2000	3,128			
01	3,328			
02	3,543			

Note: The tourist numbers from 1995 to 2002 of Prambanan are the same with the corresponding numbers of Borobudur.

Comparisons with Other Projections

Number of Visitors to the Parks vs. Visitors to the Region (A Comparison with the PATA Report)

The report on the Central Java and Yogyakarta Area by the PATA Development Authority task force is very comprehensive and goes into considerable detail with respect to practical recommendations regarding the lodging industry and as such is very impressive. Furthermore, we completely concur with its sense of urgency.

Let us consider, however, some of the apparent incongruities between it and our study in terms of market projection figures. In the PATA Report there seem to be many comparisons with the OTCA (Overseas Technical Cooperation Agency: Previous name of Present JICA) report (1976) with the present projection.

First of all, it must be said that there is a difference in basic criteria. While the PATA report projects figures for guests at accommodation facilities in the area, the JICA report projects the number of visitors to the two parks, including day trippers and domestic visitors that will stay with relative or friends. And even with respect to foreign visitors, there will be a basic difference between the number coming to the area and the number who visit the parks. As already pointed out, our market projection is with respect to the number of visitors to the parks, which has a strong bearing on the recommendable scale of their development, and with respect to the number of foreign visitors to them, respect to the number of foreign visitors to them, which has a considerable bearing on feasibility. The figures for the latter given in the PATA report are very close to ours (see the following table, particularly with regard to 1990).

Taking into account the differences with respect to what figures are being projected, it is clear that the two reports in fact very nearly coincide with one another. Our projections are for the development of the archeological parks, and those of the PATA report are for the development of accommodation facilities. Complementary to one another, both are essential to tourism development of the area, in terms of enhancement of tourism attractions and tourism accommodations, and neither can afford to lose momentum.

Projection of Number of Tourists by PATA and JICA

	Foreign tourists to Yogyakarta		Foreign tourists to Borobudur	
Year	PATA	JICA	PATA	JICA
1974	–	76,017*	–	35,113**
75	–	91,058*	–	43,075**
76	–	106,936*	–	46,025**
77	75,000	118,773*	–	45,112**
78	82,000	134,100	–	57,900
1979	90,000	143,000	–	63,900
80	103,000	161,900	–	70,000
81	103,000	175,700	–	76,000
82	113,000	189,500	–	82,000
83	124,000	203,200	–	88,000
1984	124,000	216,900	–	94,000
85	190,000	230,500	–	100,000
86	209,000	244,100	–	106,000
87	230,000	257,600	–	111,900
88	253,000	271,100	–	117,900
1989	266,000	284,500	–	123,800
1990	279,000	297,800	–	129,800

Data Sources: * Regional Tourist Office of Yogyakarta (Hotel stays)
** Administration and Public Relations Dept. of Borobudur Office

Past Trends of Visitor Inflow

Actual Number of Visitors

Trends in the number of visitors to Borobudur, Prambanan (Loro Jonggrang), and Yogyakarta Kraton is as follows:

(1) The number of visitors to Borobudur has been greater than expected. In fact, it has been near the upper limit of the projection (Case 2).

(2) There has been little increase in the number of visitors to Prambanan since 1975, and in 1977 the figure was well below even the lower limit of the projection (Case 1). The number of visitors to the Ramayana performances has also hit a ceiling.

(3) The number of visitors to Yogyakarta Kraton has been increasing year by year, overtaking in 1977 the number of visitors to Prambanan.

Year	Borobudur	Prambanan	Yogyakarta Kraton
1969	65,643	58,521	–
70	83,370	75,501	–
71	172,331	107,721	48,618
72	210,589	111,630	66,040
73	256,480	154,818	85,399
74	302,303	180,376	126,415
75	411,581	227,121	157,170
76	438,382	220,613	206,913
77	522,076	221,737	232,428

Sources: Administration and Public Relations Dept. of Borobudur Office
Kepala Kantor Suaka Sejarah dan Purbakala di Prambanan
Regional Tourist Office of Yogyakarta

Breakdown of Visitors

Domestic visitors to Borobudur account for about 90%, with a rising proportion of schoolchildren. After reaching 4,800 in 1975, the number of foreign visitors has been declining somewhat. That peak was probably due to the PATA Conference in 1974.

	Domestic visitors				
Year	General	Schoolchildren	Subtotal	Foreign visitors	Total
1969	–	–	60,467	5,176	65,643
70	–	–	75,927	7,443	83,370
71	–	–	160,594	11,737	172,331
72	–	–	193,349	17,240	210,589
73	–	–	225,042	31,438	256,480
74	263,643	3,547	267,190	35,113	302,303
75	350,285	13,221	363,506	48,075	411,581
76	373,313	19,034	392,357	46,025	438,382
77	443,880	33,074	476,954	45,122	522,076

Since 1975 the number of schoolchildren visiting Prambanan has been increasing, but the number of other domestic visitors has been declining. The number of foreign visitors, too, has fallen off after peaking in 1976.

	Domestic visitors				
Year	General	Schoolchildren	Subtotal	Foreign visitors	Total
1969	–	–	55,992	2,529	58,521
70	–	–	71,418	4,083	75,501
71	–	–	100,807	6,914	107,721
72	–	–	108,109	6,521	114,630
73	–	–	149,735	5,083	154,818
74	–	–	(172,981)	(7,395)	180,376
75	197,800	12,702	210,502	16,622	227,124
76	186,333	16,076	202,409	18,204	220,613
77	181,121	27,728	208,849	12,888	221,737

Main Premises and Condition of Projection

To predict the number of visitors, the following restrictions on the fundamental historical data are remarked:

(1) Differentiation of foreign vs. domestic visitors was made depending on personal criteria of a clerk at ticket counter.

(2) For the sake of the study, all domestic visitors are separated into two categories; general domestic visitors paying admission and schoolchildren groups not paying admission. As a result, domestic long-term tourists, weekend tourists and day trippers have not been sub-quantified this time as opposed to the case of previous JICA study in 1976.

(3) As shown in the above, time series data coverages in some items are too short for sound regression analysis. Because of this reason, the final projection was made based not only on the outcome of the regression method but also by comparing as much as possible the compiled information and results from analysis of the past trend in former paragraphs.

(4) The world travel demand is affected by changes in economic accessibility to destinations. In other words, changes in air policy or in foreign exchange rate will also influence travel demands. Actually the latter occurred in the course of this study; the devaluation of rupiah against major foreign currencies in November, 1978. However the outcome seems more foreign visitors, this was not taken into account, since quantification at this point is yet uncertain. As a result, the projection is a conservative one in this sense.

Method of Projection

The procedure followed has been to make a simple extrapolation of the past trend in order to varify the accuracy of the projection made in the preceding study and then to reforecast, on the basis of analysis of the past trend, the number of visitors that will come to the parks if the project is implemented.
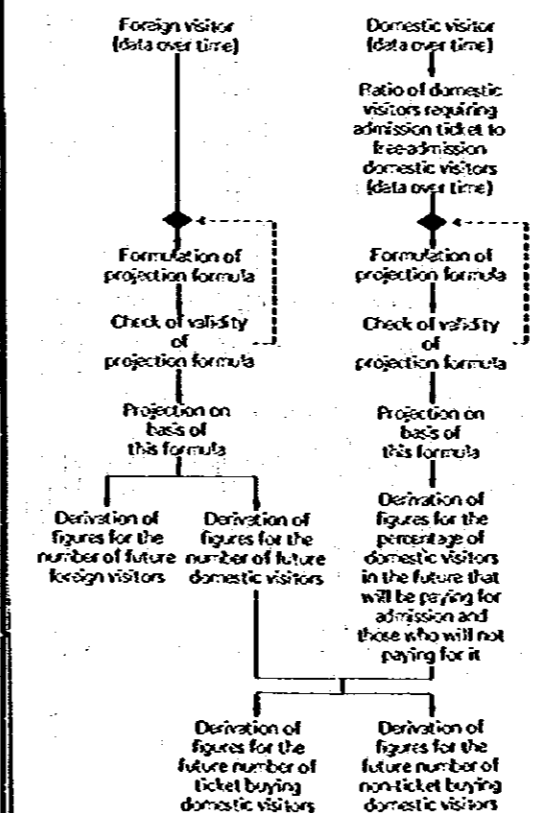
Target Projection of Visitors

General Description

The first assumption is that the present trend in the number of visitors to Borobudur will continue to 1986 and then converge with the Case-2 projection in view of the fact that through implementation of the project the considerable number of favorable conditions of a short-term nature will become long-term conditions, i.e. the present trend will continue for quite some time. It should be noted, however, that this will mean a lower percentage of foreign visitors and a higher percentage of domestic schoolchildren than anticipated in the preceding JICA study.

An assumption for Prambanan is that there will be considerable successful promotion, including tour route integration as mentioned above, so that the Case-1 projection can be caught up with by 1988 and followed thereafter. The reason why it has been made is that it is no longer considered realistic to anticipate the same number of visitors for Prambanan as for Borobudur as in the previous JICA study.

Another assumption that has been made, however, is that the number of foreign visitors and schoolchildren who visit Prambanan will rise to the same levels as for Borobudur. In other words, it has been assumed that visitors in these two categories will visit both parks instead of just Borobudur.

