6. The Amazon River Tourism Corridor Development Plan

6.1. Regional Context

6.1.1. Geographic Overview

The Amazon River Tourism Corridor covers an area that extends from Iquitos to Yurimaguas along the Amazon, Marañon, and Hullaga Rivers in the Loreto Department. Iquitos, which is some 1000km from Lima, is the capital city of the largest Department of Peru.

The Tourism Corridor's climate is tropical with an annual average temperature is 27.0 degrees (Iquitos). It is hot and humid all year round. From January to May are the wettest months. It constitutes a part of the Amazon Basin, a large part of which is still covered by lowland tropical forest.

The water level of Amazon River fluctuates considerably corresponding to the precipitation in the Andes and the Amazon Basin. The fluctuation is 8-10m in Iquitos and its vicinity, which has to be considered for the construction of piers. Pacaya – Samiria National Reserve is periodically flooded during the rainy season, which developed a unique ecosystem of Verza Forest or flood forest that is expected to be an important tourism objective.

6.1.2. Historical Background

It is very hard to find archaeological remains in the Loreto Department. This, however, doesn't mean that the area was not inhabited in the ancient times. The native peoples used to make their houses with perishable materials like wood and other plants. Besides, they were constantly moving from one place to another because of the changes of the river course and in order to have new areas to cultivate when the land's productivity decreases. Peruvian prehispanic cultures such as Moche, Wari, and Inca did not extend their direct control in the area.

A Jesuits Mission arrived at Iquitos around 1740 and a new town was founded with the name of San Pablo de los Napeanos in 1757. The Loreto Department was created in 1866. The small community grew slowly until the 1870s when the town was boomed with rubber production. The boom lasted some 30 years, remnants of which are houses decorated with Portuguese tiled mosaics, the Malecon Palace, and the Iron House that is the first prefabricated house designed by Eiffel.

Once stagnant local economy revived with the discovery of oil in the Amazon Basin. The first oil exploitation started in 1938, and the oil boom arrived in Iquitos in the 1960s. Tourism is also an important local economic activity, and it enjoyed a healthy growth

during the 1980s due to its better security conditions than other Peruvian tourism destinations.

6.1.3. Socioeconomic Conditions

Loreto has a total population of 839,748 in 1998. It accounts for 3.4 % of the national population and ranks 11th among the 24 Departments in Peru. The population has increased at 2.5% during the 1996-1998 period. The urban population accounts for 59.3% of the total population. The average population density is only 2.28 persons per square kilometer.

The gross regional domestic product (GRDP) is US$ 2,246 million, and per capita GRDP is US$ 2,812 in 1996. Each ranks 6th and 4th in the country. It is noted that the figures reflect the oil production in the Department, and they do not necessarily imply the economic situation of the people in the Department. The annual increase rate of GRDP on the constant price of 1979 is 3.63% over the past 5 years. The services sector is the major industry, which accounts for 39.5% of the GRDP in 1996. The construction sector is the second important economic sector (17.9%), which is followed by the commercial sector (13.9%).

Table 6.1 Major socioeconomic indices: Loreto

Geography		Administrative area (km2)				Share				Density
		Total	Costa	Selva	Sierra	Total	Costa	Selva	Sierra	2.28
		368,852	0	368,852	0	100%	0%	100%	0%	(Pop/km2)
Population		Total population					Annual growth rate			
	Year	1972	1981	1993	1996	1998	'72 - '81	'81 - '93	'93 - '96	'96 - '98
	Total	409,772	516,371	736,161	798,646	839,748	2.6%	3.0%	2.8%	2.5%
GRDP	Industries	Total	Agri.	Fishery	Mining	Industry	Construc.	Commer.	Gov. serv.	Other serv.
1996	(million US$)	2,246.1	104.3	15.5	204.2	183.7	402.9	311.3	136.8	887.4
	Share	100.0%	4.6%	0.7%	9.1%	8.2%	17.9%	13.9%	6.1%	39.5%
	GRDPper capita	2,812	(US$)							
GRDP annual increase		3.63%		('92 - ' 96 constant price of 1979)						

Note: US$ 1 = 2.5 Nuevos Soles
Source: National statistics institute (INEI)

The following table shows the number of hotels and restaurants in the Loreto Department based on the registration record in MITINCI.

Table 6.2 Number of hotels and restaurants: Loreto (1998)

	No. of Establishment	No. of Room	No. of Employee
(Hotel with star)	33	920	258
(Other Hotel)	167	2,477	649
Hotel	200	3,397	907
Restaurant	431		

Source: Registeration Record of Lodgings and Restaurants, MITINCI, as of Dec. 1998

The following table shows the estimated employment based on the existing number of hotel rooms. It is estimated that tourism creates approximately 13 thousand jobs including indirect employment in the Loreto Department.

Table 6.3 Estimated existing employment related to Tourism : Loreto

(1) Direct Employment in the hotel sector	3,397
(2) Direct employment other than the hotel sector (1) x 1.31	4,450
(3) Total direct employment (1) + (2)	7,847
(4) Indirect employment (1) x 1.6	5,435
(5) Total estimated employment (3) + (4)	13,282

Source: Estimated by JICA Study Team

The following table shows the estimated tourist expenditure based on the estimated tourism demand.

Table 6.4 Estimated Existing Tourist Expenditure : Loreto

(Unit: US$ 1,000)

International Tourist	Domestic Tourist	Total
30,688	21,643	52,331

Source: Estimated by JICA Study Team

6.1.4. Natural Environment

(1) General

Department of Loreto is covered by tropical lowland and evergreen and flooded forests. Complex topography and soils, and the Amazonian river system has made very complex mosaics of habitats (Stattersfield et. al. 1998). The area has the following three major habitat types according to Dinerstein et. al. (1995).

a. Napo moist forests

Number of surveys on different taxa have revealed that this ecoregion contains one of the richest biota in the world. They are ranked as Globally Outstanding, and are categorized as Level I (Highest Priority at Regional Scale) for bio-diversity conservation in Latin America and the Caribbean. The Ecuadorian part of the Napo is open for the oil leasing. Its conservation status is categorized as “relatively stable”.

b. Western Amazonian swamp forests

They are ranked as Globally Outstanding, and are categorized as Level I (Highest Priority at Regional Scale) for biodiversity conservation in Latin America and the Caribbean. Its conservation status is categorized as “stable”.

c. Verza forests

They are also ranked as Globally Outstanding, and are categorized as Level I (Highest Priority at Regional Scale) for biodiversity conservation in Latin America and the Caribbean. Its conservation status is categorized as "vulnerable" mainly because of logging activities.

They are in the area of "Upper Amazon – Napo lowland", one of the Endemic Bird Areas which are the endemic centers of the avifauna in the world (Stattersfield et.al. 1998).

(2) Protected areas

There is a national reserve in the Study Area, Pacaya – Samiria National Reserve, which is the largest protected area in Peru. The reserve is one of the Ramsar sites in Peru. In the national context, the area of the reserve is regarded as one of the 38 priority zones for conservation of the biodiversity (INRENA 1999). A new master plan for the national reserve is in preparation and will be published in due course.

This reserve is unique as an "aquatic" environment. Most of the forest is inundated seasonally (Verza forest), which makes the area as important habitats for many aquatic animals.

There is a newly established reserve zone in the Study Area; Allpahuayo – Mishana Reserve Zone. It is about 25 km from Iquitos. The ecosystems of the reserve zone are very unique and may have the highest degree of biodiversity in the world. In the national context, the area of the reserve and its surroundings is regarded as one of the 38 priority zones for conservation of the biodiversity (INRENA 1999). Instituto de Investigaciones de la Amazonia Peruana (IIAP) and other organizations have been working on the conservation of the reserve and are proposing an establishment of a field museum.

There are two National Tourism Reserves in this Study Area:

- Yacumama Tourism Reserve Zone, and
- Laguna de Quistococha Tourism Park Zone.

6.1.5. Existing Plans and Projects

Existing and on-going plans and projects in the Loreto Department that have relationship with tourism development are as follows:

- The road between Iquitos and Nauta will be completed in July 2000, and installation of electricity along the road is expected after the completion of the road.
- Improvement of water supply and sewerage systems in Iquitos, and water supply systems in Requena and Yurimaguas with the financial support by JBIC is to start in 2000.

- Extension of national electricity grid (connecting north and south grids) to the northern region will not cover the Iquitos area until the year 2002.
- Pacaya – Samiria National Reserve Management Master Plan, which may includes tourism strategy, is under preparation by INRENA, and should be ready by 2000.

6.2. Tourism Conditions

6.2.1. Tourism Resources

The Amazon River Tourism Corridor's principal tourism resources are mostly of natural interest. It is rich in flora and fauna, and has unique ecosystems that have potential to attract visitors from all over the world. The Pacaya – Samiria National Reserve, which is conveniently located from a few hours from an international airport and contains a number of nature-based tourism resources, is supposed to be the most important untapped tourism resource.

Table 6.5 shows the list of principal tourism resources, and Figure 6.1 shows their distribution. The followings are comments on respective tourism resources.

- Amazon Center for Environmental Education and Research (ACEER) is a non-profit organization that has installed Canopy Walkways for the observation of a tropical rain forest from its treetops. It is a "must-see" attraction in the area.
- Jungle lodges in tropical forests that are located within a few-hour time distance from Iquitos provide opportunities to experience the nature of the Amazon.
- There are "native's" villages not far from Iquitos City that receive visitors for Amazonian experiences although visitors' feedback is not very favorable in recent years due to the losing of authenticity, at least, from tourists' eyes.
- Amazon River cruise from Iquitos to Leticia in Colombia and/or to Tabatinga in Brazil has been operated by a tour company, and is an established tourism product.
- The Pacaya – Samiria National Reserve, which is the largest in Peru, is expected to be an anchor nature tourism destination. It has a unique ecosystem of flood forest, and is especially rich in aquatic animals such as two types of fresh water dolphins and dugong.
- Iquitos City has a number of historical buildings that are decorated with imported tiles. Iron House in Iquitos is an early example of prefabricated house, and is designed by French architect Eiffel.
- Iquitos City has a zoo that provides rare opportunities to see animals in the Amazon jungle. Its surrounding area is designated as Laguna Quistococha Tourism Park Zone.

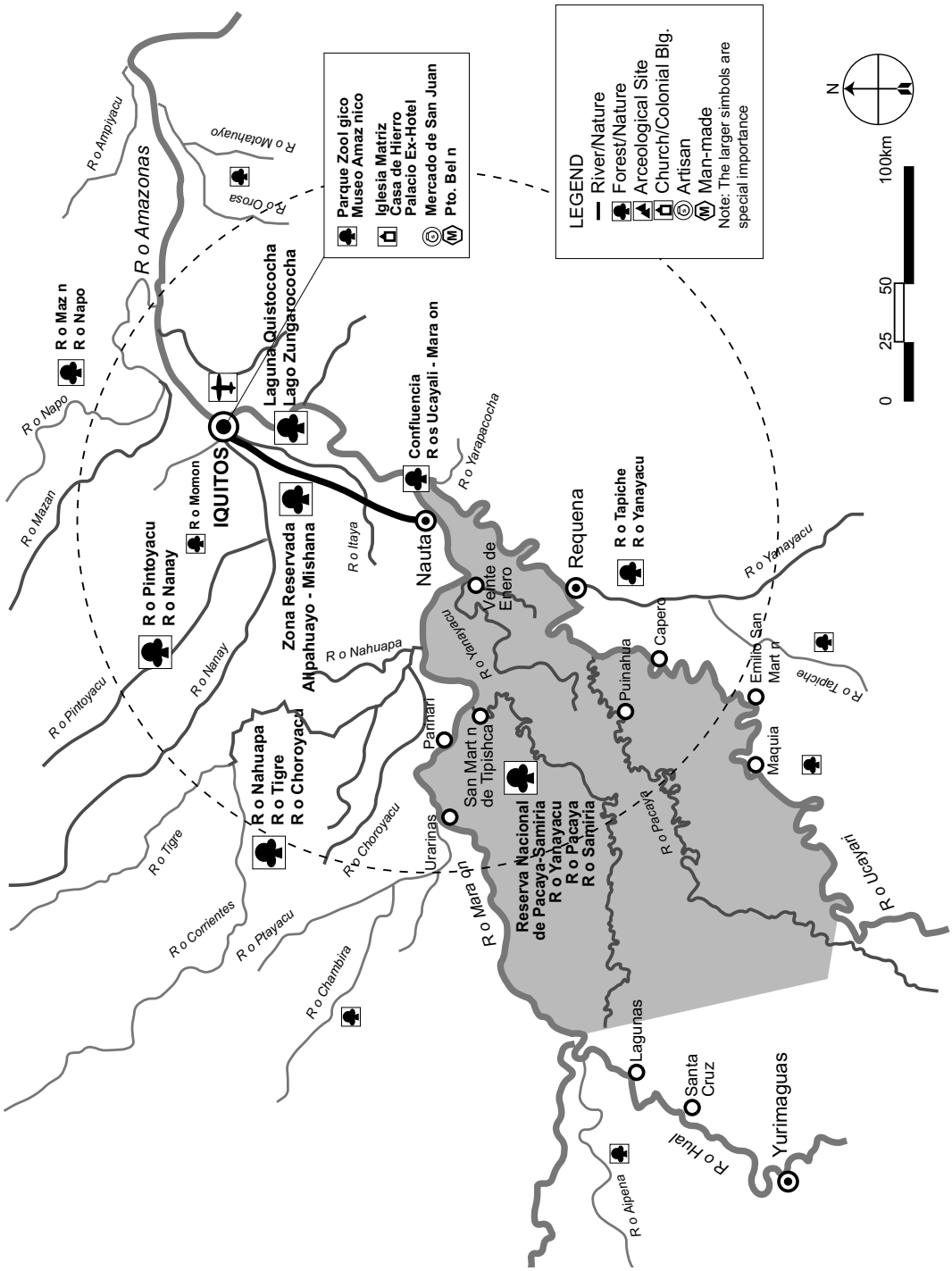
Table 6.5 Major tourism resources in the Amazon River Tourism Corridor