Daily Expenditure and Length of Stay

Here are to be determined the average daily tourist expenditure per foreign visitor and the average length of stay of such visitors as factors having a major bearing on project feasibility. In the previous JICA study it was assumed that foreign visitors would stay two days on the average and spend USD35.00 a day for tourist-related purposes (lodgings, meals, etc.). As a result of the present review, however, in which there has been new input in the form of information provided by the PATA Development Authority, these figures have been revised to 2.5 days and USD40.00 a day.

Projection of Visitors to the Parks (Unit: 1,000 persons)

Borobudur Park (Unit: 1,000 persons)

	Domestic Visitors		Foreign	
Year	General	Students	Visitors	Total
1979	622	71	64	757
80	731	100	70	901
81	861	135	76	1,072
82	1,012	183	82	1,277
83	1,191	211	88	1,520
1984	1,401	316	94	1,811
85	1,649	410	100	2,159
86	1,873	510	106	2,489
87	1,934	574	112	2,620
88	1,999	641	118	2,758
1989	2,063	717	124	2,904
90	2,136	794	130	3,060
91	2,209	880	136	3,225
92	2,288	971	141	3,400
93	2,366	1,073	147	3,586

Prambanan Park

	Domestic Visitors		Foreign	
Year	General	Students	Visitors	Total
1979	275	67	23	365
80	311	91	28	430
81	352	121	34	507
82	397	160	41	598
83	449	206	50	705
1984	508	264	60	832
85	574	334	73	981
86	649	420	88	1,157
87	733	524	107	1,364
88	783	642	118	1,543
1989	791	717	124	1,632
90	803	794	130	1,727
91	813	880	136	1,829
92	825	971	142	1,938
93	834	1,073	147	2,054

Per Diem Expenditure and Length of Stay (Based on foreign visitors in Yogyakarta, 1977)

Origin	Type of Visitors	No. of Visitors	Per diem (USD)	Length of stay	Expenditures (USD)
Europe	Business	4,378	55.00	2.5	601,975
	First class	27,583	50.00	2.5	3,447,875
	Economy	11,822	25.00	3.2	945,760
	Total	43,783	–	–	4,995,610
Australia and New Zealand	Business	881	55.00	2.0	96,910
	First class	3,964	50.00	2.0	396,400
	Economy	3,964	25.00	3.2	317,120
	Total	8,809	–	–	810,430
North America	Business	960	55.00	2.0	105,600
	First class	6,915	50.00	2.0	691,500
	Economy	1,729	25.00	3.2	138,320
	Total	9,604	–	–	935,420
Japan	Business	1,026	60.00	2.0	123,120
	First class	8,314	55.00	2.0	914,540
	Economy	924	30.00	3.2	88,704
	Total	10,264	–	–	1,126,364
Other (Mainly Southeast Asia)	Business	336	40.00	2.0	26,880
	First class	1,210	40.00	2.0	96,800
	Economy	1,815	20.00	3.2	116,160
	Total	3,361	–	–	239,840
Grand total					8,107,664

Notes: Mean value for first class, and economy visitor of per diem: $42.9 $43
Length of stay: 2.56 day 2.55sy

Source: PATA Development Authority

Financial Analysis

Summary of Economic Analysis

One aspect of this study, as already mentioned, which covers both construction and operation, has been a financial analysis. The figures for the number of visitors to the parks, tourism-related expenditures per day, number of days of stay in the area, etc. as derived from the market analysis, however, are those set before the devaluation of the rupiah of Nov. 15, 1978. Here an exchange rate of Rp. 415 to the U.S. dollar has been assumed as Case–I. As Case–II an exchange rate of Rp. 625 to the U.S. dollar has been assumed as representing an approximately 50% increase in total tourism expenditures by foreigners. The financial analysis has been made for both cases. The total tourism expenditure has been measured in terms of rupiah, and as for the increases that can be expected either in the number of days of stay or the amount of tourism expenditures per day in Case–II it has been assumed this time that there will be an increase of approximately 50% in the number of foreign visitors for convenience of calculation. The tables below are cash flow tables showing the income and expenditures of the Central Government in connection with implementation of the project as figures used in deriving the internal rate of return, the results being 6.2% in Case–I and 9.3% in Case–II.

Analysis Conditions: Revenue

Admission Fee
(unit: 1,000 Rp.)

Year	Domestic visitors	Foreign visitors	Total
1979	92,659	10,556	103,215
80	107,681	11,891	119,575
81	125,281	13,335	138,616
82	145,586	14,936	160,522
83	169,529	16,708	186,237
84	445,380	43,176	488,556
85	518,669	48,412	567,081
86	588,435	54,404	642,839
87	622,211	61,264	683,475
88	649,124	66,024	715,148
89	666,994	69,328	736,322
90	685,920	72,688	758,608
91	705,100	75,992	781,092
92	726,356	79,296	805,652
93	746,666	82,600	829,256

(1)

	Adults	Children
Up to 1983	Rp.130	Rp.60
From 1984	Rp.300	Rp.100

(2) Domestic visitors (general) Adults: Children = 2:1
(3) Group visitors (20 persons or more)
1/3 of total foreign visitors

Parking fee
(unit: 1,000 Rp.)

Year	Borobudur	Prambanan	Total
1979	2,915	1,410	4,325
80	3,450	1,655	5,105
81	4,110	1,945	6,055
82	4,905	2,300	7,205
83	5,825	2,715	8,540
84	12,080	5,550	17,630
85	14,400	6,000	20,400
86	16,620	7,730	24,350
87	17,470	9,100	26,570
88	18,400	10,270	28,670
89	19,380	10,880	30,260
90	20,400	11,520	31,920
91	21,520	12,180	33,700
92	22,670	12,930	35,600
93	23,920	13,710	37,630

Assumption

Type of access	Modal split (% of total visitors)	Unit no. of passengers	Parking fee (Rp.) Up to 1983	After 1984
Tourist bus	40	40	200	300
Passenger car	5	3	150	100
Motorcycle	10	1.5	15	30
Route bus	40	40	—	—
Others	5	—	—	—

Concession Fee

Year	Borobudur	Prambanan	Total
1979	—	—	—
80	—	—	—
81	—	—	—
82	7,600	—	7,600
83	7,600	—	7,600
84	7,600	5,500	13,100
85	15,100	5,500	20,600
86	15,100	10,900	26,000
87	21,600	10,900	32,500
88	21,600	15,600	37,200
89	21,600	15,600	37,200
90	21,600	15,600	37,200
91	21,600	15,600	37,200
92	21,600	15,600	37,200
93	21,600	15,600	37,200

Tax Revenues

The tax revenues considered here are those from the additional expenditures by foreign visitors because of the increase in their number and those from the increase in national income resulting from the public investment in the project. Such indirect income can be considered to correspond to (offset by) such indirect park construction costs as those for roads, village improvement, and so on. The following formula presents the basic thinking in calculating such tax revenues:

$$GDP \leftarrow C + I + X + G,$$

C standing for private consumption, I for private investment, X for net export, and G for government expenditures (investment and consumption). Tourism is an export industry, and an increase in its income means an increase in national income. Project construction costs and park operation and maintenance costs, too, minus leakage abroad, increase national income, for increases in X and G, along with the multiplier effect, increase C and ultimately GDP.

Multiplier: 2.9 (1976 JICA study)
Ratio of tax to GDP: 10% (Statistik Indonesia, pp. 878 & 975)
Leakage abroad of construction expenditures: 15%
Leakage abroad of foreign tourist expenditures: 15% (1978 JICA study)

Analysis Conditions: Cost

Operation and Maintenance Cost
(unit: million Rp.)

Year	Personnel expense	General expense	Material consumption	Total
1979	—	—	—	—
80	—	—	—	—
81	—	—	—	—
82	94.6	47.3	20.0	161.9
83	94.6	47.3	20.0	161.9
84	132.4	66.2	30.0	228.6
85	132.4	66.2	30.0	228.6
86	132.4	66.2	40.0	238.6
87	189.1	94.6	40.0	323.7
88	189.1	94.6	50.0	333.7
89	189.1	94.6	50.0	333.7
90	189.1	94.6	50.0	333.7
91	189.1	94.6	50.0	333.7
92	189.1	94.6	50.0	333.7
93	189.1	94.6	50.0	333.7

Assumption

(1) Personnel expense (unit: 1,000 Rp.)

Status	Number of employee	Unit cost	Annual personnel expense
Upper class	20	2,400	48,000
Middle class	90	600	54,000
Lower class	484	180	87,120
Total	594	—	189,120

(2) General expense: 50% of personnel expense
(3) Material consumption: 1% of park construction cost per year

Capital Investment
(unit: million Rp.)

Year	Design, engineering and survey	Real estate acquisition	Construction	Total
1979	450.0	1,134.3	509.3	2,093.6
80	450.0	1,397.9	447.0	2,294.9
81	200.0	1,833.7	946.9	3,000.6
82	—	1,787.6	956.6	2,744.2
83	—	444.5	845.9	1,290.4
84	—	697.4	592.1	1,289.5
85	—	90.7	856.5	947.2
86	—	30.9	290.6	321.5
87	—	33.0	335.2	368.2
88	—	—	619.9	619.9
Total	1,100.0	7,500.0	6,400.0	15,000.0

Financial Cost: Debt Service Schedule
(unit: million Rp.)