Department	Province	District	No	Ev	Name of the resources	Ctg	Era	Remarks
Loreto	Maynas	Iquitos	1		Belen Market and Port	CL	-	Port, market
Loreto	Maynas	Iquitos	2	B	Iglesia Matriz	HS	CI	Church
Loreto	Maynas	Iquitos	3	B	Zoological park in Iquitos	NA	-	Zoo
Loreto	Maynas	Iquitos	4		Malecon Tarapaca	MA	-	Pier
Loreto	Maynas	Iquitos	5	B	Museo Amazonico	CL	-	Museum
Loreto	Maynas	Iquitos	6	B	Casa de Hierro	HS	RP	Historical blg.
Loreto	Maynas	Iquitos	7	B	Ex-Hotel Palace	HS	-	Colonial blg.
Loreto	Maynas	Iquitos	8	B	Mercado de San Juan	CL	-	Commercial
Loreto	Maynas	Iquitos	9	A	Laguna de Quistococha	NA	-	Lake
Loreto	Maynas	Iquitos	10	B	Compl. Turistico de Quistococha	MA	-	Recreation
Loreto	Maynas	Iquitos	11	A	Lago Zungarococha	NA	-	Lake
Loreto	Maynas	Iquitos	12	A	Zona Reservada Allpahuayo - Mishana	NA	-	Forest , river
Loreto	Maynas	Iquitos	13	A	Río Nanay	NA	-	River, scenery
Loreto	Maynas	Iquitos	14		Río Amozonas	NA	-	River, scenery
Loreto	Maynas	Iquitos	15	B	Río Momon	NA	-	River, scenery
Loreto	Maynas	Mazan	16	B	Río Napo	NA	-	River, scenery
Loreto	Loreto	Nauta	17		Río Marañon	NA	-	River, scenery
Loreto	Loreto	Nauta	18	B	Confluencia Ucayali - Marañon	NA	-	River, scenery
Loreto	Loreto	Nauta	19	A	Río Yanayacu de R. Marañon	NA	-	River, scenery
Loreto	Loreto	Parinari	22	A	Río Samiria de R. Marañon	NA	-	River, scenery
Loreto	Loreto	Parinari	23	B	Río Yanayacu Grande de R. Marañon	NA	-	River, scenery
Loreto	Loreto	Nauta	20	A	Río Nahuapa de R. Marañon	NA	-	River, scenery
Loreto	Loreto	Nauta	21	A	Río Chroyacu de R. Marañon	NA	-	River, scenery
Loreto	Loreto	Tigre	24	A	Río Tigre	NA	-	River, forest
Loreto	Loreto/Requena		25	A	Pacaya Samiria National Reserve	NA	-	Flora and fauna
Loreto	Requena	Requena	26		Río Ucayali	NA	-	River, scenery
Loreto	Requena	Requena	27	B	Río Yanayacu de R. Ucayali	NA	-	River, scenery
Loreto	Requena	Requena	28	B	Río Tapiche de R. Ucayali	NA	-	River, scenery
Loreto	Requena	Requena	29	B	Río Pacaya de R. Ucayali	NA	-	River, scenery

Notes: 1) Ev; Evaluaton by the JICA Study Team; A:very important, B: important
2) Ctg; Category/ NA=Natural, HS=Historical, CL=Cultural, LF=Tribe village & lifestyle, MA=Man-made
3) Era/ Ph = Prehispanic, Cl=Colonial, Rp=Republican
4) Ucayali, Alto Amazonas and Mariscal Ramon Castilla Provinces are not included in the Study Area.

Source: JICA Study Team

Figure 6.1 Major tourism resources in the Amazon River Tourism Corridor



Source: JICA Study Team

6.2.2. Tourism Market

(1) Visitor arrivals

The number of visitor arrivals to Loreto in 1998 was 140,473. This number has slightly increased from that of the previous year. The share of international visitors has been one third of the total visitor arrivals (33,4% in 1998). The share of international visitors is the highest among the three Tourism Corridors, and is equivalent to that of Cusco.

JICA Study Team estimates that the total amount of bed-nights in Loreto would be 676,000, of which 165,000 bed-nights or 24% are occupied by international visitors.

Table 6.6 Major tourism indices in the Loreto Department

Year		1992	1993	1994	1995	1996	1997	1998
Arrivals	Total	97,008	116,985	105,223	128,550	150,755	139,315	140,473
	Domestic	82,855	96,669	81,725	100,495	116,207	102,079	93,570
	International	14,153	20,316	23,498	28,055	34,548	37,236	46,903
bed-nights	Total	190,331	241,730	214,710	223,949	258,527	264,946	303,804
	Domestic	166,025	201,630	171,261	173,272	190,169	194,460	209,375
	International	24,306	40,100	43,449	50,677	68,358	70,486	94,429
Average length of stay	Total	1.96	2.07	2.04	1.74	1.71	1.90	2.16
	Domestic	2.00	2.09	2.10	1.72	1.64	1.90	2.24
	International	1.72	1.97	1.85	1.81	1.98	1.89	2.01
Occupancy Rate		26.20%	32.06%	36.04%	31.99%	32.85%	27.10%	26.80%
Stock of Accommodations	Hotels	65	57	60	72	109	173	200
	Rooms	1,534	1,366	1,437	1,342	2,011	3,078	3,397
	Beds	2,675	2,288	2,459	2,244	3,286	5,193	5,623

Source: National statistics institute (INEI)

(2) Tourism characteristics

a. Domestic market

Domestic visitors to Iquitos and its vicinity have three basic types: a) business travelers, b) vacation oriented families, and c) young budget tourists;

- Business travelers: This is the most important market for Loreto. Their average length of stay is shorter than other market segments.
- Vacation oriented families: This market has decreased recently. People seeking for swimming pool and beaches characterize this type of tourism. Their principal interest is relaxation and recreation. They are mostly people from Lima and arrive by air.
- Young budget tourists: The market has also decreased in recent years. It is oriented to ecotourism in Iquitos and its vicinity, including a trip to Amazon River or some of its tributaries. They mostly come from Tarapoto by boat. They do not use air service due to a high cost.

b. International market

There are three types of international tourists to the Loreto Department:

- Youth and backpackers: This type of tourism basically concentrates in the Iquitos City due to cheaper accommodation fee. Youths use hostels and less than two-star hotels. It is estimated that this type of tourists accounts for approximately 40% of the international market (a 10% of the total would be backpackers that do not use hotels. It is said that this type of tourism has been the most constant during the last ten years,
- General interest package tours brought by tour operators for "the Amazonian experience": This type of tourism demands comfortable accommodation with more than 3 stars or cruise ship. In this group are found persons of more than 50 years who seek for a "soft" Amazonian adventure, that is, to avoid rigors of the Amazon basin (mosquitoes, available food, water, sanitary, etc.). They are principal clienteles for jungle lodges. At present, this type roughly accounts for 60%; and,
- Special interest tourists that come to Iquitos in search of the numerous flora and fauna: They are interested in experiencing the real Amazon. They are often scientists or specialists that are interested in some of the numerous flora and fauna in the vast Amazonian jungle. Although their number is limited, academics in various fields such as entomologists, biologists, ornithologists as well as ethnologist and anthropologists that visit the indigenous communities, are visiting the Amazon.

6.3. Considerations for Sustainable Tourism

The following considerations should be paid to assure sustainability in tourism development. They are described from the three viewpoints: natural environment, cultural resources conservation, and local participation/ social considerations.

6.3.1. Natural Environment

(1) Scenery

- Designs of infrastructures must be harmonized with their surrounding environments.
- Any trees and ornamental flowers planted around infrastructures should be native species.
- Trashes need to be carefully treated in and around buildings, along roads/ walking trails, and rivers / creeks.

(2) Ecosystems

Since the ecosystems of the Study Area are very unique, valuable, and fragile, the following points need to be considered.

- Zoning: The Pacaya – Samiria National Reserve should be properly zoned in order to conserve the very unique ecosystems. A new Master Plan is currently drafted by INRENA, in which the zoning plan will be presented. The Master Plan must be respected whenever any tourist developments are planned.

- Allpahuayo – Mishana Reserve Zone: It is a newly established protected area and is also a very unique and important area in terms of biodiversity conservation in the world. Any tourism development related to the reserve zone should be carefully examined by INRENA and other relevant organizations (e.g. IIAP).
- Phenology: There is a clear seasonal difference, and the impacts on the ecosystems are also different. Appropriate management measures to meet the difference need to be required.
- Important animals: Dolphins (Pink and Dray), Amazon Manatee, otters (Giant and Southern River), and other important animals which represent the ecosystems need to be strictly protected. Especially, these large mammals are often a big attraction for tourists, any harassment or disturbance to them should carefully be avoided. Their breeding areas should especially be protected. It is necessary for the tour operators to have a "code of environmental ethics".
- Feeding animals: Feeding animals in order to show them to tourists should be adequately guided.
- Waste water: Waste water including oils and fuels should be properly treated in order not to give extra loads to the environment.
- Wildlife / wild plant extraction: Extracting any wildlife and wild plants should be strictly prohibited. Selling them to tourists should also be strictly prohibited. Tourists need to be properly guided and educated not to extract them from the natural environment and not to buy any of them as a souvenir. Consumption of wildlife especially fishes as local delicacies for tourists needs to be carefully controlled.
- Road improvement: When it may be necessary to improve the lighting conditions of the road between Iquitos and Nauta, lighting bulbs/ tubes should carefully be selected not to attract insects from the surrounding areas.
- Aquariums/ zoos: It is essential to consider the best conditions for fishes and animals in aquariums and zoos wherever possible.

6.3.2. Cultural Tourism Resources

There are some buildings in Iquitos that should be nominated as historical ones because of their antiquity (late 1890s) and their beauty: Wise use of the buildings is recommendable.

- Some typical houses that belong to these are characterized by decoration with Portuguese tiled mosaics.
- Malecon Palace is a building that belongs to the same period.

- Iquitos has the first prefabricated house in Peru, which was designed by Eiffel. It should be considered to be included in the National Patrimony and protected by INC, for it is at least one hundred years old.

6.3.3. Local Participation/ Social Considerations

(1) Establishment of Sub-project Implementation Committee and Local Tourism Organizations

Sub-project Implementation Committee should be established to coordinate among stakeholders including local people.

(2) Partcipatory Tourism Support Program

Participatory Tourism Support Program would be provided for communities interested in introducing tourism to conceive, plan, and implement community-based tourism plans. The highest priority should be given to communities in the Pacaya - Samiria National Reserve

(3) Promotion of handicraft promotion and sales

Promoting handicraft production and sales would increase the spending of visitors, and help distribute tourism income to a wider range of people. Tourism Improvement of the San Juan Market, which is part of the priority project, is conceived for this end.

(4) Investor-led development with forced local involvement

Construction of the Iquitos – Nauta road will have a significant impact on tourism development as well as communities in the Pacaya – Samiria National Reserve. Tourism is regarded as a local source of income that would motivate people for conservation. However, careful considerations for local communities have to be made to introduce the new economic sector, since tourism has been minimal. There are several possibilities as to how tourism would be introduced to the national reserve. Table 6.7 summarizes the relationship of factors related to tourism and local community.

Table 6.7 Lodge development types and local community

Development Type	Investor-led development	Investor-led development with local involvement	Community-led development
Lodge operator	Investor	Investor and local community	Local community
Adaptability to market needs	High	Moderate	Low
Possible visitor types	General interest tourists Nature lovers	Nature lovers	Keen nature lovers
Speed of development	Fast	Moderate	Slow
Local economic benefit	Small	Moderate (largely depend on arrangement)	Large

Source: JICA Study Team

Although investor-led tourism development may be quickly introduced, this type of development would spoil both the nature and people of Pacaya – Samiria. It could happen that most of the tourism income would be snatched by the investor, and that local people do not feel any incentive to conserve the nature. Another risk is that this type of tourism development may attract general interest tourists in a mass volume, which tends to cause over-exploitation of the tourism resource and rapid social changes in local communities.

Although community-led development may sound like a good idea, it may face difficulties in implementation since local communities have little commercial know-how.

There should be a system that would distribute the tourism income to areas that do not receive tourism benefit. Otherwise, the whole ecosystem of the reserve would not be protected.

Hence, regulations should be introduced that would force investor to involve local community, and tourism income be distributed to communities that do not receive tourism benefit. The followings are ideas of regulations:

- Regulation on the percentage of local employment,
- Regulation on procurement of local food and materials, and
- Environmental fee: certain percentage of tourism income should be collected as community fee that would be used for development of non-tourism communities.

6.4. Tourism Development Strategy

6.4.1. Prospects for Development

The Phase 1 Study stipulates that the Amazon River Tourism Corridor is a Supplementary Tourism Corridor attached to the Northern Tourism Circuit, and is tasked to introduce nature tourism. Although the direction seems agreeable in general, Iquitos needs a strategy for repositioning in the tourism market to eliminate its old-fashioned nature destination image. Tourism use of the Pacaya – Samiria National Reserve, which is to be located conveniently within 3 hours from an international airport thanks to the newly constructed Iquitos - Nauta Road, would be a key to rejuvenate tourism in the Loreto Department. It is noted, however, that sufficient considerations should be paid so that tourism would make a successful "soft landing" on the largest protected area in Peru.

In the long-term perspective, the Amazon River Tourism Corridor could be connected to the Northern Tourism Circuit via Yurimaguas and Tarapoto. In this context, introducing Upper Amazon Cruise from Nauta to Yurimaguas would have a strategic importance.

(1) Competitor analysis

Iquitos is one of the pioneers of nature destinations in South America, and enjoyed healthy growth during the 1980s. However, it is now challenged by emerging nature destinations in Madre de Dios in the south. As has been discussed previously, the Pacaya - Samiria National Reserve is expected to rejuvenate tourism in the Loreto Department. Table 6.8 compares Iquitos and Pacaya – Samiria with the nature destinations in Madre de Dios.

Table 6.8 Comparison of Iquitos/ Pacaya – Samiria and nature destinations in Madre de Dios

	Iquitos / Pacaya-Samiria	Madre de Dios
Location	Near Amazon River	Far from Amazon River
National reserve	The largest of Peru	Not the largest
Fauna and flora (population/diversity)	Exuberant	Exuberant
Service and price	Reasonable	Exclusive/luxurious
Interpretation facilities	Several museums*	Almost no museum
Scientific facilities	Many in the city/reserve	Not numerous
Observation sites	Dispersed over the reserve	Concentrated and limited
Access from/to Miami	1 flight *	3 flights (via Lima-Cuzco)
from/to Lima	1 flight	2 flights (via Cuzco)
from/to Cuzco	1 flight *	1 flight
Others	Designated as Ramsar sites	Not designated

Source: JICA Study Team

The table shows that Iquitos, if it is combined with the Pacaya – Samiria National Reserve, could be a competitive nature destination that rivals Madre de Dios. Iquitos'

strengths come from a fact that a modern city with a number of interpretation facilities is combined with a pristine nature destination.