Year	Total amount of loan	Amortization total	Interest payment total
1979	959.3	0	28,780
80	897.0	0	55,600
81	1,169.9	0	90,095
82	956.6	0	118,765
83	845.9	0	144,140
84	592.1	0	161,905
85	856.5	0	187,600
86		63,295	174,120
87		103,130	161,510
88		166,845	145,395
89		219,990	131,975
90		266,986	120,085
91		299,830	111,760
92		347,465	99,720
93		"	"
94		347,465	99,720
95		"	"
96		"	"
97		"	"
98		"	"
99		347,465	99,720
2000		"	"
01		"	"
02		"	"
03		"	"
04		294,170	84,410
05		244,335	70,120
06		180,620	51,830
07		127,475	36,580
08		80,480	23,095
09		47,565	13,655
Total	6,254.3		

Conditions

(1) Financing by loan from abroad:

Design and engineering	FY 1979–81	100%	1,100.0
Real estate acquisition	Nil	Nil	—
Construction	FY 1979–85	80%	5,154.3
Total loan			6,254.3

(2) Financing by government equity:

Design and engineering	Nil	Nil	
Real estate acquisition	FY 1979–87	100%	7,500.0
Construction	FY 1986–88	20%	1,245.7
Total equity			8,745.7

(3) Interest rate at 3% annual
Grace period: 7 years
Repayment period: 25 years

These conditions are for calculation purpose only, and they do not necessarily reflect the exact practice of the financing of the project when implemented.

Financial Analysis: Case–I (US$=Rp.415) Financial IRR=6.2%

	Revenue			Cost				Discount rate = 0.06		Discount rate = 0.07	
Year	Operation revenue	Tax revenue	Total revenue	Capital investment	O/M cost	Financial cost	Net cash flow	Discount factor	Present value	Discount factor	Present value
1979	14.8	187.0	201.8	2,093.6	—	28.8	(1,920.6)	0.943	(1,811.1)	0.935	(1,795.8)
80	32.0	234.3	266.3	2,294.9	—	55.7	(2,084.3)	0.890	(1,855.0)	0.873	(1,819.6)
81	52.0	418.4	470.4	3,030.6	—	90.1	(2,650.3)	0.840	(2,226.3)	0.816	(2,162.6)
82	82.6	529.5	612.1	2,744.2	161.9	118.8	(2,412.8)	0.792	(1,910.9)	0.763	(1,841.0)
83	109.7	563.4	673.1	1,290.4	161.9	144.1	(923.3)	0.747	(689.7)	0.713	(658.3)
84	429.6	581.7	1,011.3	1,289.5	228.6	161.9	(668.7)	0.705	(471.4)	0.666	(445.4)
85	515.4	708.4	1,223.8	947.2	228.6	187.6	(139.6)	0.665	(92.8)	0.623	(87.0)
86	600.5	630.1	1,230.6	321.5	238.6	174.1	496.4	0.627	311.2	0.582	288.9
87	649.8	728.9	1,378.7	368.2	323.7	161.5	525.3	0.592	311.0	0.544	285.8
88	683.3	863.5	1,551.8	619.9	333.7	145.4	452.8	0.558	252.7	0.508	230.0
89	710.1	771.0	1,481.1	—	333.7	132.0	1,015.4	0.627	535.1	0.475	482.3
90	736.0	832.5	1,567.5	—	"	120.1	1,113.7	0.497	553.5	0.444	494.5
91	759.3	892.8	1,652.1	—	"	111.8	1,206.6	0.469	565.9	0.415	500.7
92	785.7	953.1	1,738.8	—	"	99.7	1,305.4	0.442	577.0	0.388	506.5
93	811.4	1,013.5	1,824.9	—	"	"	1,391.5	0.417	580.3	0.362	503.7
94	811.4	1,013.5	1,824.9	—	333.7	99.7	1,391.5				
95	"	"	"	—	"	"	"				
96	"	"	"	—	"	"	"				
97	"	"	"	—	"	"	"				
98	"	"	"	—	"	"	"				
99	811.4	1,013.5	1,824.9	—	333.7	99.7	1,391.5	3.071	4,273.3	2.546	3,542.8
2000	"	"	"	—	"	"	"				
01	"	"	"	—	"	"	"				
02	"	"	"	—	"	"	"				
03	"	"	"	—	"	"	"				
04	811.4	1,013.5	1,824.9	—	333.7	84.4	1,406.8	0.220	309.5	0.172	242.0
05	"	"	"	—	"	70.1	1,421.1	0.207	294.2	0.161	228.8
06	"	"	"	—	"	51.8	1,439.4	0.196	282.1	0.150	215.9
07	"	"	"	—	"	36.6	1,454.6	0.185	269.1	0.141	205.1
08	"	"	"	—	"	23.1	1,468.1	0.174	255.4	0.131	192.3
							Net present value		313.1		(890.4)

Notes: The figure in the parentheses is minus figure.
The figure with * mark is the cumulative amount of ten years from 1994 to 2003.

Financial Analysis: Case–II (US$=Rp.625) Financial IRR=9.3%

	Revenue		Cost				Discount rate = 0.08		Discount rate = 0.10	
Year	Operation revenue	Tax revenue	Capital investment	O/M cost	Financial cost	Net cash flow	Discount factor	Present value	Discount factor	Present value
1979	15.4	218.3	2,093.6	—	28.8	(1,888.7)	0.926	(1,748.9)	0.909	(1,716.8)
80	33.3	297.3	2,294.9	—	55.7	(2,020.0)	0.857	(1,731.1)	0.826	(1,668.5)
81	54.0	512.1	3,030.6	—	90.1	(2,554.6)	0.794	(2,028.4)	0.751	(1,918.5)
82	85.5	654.5	2,744.2	161.9	118.8	(2,284.9)	0.735	(1,679.4)	0.683	(1,560.6)
83	113.5	719.5	1,290.4	161.9	144.1	(763.4)	0.681	(519.9)	0.621	(474.1)
84	444.1	768.8	1,289.5	228.6	161.9	(467.1)	0.630	(294.3)	0.564	(263.4)
85	535.5	926.4	947.2	228.6	187.6	98.5	0.583	57.4	0.513	50.5
86	623.8	879.2	321.5	238.6	174.1	768.8	0.540	415.2	0.467	359.0
87	676.7	1,008.5	368.2	323.7	161.5	831.8	0.500	415.9	0.424	352.7
88	717.6	1,174.4	619.9	333.7	145.4	793.0	0.463	367.2	0.386	306.1
89	741.1	1,112.4	—	333.7	132.0	1,387.8	0.429	595.4	0.350	485.7
90	767.8	1,204.9	—	"	120.1	1,518.9	0.397	603.0	0.319	484.5
91	793.8	1,295.6	—	"	111.8	1,643.9	0.368	605.0	0.290	476.7
92	821.9	1,386.7	—	"	99.7	1,775.2	0.340	603.6	0.263	466.9
93	849.3	1,477.5	—	"	"	1,893.4	0.315	596.4	0.239	452.5
94	849.3	1,477.5	—	333.7	99.7	1,893.4				
95	"	"	—	"	"	"				
96	"	"	—	"	"	"				
97	"	"	—	"	"	"				
98	"	"	—	"	"	"				
99	849.3	1,477.5	—	333.7	99.7	1,893.4	2.115	4,004.5	1.471	2,785.2
2000	"	"	—	"	"	"				
01	"	"	—	"	"	"				
02	"	"	—	"	"	"				
03	"	"	—	"	"	"				
04	849.3	1,477.5	—	333.7	84.4	1,908.7	0.135	257.7	0.084	160.3
05	"	"	—	"	"	1,923.0	0.125	240.4	0.076	146.1
06	"	"	—	"	51.8	1,941.3	0.116	225.2	0.069	133.9
07	"	"	—	"	36.6	1,956.5	0.107	209.3	0.063	123.3
08	"	"	—	"	23.1	1,970.0	0.099	195.0	0.057	112.3
						Net present value		1,389.2		(706.2)

Economic Analysis

Summary of Economic Analysis

In the economic analysis, the idea of opportunity cost has been introduced in order to be able to consider better the benefits and costs of the project to Indonesian society. In this connection, it should be kept in mind that there is not necessarily a clear correspondence between market cost and social value. Furthermore, the advantages and disadvantages of the project are considered from the standpoint of the Indonesian nation as a whole rather than from the viewpoint of the Central Government or local governments or private firms or consumers individually. The income considered here is the net increase in income attributable to foreign tourists, and the costs considered are the initial capital cost, as calculated for the purpose of consideration of opportunity cost, and operation and maintenance cost, the servicing of debts not having been considered as costs since it has been presumed that all loans will be soft loans in order to make the analysis more conservative. As a result, the economic internal rate of return has come to more than 17%.

Study components of economic analysis is as follows:

(1) Benefit: Net income generated by foreign visitor's expenditure.

(2) Cost: Shadow price (opportunity cost)
 — Design, engineering and survey cost
 — Real estate acquisition cost
 — Construction cost
 — Operation and maintenance cost

Viewpoint of the Economic Analysis

Cash Flow Table (US$ = Rp.415)

(unit: million Rp.)

Year	Benefit Net income generation	Cost Design and engineering	Capital cost * Real estate acquisition	Construction	Operation and maintenance	Total	Cash flow
1979	212	472.5	607.6	609.3	—	1,589.4	(1,377.4)
80	418	472.5	752.5	447.0	—	1,672.0	(1,244.0)
81	638	210.0	1,010.0	946.9	—	2,166.9	(1,528.9)
82	851		957.7	956.6	161.9	2,076.2	(1,225.2)
83	1,062		237.4	845.9	161.9	1,245.2	(183.2)
84	1,274		374.3	592.1	228.6	1,195.0	79.0
85	1,488		48.3	856.5	228.6	1,133.4	352.6
86	1,697		16.1	290.6	238.6	545.3	1,151.7
87	1,905		20.1	335.2	323.7	679.0	1,226.0
88	2,117			619.9	333.7	953.6	1,163.4
89	2,326				333.7	333.7	1,991.3
90	2,537				"	"	2,203.3
91	2,745				"	"	2,411.3
92	2,953				"	"	2,619.3
93	3,161				"	"	2,827.3
94	3,161				333.7	333.7	2,827.3
95	"				"	"	"
96	"				"	"	"
97	"				"	"	"
98	"				"	"	"
99	3,161				333.7	333.7	2,827.3
2000	"				"	"	"
01	"				"	"	"
02	"				"	"	"
03	"				"	"	"
04	3,161				333.7	333.7	2,827.3
05	"				"	"	"
06	"				"	"	"
07	"				"	"	"
08	"				"	"	"

Economic IRR Calculation   Economic IRR = 17.6%

Year		Discount rate = 0.00	Discount rate = 0.17 Discount factor	Present value	Discount rate = 0.18 Discount factor	Present value
1979	1	(1,377.4)	0.855	(1,177.7)	0.847	(1,166.7)
80	2	(1,244.0)	0.731	(909.4)	0.718	(893.2)
81	3	(1,528.9)	0.624	(954.0)	0.609	(931.1)
82	4	(1,225.2)	0.534	(654.3)	0.516	(632.2)
83	5	(183.2)	0.456	(83.5)	0.437	(80.1)
84	6	79.0	0.390	30.8	0.370	29.2
85	7	352.6	0.333	117.4	0.314	110.7
86	8	1,151.7	0.285	328.2	0.266	306.4
87	9	1,226.0	0.243	297.9	0.225	275.9
88	10	1,163.4	0.208	242.0	0.191	222.2
89	11	1,991.3	0.178	354.5	0.162	322.6
90	12	2,203.3	0.152	334.9	0.137	301.9
91	13	2,411.3	0.130	313.5	0.116	279.7
92	14	2,619.3	0.111	290.7	0.096	251.5
93	15	2,827.3	0.095	268.6	0.084	237.5
94	16	2,827.3				
95	17	"				
96	18	"				
97	19	"				
98	20	"				
99	21	2,827.3				
2000	22	"				
01	23	"	0.505	1,427.8	0.425	1,201.6
02	24	"				
03	25	"				
04	26	2,827.3				
05	27	"				
06	28	"				
07	29	"				
08	30	"				
		Total (Net Present Value)		227.4		(164.1)

Notes: Capital cost is assumed to be financed by the Government equity and soft loan.
The figure in the parenthesis is minus figure.
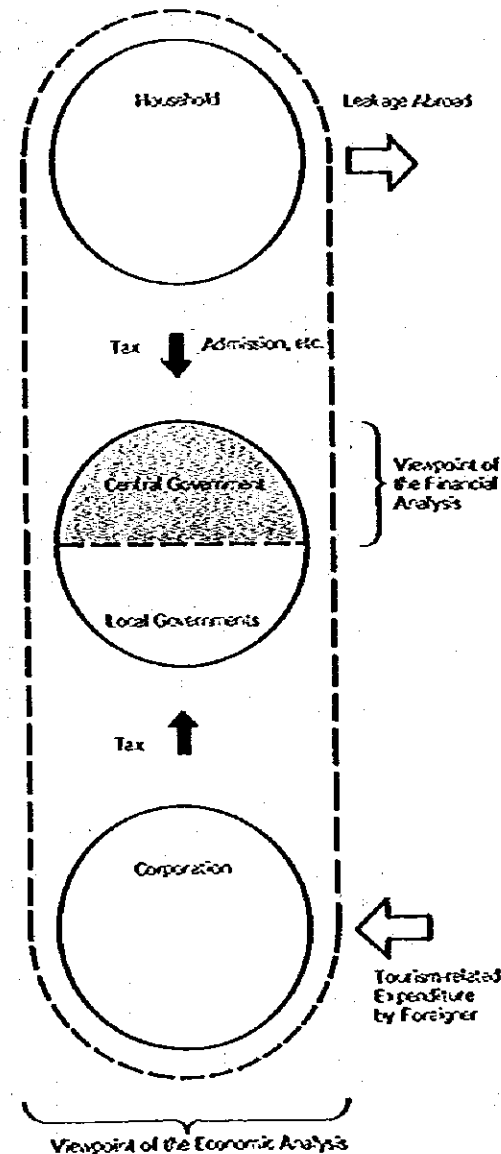
Analysis Conditions : Revenue

Willingness to pay ought to be considered in connection with such revenue categories as admission fees and parking fees paid by domestic visitors and revenue from land rentals within the parks to domestic private firms. Since it would be difficult to do this at the present time, however, such consideration has been excluded from the consideration of economic benefits. Nor is tax revenue considered as an economic benefit since it represents transfer payments from the private sector to the Central Government.

What has been considered as economic benefits is tourism related expenditures on the part of foreign visitors, implicitly including admissions and parking fees.

Assigning such foreign tourist expenditures a value of 1, we get the following formula for the initial income effect of such expenditures.

$$1 \longrightarrow \begin{cases} r_{va} \\ 1 - r_{va} \longrightarrow \begin{cases} r_{va}(1-r_{va}) \\ (1-r_{va})^2 \longrightarrow \begin{cases} r_{va}(1-r_{va})^2 \\ (1-r_{va})^3 \longrightarrow \end{cases} \end{cases} \end{cases}$$

The increase in income attributable to expenditures by foreign tourists (the total value added) comes to:

$$r_{va} + r_{va}(1-r_{va}) + r_{va}(1-r_{va})^2 + \ldots$$

which can be reexpressed as follows:

$$r_{va} \cdot (1 + (1-r_{va}) + (1-r_{va})^2 + \ldots)$$

$$= r_{va} \cdot \frac{1}{1-(1-r_{va})} = \frac{r_{va}}{r_{va}}$$

$$= 1$$

In other words, the same amount of initial increase in income results as the amount of expenditures by foreign tourists, irrespective of the value of r_{va}. Accordingly, in order to determine the economic benefit it suffices to calculate the amount of expenditures by foreign tourists.

Secondary increase in income is generally known as the multiplier effect. Here, however, it has not been taken into consideration in view of the fact that the calculations yielded an IRR that is sufficiently high in terms of the direct benefit of the initial income effect alone.

It should be emphasized that costs have been estimated rather high and benefits rather conservatively in view of the fact that as of the present stage, i.e. that of review of the Master Plan, details have not yet been determined regarding costs and benefits, the same estimating attitude applying to both the financial and the economic analysis.

Analysis Conditions : Cost

Three categories of capital cost will be considered: design, engineering, and survey costs; the cost of acquisition of real estate; and construction cost. As already noted, cost must be considered from the standpoint of opportunity cost.

Design, Engineering and Survey Costs

In calculating design, engineering, and survey costs, opportunity cost has arbitrarily been set 5% above market prices since it will mainly be foreign experts that undertake such activities.

Real Estate Acquisition Cost

As for the cost of acquisition in terms of market prices, but in the case of the cost of acquisition of land, all of which falls under the category of farmland, the opportunity cost has been calculated on the basis of the following assumptions, which have been made in line with the conservative approach that has been adopted:

(1) All the land involved is considered to consist of rice paddies.

(2) Use of the target yield for 1983 of 40.54 q/ha in lieu of the unit yield registered in 1979 (1q1 = 100kg). (Source: Dinas Pertanian Rakyat)
 Reference values: 1976   Rp. 141.96
                     1977   Rp. 152.19

(3) Production unit cost of 170 Rp./kg (in rural market). (Source: Estimate by JICA Study Team using figures from Statistik Indonesia 1977/78)

(4) A ratio of income to amount of production of 70%, this estimate being based on agricultural income from farm crops and the amount of agricultural production times the price per unit. (Agricultural income and production figures based on Statistik Indonesia 1977/78)

Although the value added rate is considerably higher than in actuality, it has been used anyway in order to make the results conservative.

(5) A social discount rate of 3% on agricultural income from farmland.
 (Calculation of Opportunity Cost of Farmland)

Agricultural income (Y)

$$Y = \frac{40.54q/ha \times 100kg/q \times 170 \ Rp./kg \times 0.7}{10,000m^2/ha}$$

$$= Rp. 48.24$$

Opportunity cost of farmland (C)

$$48.24 \div 0.03 = Rp. 1,608/m^2$$

On the assumption that the farmland can be used perpetually, the present value of the income that will continue to derive from it in the future has been calculated as follows on the basis of the social discount rate.

$$\frac{Y}{1+0.03} + \frac{Y}{(1+0.03)^2} + \frac{Y}{(1+0.03)^3} + \ldots = \frac{Y}{0.03}$$

Real estate acquisition cost is as follows:

(1) Land acquisition cost (108ha)   1,736 million Rp.
(2) Building compensation cost   2,288 million Rp.
 Total   4,024 million Rp.