(2) SWOT Analysis of the Amazon River Tourism Corridor

The followings are the results of SWOT analysis of the Amazon River Tourism Corridor based on the analysis of existing conditions.

a. Strengths

- A modern city that is equipped with all the modern amenities and interpretation facilities, and a pristine nature destination coexist in a short distance.
- Pacaya – Samiria National Reserve is a very competitive destination that could attract visitors from all over the world. In particular, its aquatic fauna is quite unique and outstanding.
- The Tourism Corridor has an authenticity in that it actually faces the Amazon River unlike other Amazon destinations, and has the confluence where the Amazon River is born.

b. Weaknesses

- Iquitos is a long-established tourism destination; therefore its tourism attractions tend to be out-dated.
- Pacaya – Samiria National Reserve, on the other hand, lacks in basic infrastructure, facilities, and services to receive visitors.
- Pacaya – Samiria National Reserve does not have sufficient local manpower that supports tourism development.
- The international travel trade tends to associate the Amazon with Brazil, and the Andes with Peru. Peruvian Amazon lacks in market's awareness and needs efforts at establishing a favorable tourism image.

c. Opportunities

- The complementary relationship of Iquitos and the Pacaya - Samiria National Reserve would lead to an increase of competitiveness.
- A strategy is needed that ensure tourism's "soft landing" on the Pacaya-Samiria. At least in the short-term, the nature reserve should be marketed toward the SIT and keen ecotourism markets.

d. Threats

- The construction of the Iquitos – Nauta road would give significant negative impacts on the people and nature of Pacaya – Samiria, which would annihilate the Tourism Corridor's potential.

6.4.2. Market Strategy

A two-pronged strategy would be suitable for the Amazon River Tourism Corridor: a gateway resort city of Iquitos and an exclusive nature tourism destination of the Pacaya – Samiria National Reserve.

Different market strategies are necessary for the international and domestic markets as summarized below:

(1) International market

- Iquitos should be positioned as the principal gateway city to the whole Amazon with modern urban amenities and interpretation facilities rather than a nature tourism destination.
- Vicinity of Iquitos and Nauta would be marketed to general interest tourists, while the Pacaya - Samiria should be marketed for exclusive ecotourism, at least, in the short-term.
- Considering Pacaya - Samiria's tourism potential, it is worth efforts to attract international visitors from countries other than the USA.
- Efforts should be made to establish a tourism image that enhances the linkage between Peru and Amazon.

(2) Domestic market

- Iquitos City should be re-positioned as a jungle resort city for the domestic market.
- Tourism attractions as well as jungle resort accommodations should be developed in and around Iquitos that would cater for the needs of domestic tourists.
- Inexpensive tour packages that include accommodation and airfare should be introduced to promote the domestic market.

6.4.3. Tourism Product Development Strategy

Corresponding to the market strategy, the following directions for the tourism product development strategy have been established.

(1) Repositioning of Iquitos as a gateway resort city

Iquitos needs more sophistication as the gateway resort city to the Amazon River Tourism Corridor. It should be equipped with facilities and services that enable its visitors to get necessary information and interpretation for exploring the Amazon such as museum, zoo, and tourist information center, and that make visitors who returned from jungle expedition feel relieved to meet modern urban amenities.

(2) Development of interpretation facilities along the Iquitos - Nauta Road

The Iquitos – Nauta road is expected to be the main tourism artery to the Pacaya Samiria. It is proposed to develop visitor facilities that would provide interpretation of Amazon's flora and fauna along the artery road.

(3) Development of Nauta as an exploration base for Pacaya – Samiria

Nauta town should be developed as an alternative accommodation base for those who prefer idyllic ambience of a typical Amazonian rural town. It would also function as the jumping off point to the Pacaya – Samiria. Improvement of its port infrastructure would make a prerequisite for the strategy. Viewing platform for the birthplace of the Amazon is expected to be a tourist attraction in Nauta.

(4) Low-impact high-income tourism in Pacaya – Samiria

Pacaya – Samiria National Reserve should employ a "low impact high income" strategy to attract nature lovers mostly from the long-haul market. Physical development should be kept minimal to cater for the needs of tourists. Instead, deliberate arrangements should be made to facilitate cultural exchanges between the hosts and the guests as well as provision of basic tourism know-how.

In order to deliver quality tourism products as well as to motivate people for conservation, local participation is indispensable.

(5) Introduction of the Nauta – Yurimaguas Cruise

It is recommendable to introduce a nature cruise between Nauta and Yurimaguas visiting the Pacaya – Samiria National Reserve on the way. It would help formulate a "product mix" of nature tourism in the Selva and archaeological tourism in the Sierra. Lack of quality accommodations and poor air services to and from Yurimaguas, which make the constraints to operate the cruise, need to be improved.