Although there is quite a difference between the market cost of Rp. 7,500 million and the opportunity cost of Rp. 4,024 million, the difference has not been considered as a real economic cost since it is only the amount of money transferred from the government to landowners and others.

Land Acquisition Cost

	Area (ha)	Unit price (Rp./m²)	Acquisition cost (million Rp)
Borobudur			
(1) Original land:			
Rice field	Non	—	—
Other crop field	36.7	6,793	2,493
(2) Substitute land:			
Rice field	Non	—	—
Other crop field	20.8	7,356	1,530
Prambanan			
(1) Original land:			
Rice field	19.9	2,000	398
Other crop field	9.6	2,260	217
(2) Substitute land:			
Rice field	20.8	2,760	574
Other crop field	Non	—	—
Total (excluded building compensation cost)			5,212

Comparison of Market and Economic Value of Land

(unit: million Rp.)

Year	Previous (Market price)	New (Economic value)	
1979	1,134.3	15.1%	607.6
80	1,397.9	18.7%	752.5
81	1,883.7	25.1%	1,010.0
82	1,787.6	23.8%	957.7
83	444.5	5.9%	237.4
84	607.4	9.3%	374.3
85	90.7	1.2%	48.3
86	30.9	0.4%	16.1
87	33.0	0.5%	20.1
88	—	—	—
Total	7,500.0	—	4,024.0

Construction Cost

In the cases of both construction cost and operation and maintenance costs, market costs have been used just as they are. This is in spite of the fact that, strictly speaking, consideration ought to be given to such factors as the number and rate of apparent and latent unemployment as the opportunity cost of low-wage workers in particular. This has not been done in view of the various constraints at work and the policy of making the estimates conservative.

Transfer Item

Financial cost, i.e. the interest on foreign loans, which has been included as a cost item in the financial analysis, has not been included as an economic cost since the assumption is that the loans will be on soft loan basis, which makes the estimates still more conservative than they would be with tied loans.

Economic Effects Study

Internal rate of return as defined earlier an important factor to be considered in the course is of justification of the project. However, as stated earlier the significance and main objectives of the project go beyond what the project produces merely in terms of the economicly measurable indicators. In other words, justification of the project should not only be based on increment in government's tax receipt or in operation revenue or regional receipts from foreigners.

Social value of the project should rather be weighed more in the field of culture and education in their broadest sense. Aiming at the significance and objectives, the project should, therefore, be assessed along with these lines. Those effects are considered as intangible effects in this study, for assigning shadow prices to those factors is beyond the scope of the study.

There are also tangible effects which have not been taken account in previous sections of this chapter. These two types of economic effects are discussed in the following paragraphs.
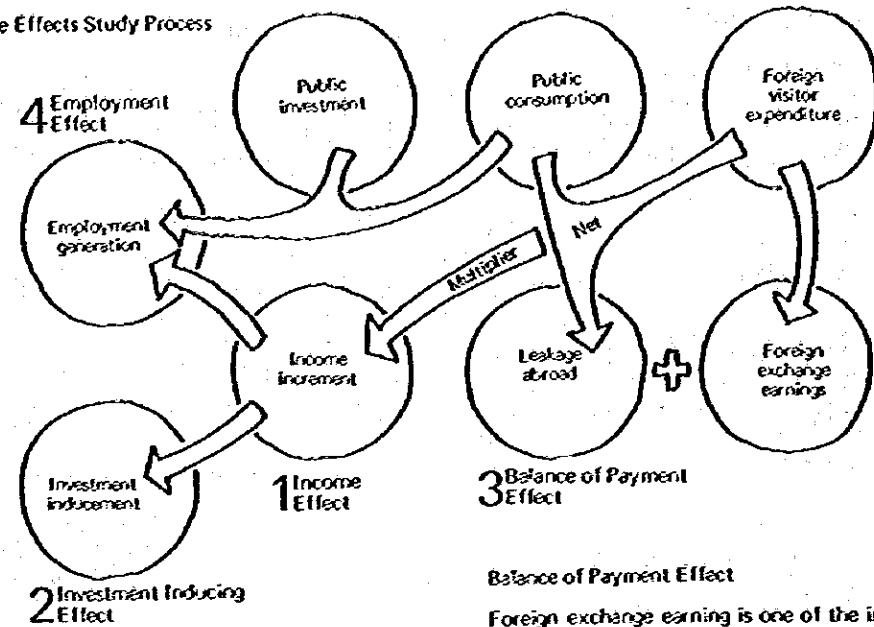
Tangible Effects of the Project

Income Effect

From the viewpoint of national economy, incremental income will be generated from the expenditures of foreign tourists and from the public investment and public consumption concerned with the project. Net income effects are provided after deduction of leakages from the country.

Generated Income

(unit: million Rp. at current price 1978)

Year	Net incremental expenditure by foreign tourists	Net public investment (Construction only)	Net public consumption (O/M costs)	Subtotal	Total multiplied @2.9
1979	212	433	0	645	1,870
80	428	330	0	808	2,345
81	638	805	0	1,443	4,185
82	851	813	162	1,826	5,295
83	1,062	719	162	1,943	5,635
84	1,274	503	229	2,006	5,815
85	1,436	728	229	2,443	7,085
86	1,697	247	229	2,173	6,300
87	1,905	285	324	2,514	7,290
88	2,117	527	324	2,968	8,605
Total					54,425

Note: figures above are those of direct effects only
(i.e. indirect effect taking account of induced investment effect is not included).

Investment Inducing Effect

As mentioned earlier in the chapter that income inducing effect was excluded from calculation of benefit (revenue) in the feasibility study, because of the reason that the estimation of unused facilities was difficult. However, in this section, we assess the magnitude of the effect based on the assumption that all facilities are fully utilized in the base year (1978). Income increase caused by tourist expenditures will induce tourism-related private investment with acceleration effects. We estimate the accumulated amount of private investment for the first ten years which is expected to be induced due to the implementation of the project as below.

Income is that of initial income increase only, and the indirect multiplied income generation was not taken account. In this study A was given a value of 2.4.

As a result, the derived figure is only indicating net and initial private investment only, and not multiplied effect that follows up the investment.

Inducement of Tourism-related Private Investment

(unit: million Rp. at current price 1978)

Year	Net incremental expenditure by foreign visitors	Net increment over previous year	Investment induced @2.4
1979	212	212	510
80	428	216	520
81	638	210	505
82	851	213	510
83	1,062	211	505
84	1,274	212	510
85	1,436	212	510
86	1,697	211	505
87	1,905	108	500
88	2,117	212	510
Total			5,085

Note: Accumulated induced investment (t)

$$I(t) = \sum_{t=1}^{t} \text{Induced investment (t)}$$

Induced investment (t)
I(t) = A x (Income (t) – Income* (t–1))
where A is acceleration coefficient.

Income* (t–1) stands for the highest level of income in the period (t–1)

Tangible Effects Study Process

Balance of Payment Effect

Foreign exchange earning is one of the important aims of the tourism development, which is termed as an exporting industry in Indonesia. Although the effect of the devaluation of rupiah was not considered in this section of the study, the following shows a favourable outcome due to the implementation of the project. The gross direct foreign exchange inflows will amount at 206 million US$ in total of thirty years, where the direct outflows are estimated at 35 million US$. As the investment inducing effect was not considered in the feasibility study, those foreign exchange effects are that of public sector portion of investment of the project only.

Balance of Payment

(unit: million US$ at current price 1978)

Year	Gross inflow (Foreign tourist)	Gross outflow	Net earnings
1979	0.6	1.14	–0.54
80	1.21	1.21	0
81	1.81	0.61	1.2
82	2.41	0.71	1.7
83	3.01	0.76	2.25
84	3.61	0.76	2.85
85	4.21	0.94	3.27
86	4.81	0.83	3.98
87	5.4	0.93	4.47
88	6.0	1.13	4.87
1989–2008	173.29	25.99	147.3
Total			171.35

Note: Foreign exchange earnings are that of direct effect only.
Exchange rate of US$ 1.00 = 415 Rp. was used.

Employment Effect

If we assume that 30% of the construction cost is used for domestic labour resource acquisition at Rp. 500/man-day on an average, the annual requirement of manpower for construction envisaged by the project is estimated at 275 thousand man-day on an annual average for ten years. Further, more than 800 permanent personnel's and employees will be required for the operation and maintenance of the parks as well as for restaurants and kiosks. (300 POC's staffs and 100 private consignment workers per each park.) It is also estimated for the first ten years more than a quarter of million of job opportunities will be provided as a secondary effect (Based on an assumption that Rp. 182,500/year on an average per worker.). Again, investment inducing effect and additional employment opportunities therefrom was not considered here.

In addition to the main effects mentioned in the above, the following effects are considered to be important, although they are intangible or unmeasurable.

Intangible and Unmeasurable Effects of the Project

Demand Effect

The demand effect of this project will be estimated in the following way:

(1) Consumption is a function of disposable income which is income minus taxes (central and local taxes). As the propensity to consume and imports are estimated to be 0.83 and 0.175 respectively, total consumption, domestic consumption, and imports will be 0.7055, 0.557 and 0.149 of income flow respectively in case of a 15% tax ((for example, 10% central and 5% local).

(2) A social accounting tells us S-I = X-M, where S is savings, which of course includes governmental (central and local) savings, and X is exports.

(3) If the government budget and the international balance of payments are balanced, the coefficient of investment to income is equal to the propensity to save; 0.17.

(4) As the surplus in the government budget which was already analyzed in the Feasibility Study is not put into the economic circulations in this report, the coefficient of investment to income will be a little smaller than the propensity to save.

Production Effect

The production effect of this project could be estimated from the income effect divided by the value-added rate, because income is equal to the product of the value-added rate times productions.

Income ÷ Value added rate x Production

According to H. Chennery's study, intermediate goods are an increasing function of income. This means that the value-added rate will decline in the course of economic development through this project. If this is the case, the production effect flow of this project will be increasing as compared with the income flow over the course of time. In a word, the total production method will reverberate wider and deeper. If precise production effects are required, these must be analyzed using Input-Output Table*, which is beyond the scope of the study.

* It is understood that Asian Economic Research Institute had finished creation of new Input-Output model of Indonesia in 1977.

Acceleration of Development of Regional Infrastructure

Tourism development proposed in this project is sustained by the development of social infrastructures, utilities and transportation, as well as that of tourism industry itself. These social overhead investments are not the burden only for the tourism section, but partly for the other sectors to be benefited by such social infrastructures. If the income increment came from tourism sector will prove the financial autonomy of the investment in the tourism sector itself and some surplus will remain, a part of the investment cost of such social infrastructure requirement can be borne by the tourism sector. For example, village and road improvement investment cost to be incurred by the project will not directly earn foreign dollars, thus not considered as sources of direct benefit of the project. However, if the total investment including those items is justified in itself, the burden of other industries or sectors in the region will be lessened, because acceleration of the infrastructure development, which is a prerequisite of their successful development, will have been realized. This is considered external economy created by the project.

Enhancement of Economic Mobility and Related Industries

The main characteristics of the project, being an enhancement of tourism attraction resources, will encourage tourism superstructure development (i.e. lodging and catering facilities, tour services, etc.). This will be realized based not only on increased number of foreign tourists to the region but also on domestic tourist increment. The overall attraction of tourist mobility will enhance the economic mobilities in the region such as commodity distribution, and then encourage related industries to fulfill the related demands. Those industries will include agriculture, food production and processing, handicrafts, construction, manufacturing and service industries for transportation means and so forth.

Distribution of Economic Activities

The agricultural sector plays an important role in the economy of the concerning regions. However, in a long term viewpoint, diversification of industrial activities are required. In this context, promotion of tourism by increasing tourist facilities and development of objects such as restoration of historical remains and creation of archeological parks will contribute to the diversification of economic activities and consequently income sources of the region. Further, the project is expected to create increasing job opportunities to the indigenous people of the region more than that other capital-intensive projects will do. This will also contribute to the distribution of economic activity and income to the region.

Nation's Unity

Activation of human mobility due to tourism development will enhance the mutual understandings between regions and consequently contribute to the better consciousness of the people for the nation's unity. This is especially so when there is a monumental core as a pride of all Indonesian people. The present trend of increasing number of student visitors is a good indicator aiming toward the objective along this line.

Terminology

The Terminology inventories some of the KEY WORDS developed following ICOMOS Terminology, 1976 which appeared in the Plan. The group of such words is hoped to facilitate the readers' comprehension of the Plan framework.

This will be also useful for promotion of the international cooperation and mutual understanding.

All persons who to be also involved will be encouraged to add your own words according to needs. This is never complete before a full range compilation.

The Terminology consists of 39 terms written in three languages of Indonesian, to be titled, English and Japanese and explained in English only.

Series A: Description Term

A1 ...... Cultural Property — Budaisai
All property which correspond to use or benefit from a cultural point of view.
(ICOMOS Terminology)

A2 Candi — Hindu temple, shrine, monument. — Chandi
(Echols I.E. Dic., p. 391)

A3 Keraton — Palace (of Javanese prince). —
(Echols I.E. Dic., p. 183)

A4 ...... Sanctuary — Seiki
A sacred or holy place.
(Pandora House, p. 1255)
A site and monument, landscaped and improved for "safeguarding" of "Candi" and "Kraton".

A5 ...... Monument — Kinenbutsu Isoki
Any building, megalith, etc., surviving from a past age, and regarded as of historical or archeological importance.
An area or a site of interest to the public, as being of historical significance, great natural beauty, etc., that is preserved and maintained by a government. (Pandom House, p. 929)

A6 ...... Site — Shiseki
Any place or complex, natural, or social, whose homogeneity and particular artic, historic, ethnographical, scientific, literary or legendary interest warrants its protection and use.
(ICOMOS Terminology)

A7 ...... Archeological Park — Iseki-Koen
Archeology: the scientific study of historic or prehistoric peoples and their cultures by analysis of their artifacts, inscriptions, monuments, and other such remains, esp. those that have been excavated. (Pandom House, p. 77)
Park: an area of land, usually in a natural state, for the enjoyment of the having facilities for rest and recreation, usually owned, set apart, and managed by a city, state, or nation.
(Pandom House, p. 1069)
A large trace of land around "Sanctuary" developed for appreciation of historic assets and environment, educational/cultural and cultural tourism activities.

A8 ...... Historic
Historical: or, relating, or having the characteristic of history. Famous in history. Based in history.
(Web. Dic., p. 543)

A9 ...... Historic Climate — Rekishiteki-fudo
Climate: the prevailing attitudes, standards, or environmental conditions of a group, period, or place.
(Pandom House, p. 277)
"Historic" environmental condition which is composed harmoniously of historic buildings, site and natural environment and of people's historic life style and attitude.

A10 ...... Historic Center, District: — Rekishiteki-chiku
Area of city having the characteristic of lived history. (ICOMOS Terminology)

A11 ...... Historic Climate Council — Rekishiteki-fudo Shingikai
A body of persons specially designated or selected to act in an advisory, administrative, or legislative capacity. (Pandom House, p. 331), regarding "Historic Climate".

A12 ...... Scenic — Keshikino, Futeino
Of or relating to natural scenery.
(ICOMOS Terminology)

A13 ...... Conservation Area — Hozon-chiku
An area of land for the protection and care of buildings, sites etc. of special historical interest and importance.

A14 ...... Existing Use Value — Riyo kachi
Use: the act or practice of employing something; employment; application.
The fact or state of being use.
(Web. Dic., p. 1288)
Value: Relative worth, utility or importance. The monetary worth of something. (Web. Dic., 1292)

A15 ...... Sanctuary Area — Seiiki-chiku
A space or site of "Sanctuary" (Zone-1)

A16 ...... Archeological Park Area — Koto-Koen chiku
A space or site of "Archeological Park" (Zone-2)

A17 ...... Development Area for Environmental Preservation — Koen-shizen hozkyo-sebi chiku
A "zone" for protecting from injury, carrying of, developing a harmony of natural and man-made environment. (Zone-3)

A18 ...... Area for Safeguarding of Historic Climate — Rekishiteki-fudo hozen chiku
A "zone" for guarding, protecting, securing and making use "Historic Climate". (Zone-4)

A19 ...... Mandala — Mandara
A graphic, mystic symbol of the universe which is typically in the form of a circle enclosing a square. It is used as an aid to meditation. A word of Sanskrit origin. (Ardena, p. 140)

Series B: Description Term

B1 ...... Cultural Tourism — Bunka kanko
A process and result of touristic, appreciational and educational cultural activities which is being performed in the historic and cultural environment.

B2 ...... Archeological Park Development — Iseki-Koen seibi
The action process of developing "Archeological Park".

B3 ...... Archeological Assessment — Kokogaku-zasshi no
Act of assessing, appraisal, evaluation of the area of land from "Archeological" view point.

B4 ...... Safeguarding
Guarding, protecting, securing and making use of historic buildings and sites.

B5 ...... Plan for Safeguarding of Historic Climate — Rekishiteki-fudo-hozen keikaku
A scheme of action or procedure, or project for "Safeguarding Historic Climate".

B6 ...... Planning — Kikaku, keikaku
A scheme of action or procedure, or project.