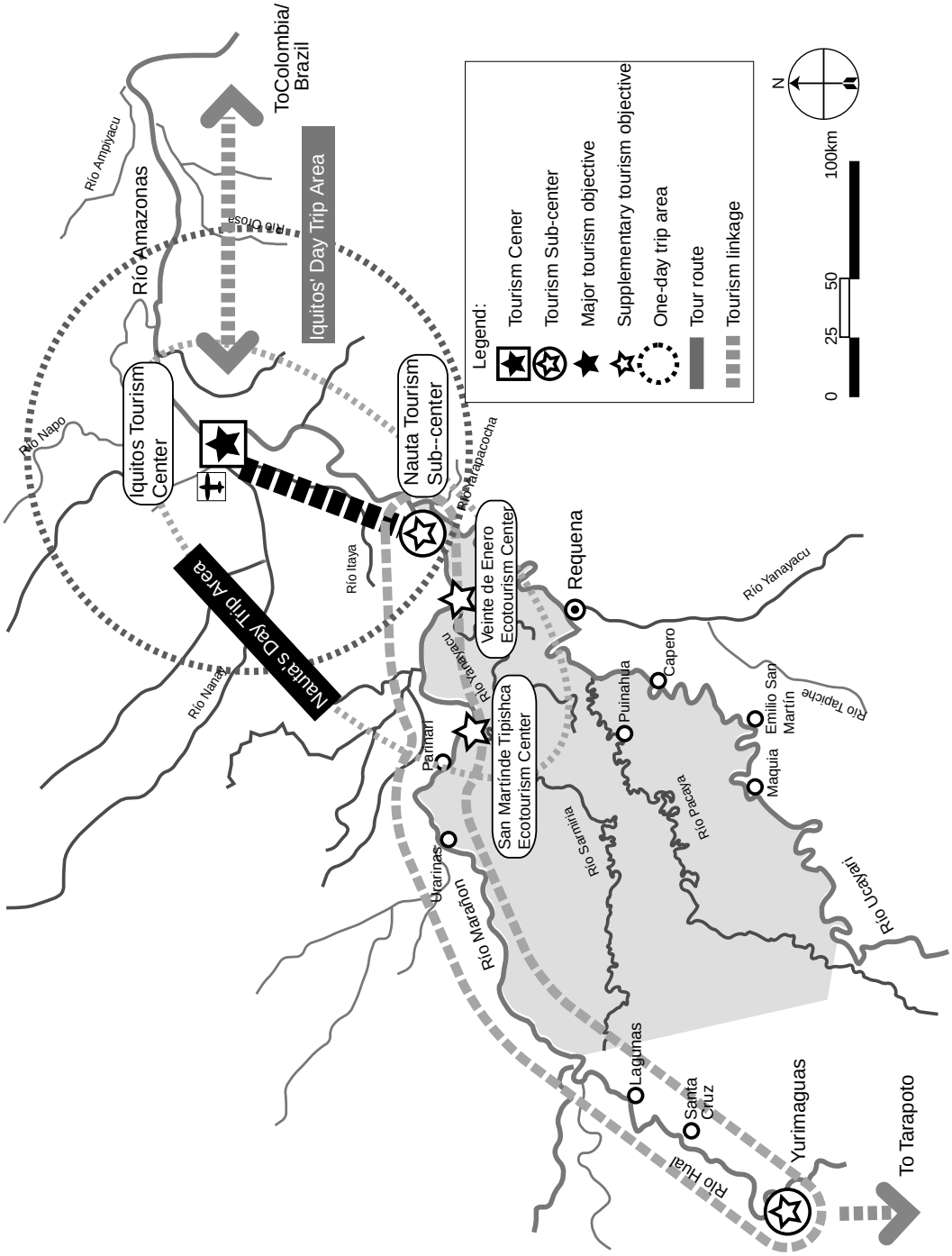
6.4.4. Spatial Development Strategy

Iquitos - Nauta Road is expected to give significant impacts on the spatial tourism structure of the Amazon River Tourism Corridor. It would facilitate the tourism use of the Pacaya - Samiria National Reserve, which would revitalize the Loreto Department as a nature destination, and increase the importance of the Nauta Port as a tourism hub of river transportation. The followings are the directions of the spatial development strategy for the Amazon River Tourism Corridor.

- Iquitos is the international gateway city to the Peruvian Amazon, which should also have a function of jungle resort. It is a Tourism Center of the Amazon River Tourism Corridor. Yurimaguas is another Tourism Center for the Tourism Corridor.
- Nauta, which is expected to increase its importance due to the construction of the Iquitos – Nauta road, is designated as a Sub-Center that functions as a base for exploration in the Pacaya – Samiria National Reserve. It is also foreseen that the town would be a departure point for proposed Upper-Amazon Cruise to Yurimaguas.
- Veinte de Enero and San Martin de Tipishca are designated as Ecotourism Centers where tourists take small boat to explore into the largest nature reserve in Peru.

Figure 6.2 shows the spatial structure of the Amazon River Tourism Corridor.

Figure 6.2 Tourism spatial structure in the Amazon River Tourism Corridor



Source: JICA Study Team

6.4.5. Tourism Demand Framework

Tourism development framework for the respective Tourism Corridors are set based on the national development framework that is proposed in the Phase 1 Study. Target number of visitor bed-nights in 2005 is 1,839,000, of which 467,000 or 25% are occupied by international visitors. Target number of visitor bed-nights in 2015 is 3,024,000, of which 945,000 or 31% are occupied by international visitors.

Table 6.9 Development framework for the Amazon River Tourism Corridor

	1997	2005	2015
Int'l arrivals	106,000	291,000	500,000
Domestic arrivals	282,000	787,000	1,204,000
Total arrivals	388,000	1,077,000	1,705,000
Int'l bednights	165,000	467,000	945,000
Domestic bednights	512,000	1,372,000	2,080,000
Total bednights	676,000	1,839,000	3,024,000
Available rooms	2,100	4,500	7,300

Source: JICA Study Team

It is noted that the figures are on a estimation basis as has been discussed in the Chapter 2. Therefore, the figures in 1997 do not agree with the hotel statistics except the number of hotel rooms.

6.5. Projects and Programs

6.5.1. Project Evaluation

Existing projects and project ideas proposed by a broad range of organizations and individuals in the Study Area, and by JICA Study Team were evaluated based on the criteria as described in the Chapter 2, namely, conformity with the development strategy, urgency and impact, and project maturity. Each project was evaluated by calculating the total of points given in 3 grades to the respective evaluation criteria. Projects that are given more than 8 points are chosen as "priority sub-projects"

Development efforts are focused on developing interpretation facilities such as museum and zoological park in and around Iquitos, establishment of Nauta as an exploration base for the Pacaya - Samiria, and deliberate introduction of tourism to the largest national reserve in Peru.

Table 6.10 shows the result of project evaluation.

Table 6.10 Result of project evaluation in the Amazon River Tourism Corridor

No	Subproject	Department/ Province/ District	Strategy	Effect	Maturity	Total
	Priority sub-project					
1	Construction of Allpahuayo - Mishana Museum	Loreto/ Maynas/ Iquitos	3	3	2	8
2	Improvement of Quistococha Tourism Complex	Loreto/ Maynas/ Iquitos	3	3	2	8
3	San Juan Market Tourism Improvement	Loreto/ Maynas/ Iquitos	3	3	2	8
4	Construction of Nauta Tourists Pier	Loreto/ Loreto/ Nauta	3	3	3	9
5	Construction of Training Lodges for the Pacaya-Samiria N. R.	Loreto/ Loreto/ Nauta	3	3	2	8
6	Sign System Program	Loreto/ Loreto/ Iquitos	3	3	3	9
7	Participatory Tourism Support Program	Loreto/ Maynas, Loreto/	3	3	3	9
	Long-term project					
1	Tourist amenities improvement for pier of ENAPU	Loreto/ Maynas/ Iquitos	2	2	1	5
2	Rehabilitation and conservation of historical center	Loreto/ Maynas/ Iquitos	2	2	2	6
3	Ethnography and history museum in Iquitos	Loreto/ Maynas/ Iquitos	3	2	2	7
4	Tourism training center	Loreto/ Maynas/ Iquitos	3	2	2	7
5	Rio Amazonas aquarium	Loreto/ Maynas/ Punchana	3	2	2	7
6	Road side beautification of the Iquitos - Nauta road	Loreto/ Maynas, Loreto	2	2	2	6
7	Construction of a mirador for the birth of the Amazon River	Loreto/ Loreto/ Nauta	3	2	1	6
8	Beautification of Nauta town	Loreto/ Loreto/ Nauta	3	2	2	7
9	Security and tourist service improvement	Loreto/ Loreto/ Nauta	3	2	1	6
10	Improvement of infrastructure service	Loreto/ Loreto/ Nauta	2	2	2	6
11	Construction of tourist pier at Veinte de Enero	Loreto/ Loreto/ Nauta	3	2	2	7
12	Construction of interpretation and tourism center in Nauta	Loreto/ Loreto/ Nauta	3	2	1	6
13	Construction of tourist pier at San Martin Tipishca	Loreto/ Loreto/ Puinahua	3	2	1	6
14	Improvement of the control posts in the Pacaya-Samiria	Loreto/ Loreto, Requena	3	2	2	7

Source: JICA Study Team

6.5.2. Priority Project

The Amazon River Tourism Corridor Development Plan is a priority project for the Master Plan Study on National Tourism Development (Phase 2), which is to be implemented by year 2005. A total of 7 sub-projects are chosen for the priority project as

shown in Table 6.10. The followings outline the respective priority sub-projects. Volume 3 of this report describes the priority sub-projects in more details.

(1) Construction of the Alpahuayo-Mishana Museum

a. Background

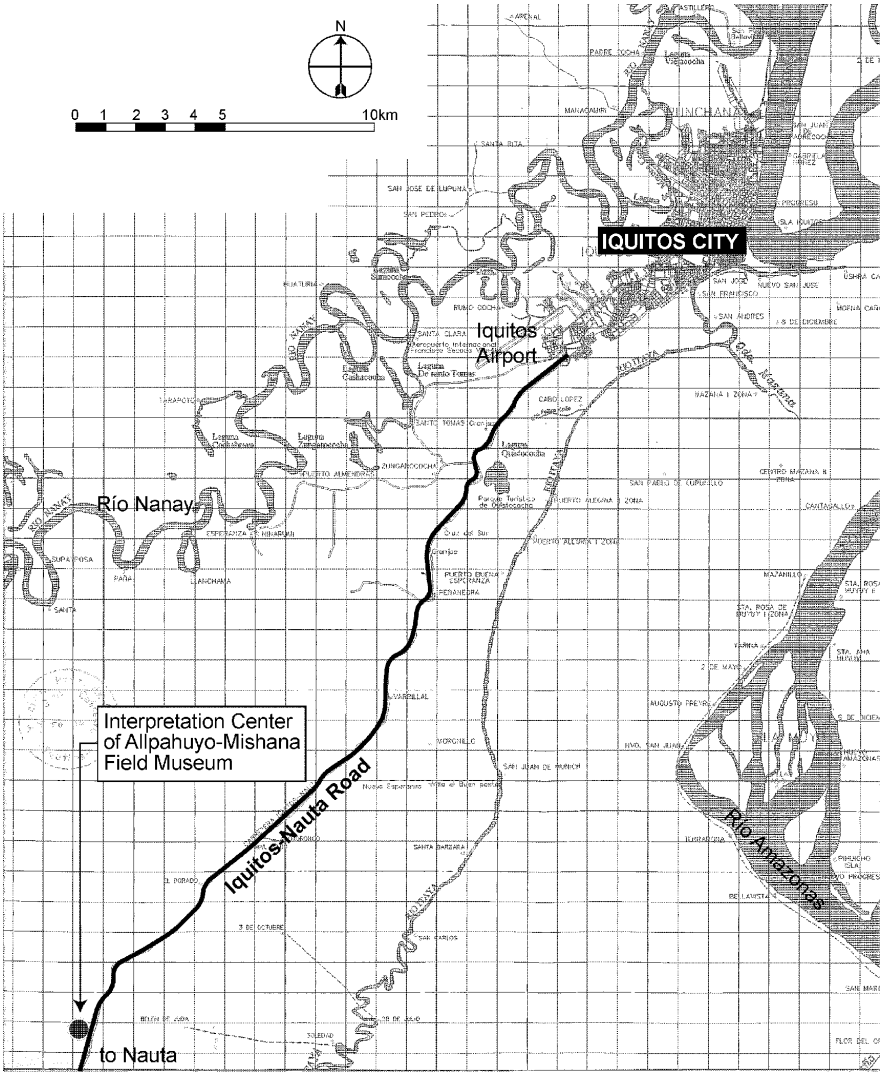
The Allpahuayo-Mishana Reserve Zone (AMRZ) is a newly created reserve in 1999 with a surface area of around 577 km^2. The reserve is administered by the CTAR and Peruvian Amazon Research Institute (IIAP) under the supervision of INRENA. AMRZ has two advantages for tourism utilization: 1) diverse ecosystems, 2) easily accessible location on the Iquitos –Nauta Road.

The idea of "Amazonium" (Memorial of Man and Bio-diversity in the Amazon Region) is conceived among people who strive for conservation in order to promote understandings of the Amazon area and to encourage the participation of local people. The objective of the Amazonium is to encourage investigation works on, 1) diverse local cultures and ethno-communities, 2) biodiversity of the Amazon area and its vulnerability; 3) sustainable development in the Amazon area including ecotourism. Moreover, the Amazonium is listed on the projects of *Bi-national Plan for Development of the Borders Region* of Peru and Ecuador.

The Amazonium is composed of the center and satellite museums in each district in the Amazon region, which envisages presenting the Peruvian Amazon as a huge outdoor museum. JICA Study Team proposes to build a museum in AMRZ as the center of the Amazonium. The museum is composed of two sites: the interpretation center and the forest site. The interpretation center would function as the center of the Amazonium.

AMRZ and the proposed museum could be used to train park rangers and guides for nature tourism in Pacaya - Samiria and other nature areas. They would be also useful to provide visitors who are going to the Pacaya - Samiria with necessary instructions on how they should behave, and cope with accidents, in the national reserve.

Figure 6.3 –. . . . .. . of the Allpahuayo - Mishana Museum



Source: Municipalidad Provincial de Maynas – Oficina General de Catastro 2000

b. Objectives

Construction of the Allpahuayo-Mishana Museum has the following objectives:

- Research and Investigation on biodiversity in the reserve zone.
- Education of biodiversity and ethnic cultures.
- Providing a recreational area and attractions for visitors.
- Research and investigation of forest products (medicinal plants, fruit producing plants and etc.).

c. Site and location

AMRZ is located some 25km from Iquitos (half-hour by vehicle) in an area between Río Nanay and the Iquitos - Nauta Road (INR). IIAP has already developed administration facilities in AMRZ, which are about 150m from the INR. The interpretation center of the museum is proposed in the same site.

d. Components

The sub-project includes the following components.

Interpretation center

The interpretation center should be located close to an access road from INR. IIAP's administration buildings, which are about 200m from the INR, is a site for the proposed interpretation center. The following facilities should be constructed:

- Visitor center,
- Laboratory and library,
- Conference room and dormitories,
- Picnic site and multi-purpose field,
- Botanical gardens,
- Administration,
- Parking area, and
- Access way

Forest site

Forest site is a place to experience the Amazonian nature with the following minimal installations:

- Nature trail,
- Resting place with shade, bench and toilet,
- Observatory, and
- Signs.

e. Costs

The total cost of the sub-project is estimated at US$ 1.47 million, which accounts for 18.1 % of the whole project costs of the Amazon River Tourism Corridor.

f. Sub-project implementation

Responsible implementation body

INRENA would implement the sub-project.