B7 ...... Inventory, Listing — Mokuroku
Inventory: the quantity of goods or materials on hand: stock. An itemized list of current assets. (Web. Dic., p. 1189)
Listing: to get in writing: write down. (Web. Dic., p. 1189)

B8 ...... Conservation, Preservation — Hozon
Historic Conservation is the careful protection, care of, and planned management of buildings, sites etc. of special historical interest and importance. (ICOMOS Terminology)

B9 ...... Protection — Hogo
The act of protecting; the state of being protected; also, legislation enacted to prevent the exploitation of extinction of cultural property.
(ICOMOS Terminology)

B10 ...... Restoration — Shufuku
The process of returning an object, material, or building form and condition, designed to indicate the original appearance. (O.A.C., p. 404)
Something that is restored.
(Web. Dic., p. 987)

B11 ...... Strengthening — Hokyo
From verb strengthen: to make stronger material added to provide additional strength. (ICOMOS Terminology)

B12 ...... Maintenance, Upkeep — iji
Maintenance: the upkeep of property or equipment.
Upkeep: the act of maintaining in good condition; the state of being maintained in good condition. The cost of maintaining in good condition.
(Web. Dic., p. 1265)

B13 ...... Use — Riyo (suru)
Turning to practical account().
(ICOMOS Terminology)

B14 ...... Reuse, Reutilization — Sairiyo
Utilization-vedi B13.
"Re": prefix: again, anew.
(Web. Dic., p. 900)

B15 ...... Enhancement — Koyo, Kyoka
(from "Enhance")
To make greater (as in value, desirability, or attractiveness).
(Web. Dic., p. 378)

B16 ...... Improvement — Kaizen
A structure or public utility or any other installation or physical change made in a property to increase it, value and utility or to improve its appearance. (O.A.C., p. 262)

B17 ...... Rehabilitation, Revitalization — Fukko
The action or process of rehabilitating or of being rehabilitated; the state of being rehabilitated, to restore to use or function. (ICOMOS Terminology)

B18 ...... International Cooperation — Kokusai-kyoryoku
International: of, pertaining to two or more nations or citizens; pertaining to the relations between nations.
(Random House, p. 743)
Cooperation: an act or instance of working or acting together for a common purpose or benefit, joint action.
Willingness to cooperate.
(Random House, p. 321)

B19 ...... Sanctuarization — Seiiki-seibi
A process and results of development of "Sanctuary": a process and results of landscaping and improvement of monument and site for the purpose of "safe-guarding" and "Cultural tourism".

B20 ...... Zoning — Zoning
Any continuous tract or area, usually circular, which differs in some respect, or is distinguished for some purpose, from adjoining tracts or areas, or within which certain distinctive circumstances exist or are established.
(R.H. p. 1662)

Bibliography

Environmental Planning Term

Ecology: The science which deals with the relationship of organisms to their environment. Ecology is generally divided into phyto-ecology or plant ecology, zoo-ecology or animal ecology, and homoecology or human ecology, inasmuch as man is the dominant organism in the biosphere and all other organisms are more or less under his influence.

Ecosystem: A self-sustaining community of organisms plus their inorganic environment. An ecosystem must have an adequate resource of chemical nutrients and energy, and a balanced population of organisms.

Environment: The assemblage of materials, situations, and conditions surrounding an organism and its component parts. Abbreviated the surround.

Erosion: The removal and transportation of soil and rock materials by gravity, wind, and running water. The occurrence of accelerated soil erosion, where ecological balances have been disturbed by human activities, is a major problem of civilization.

Vegetation: The plant life that covers land areas of the earth.

Tree: A woody plant of considerable size, generally growing with a single trunk or stem.

Flora: A living organism belonging to the vegetable kingdom. A general name for vegetable organisms.

Planting: To sow seeds or set shoots in the ground.

Plantation: An area planted trees. An area in which economic plants are set out for cultivation.

Tropical rain forest: A tropical zone forest in an area of high rainfall, usually 2,500 mm or more per annum.

Right of way: Any area which is reserved by law, or by common consent, to a public or semi-public use. Streets and easements are typical examples.

Scenery: The general appearance of the landscape, particularly a pleasant landscape. The art of landscape architecture is concerned with the creation of scenery in micro-landscape, and preservation and improvement of scenery in macro-landscape.

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Ci Ampea Inscription

Although it is evident that the ancient culture of Java was very strongly influenced by Indian culture, there is little reliable evidence of exactly when this influence occurred. Among such evidence, however, there are four Sanskrit inscriptions that have been discovered in western Java, and one of these is the Ci Ampea Inscription, which dates from the middle of the 5th century A.D. This inscription consists of four lines of Brahmi writing of the Grantha form of south India and, perpendicular to them, another line of writing that is indecipherable, two foot imprints, and two symbols above them. The four lines of writing have been deciphered as follows:

vikkrānatasyāvanipateh
śrīmatah Pūrnnavarmmanah
Tārūmanagarendrasya
Visnor iva padadvayam//

The Vishnu-like feet of the felicitous Purnavarman, brave protector of the earth and ruler of the Kingdom of Taruma.

Editing Note

This is the seventh year of the studies for the national archeological parks, and the construction work on them is at last going to get started next fiscal year. In the next ten years, therefore, a message to future generations will be engraved in the earth, so to speak, in Central Java as the project takes shape.

Just as the Ci Ampea Inscription is a message to us from the 5th century, we hope that this report will be of some help in conveying on to the 30th century and beyond, through the national archeological parks, the message that has been passed down from the 8th century to the present day in the form of the archeological monuments of Borobudur and Prambanan.
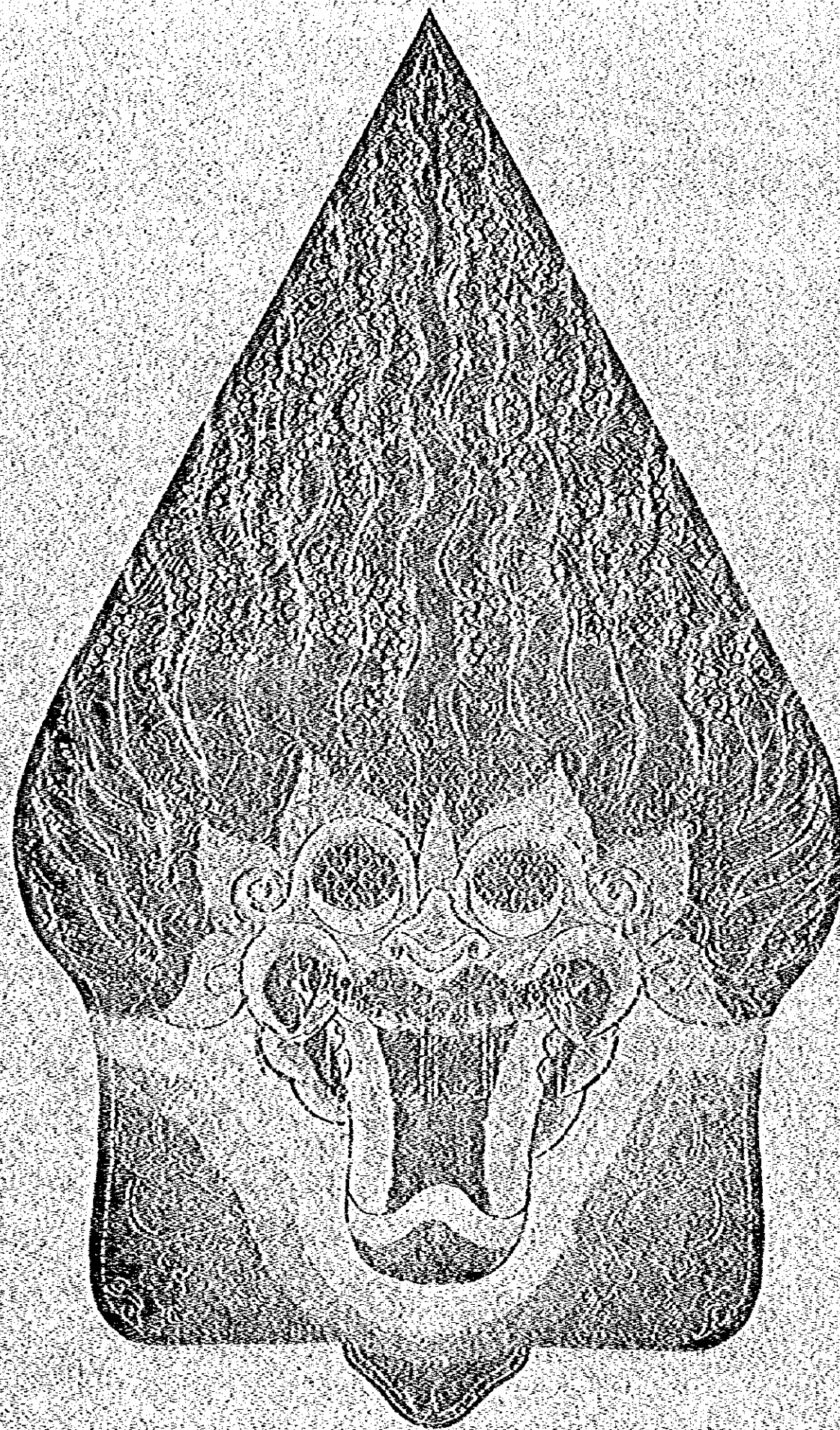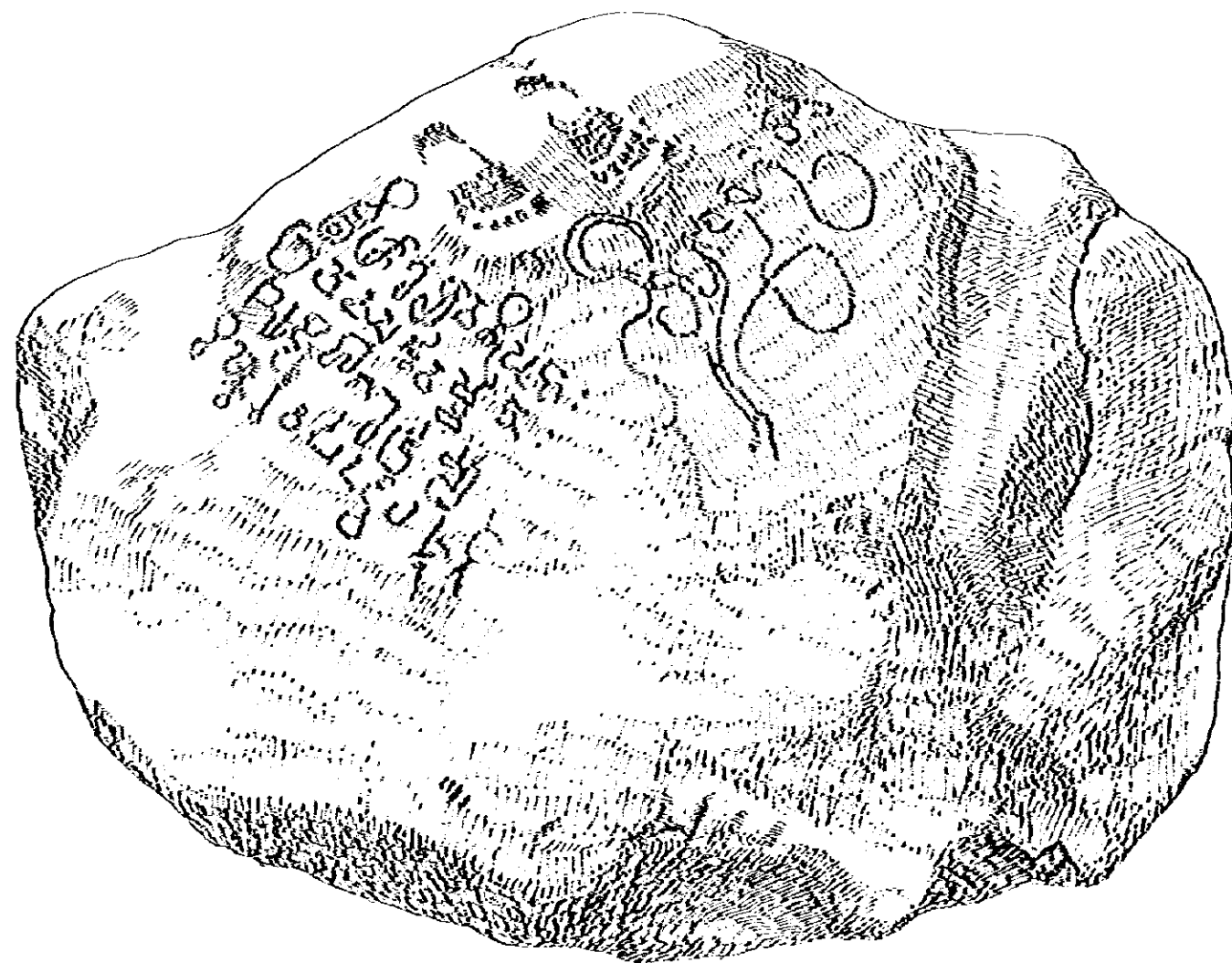
Gunungan

The gunungan represents life in all its aspects. Its upper half shows the branches of the tree of life, its lower half a closed door which is flanked by two giants. The roots of the tree of life, which stand for the source of life (God), are concealed behind this door. The two giants guarding the door are supposed to represent the powers of hunger and sex. As a whole, the picture is meant to represent man as having to master his longing for food and his carnal desire before he is able to see God. Only the longings are visible, symbolized by monkeys and birds which flutter about in the branches of the tree of life. Two giants and two other figures, stand in contest with each other, demonstrating that power and strength, it is impossible to...

UTARA

BARAT

TIMUR

JEROAN

SELATAN

JABA TENGAH
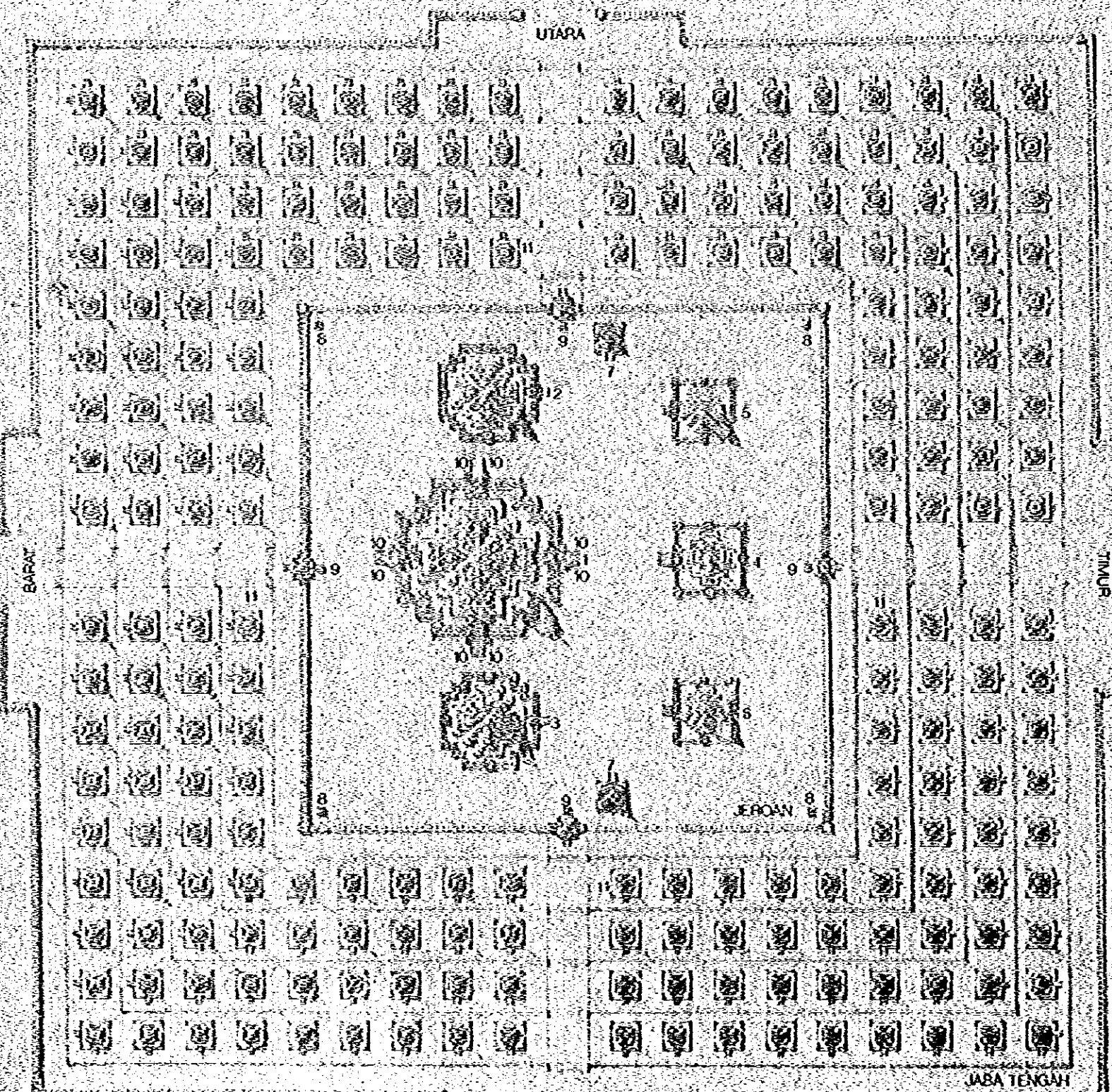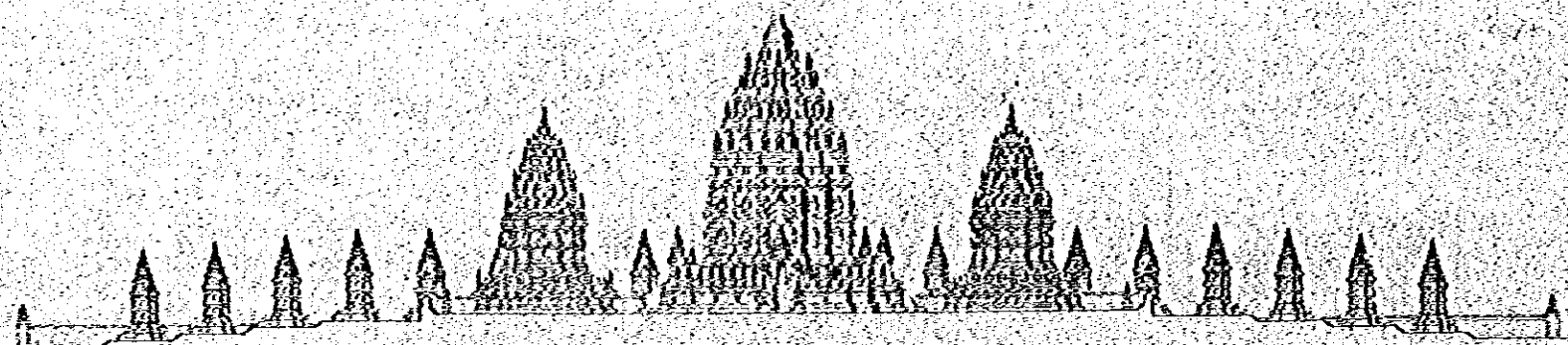
Candi Loro Jonggrang Complex