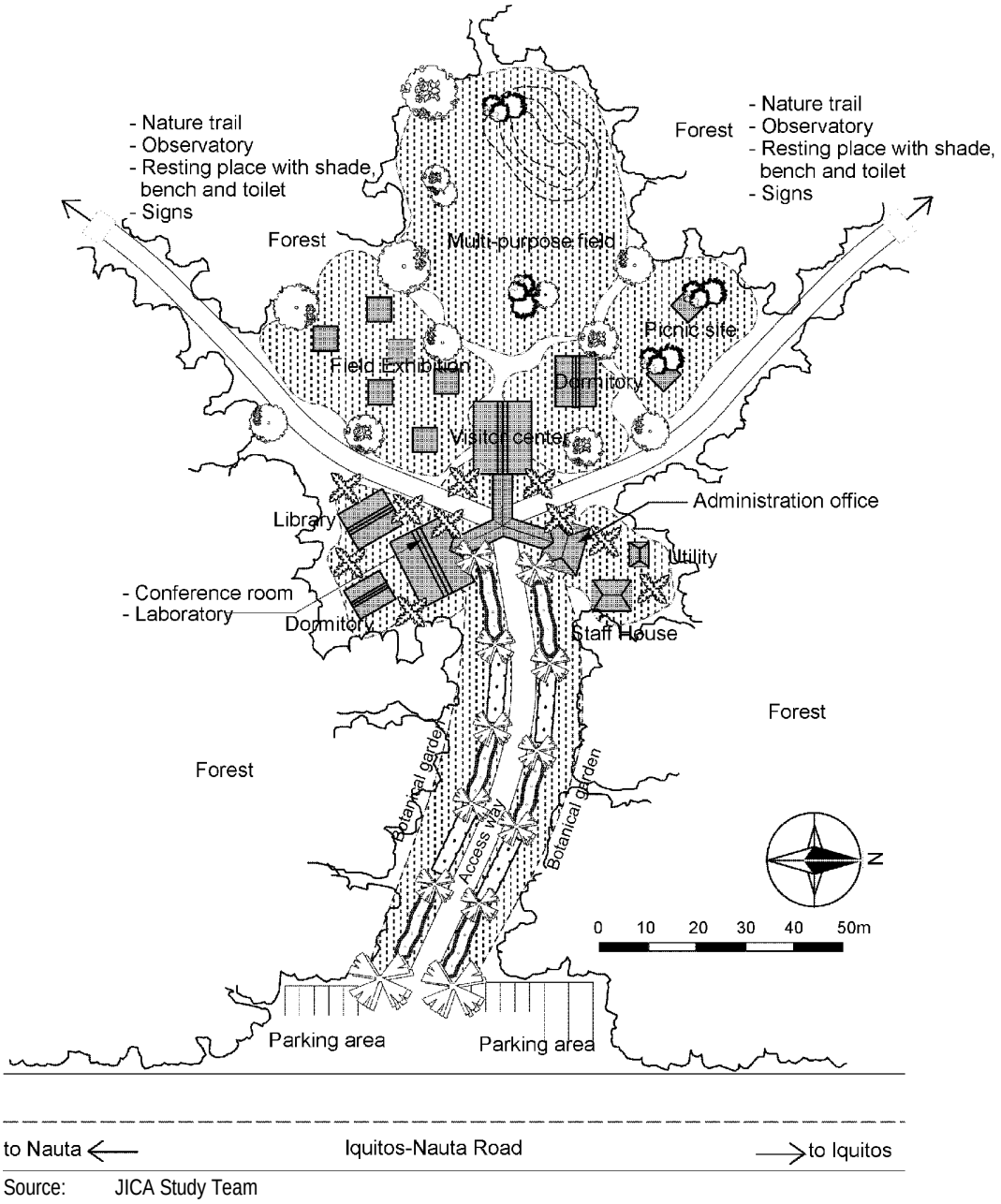
Supplementary implementation body

INRENA would commission the operation and maintenance of the museum to the consortium for Amazonium, which is made up of IIAP, the Amazon Theological Studies Center, and National University of the Peruvian Amazon.

Other stakeholders

INC, local people in and around the nature reserve, MITINCI.

Figure 6.4 –. . . . . plan of the visitor center area of the Museum



Source: JICA Study Team

g. Local participation

- Sub-project Implementation Committee should be formed, which is comprised of the above-mentioned entities and stakeholders.
- The museum is ideal site to train nature tourism guides for exploring the Pacaya – Samiria.
- The museum and the Amazonium as a whole should play the central role for the environmental education for the local community.

(2) Improvement of the Quistococha Tourism Complex

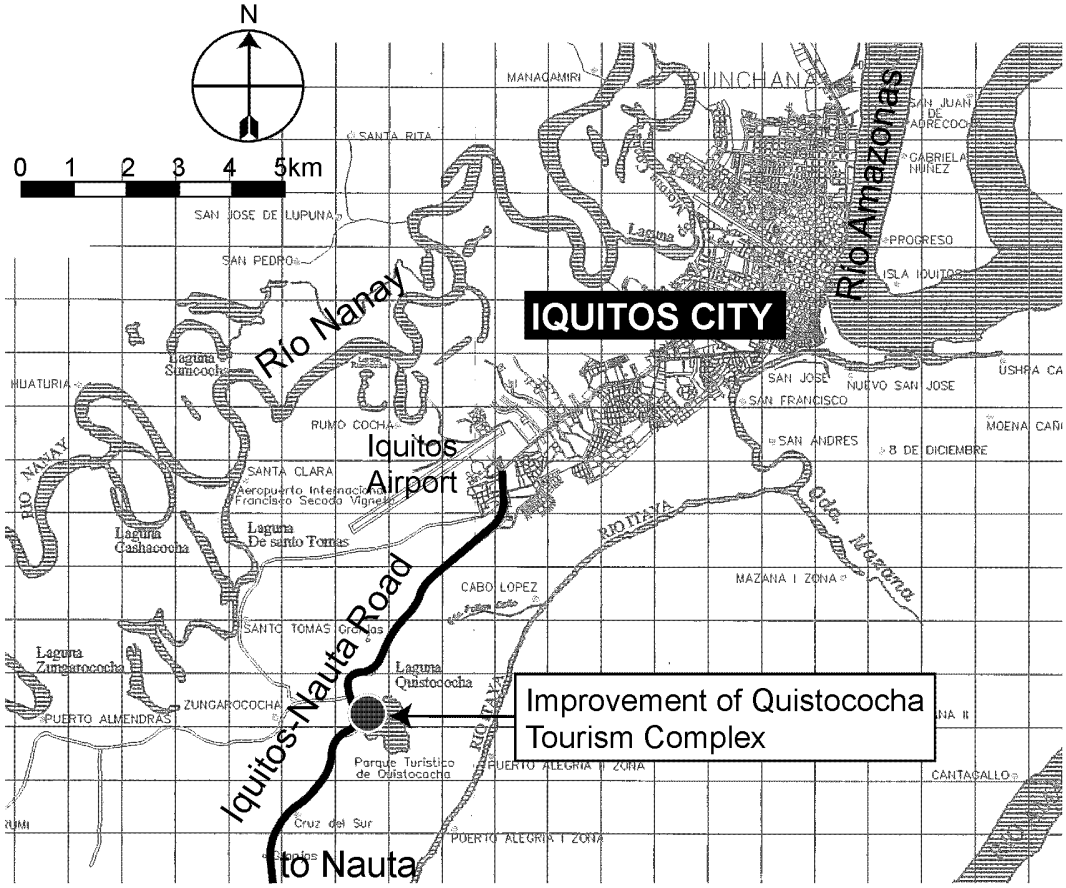
a. Background

Generally speaking, it is difficult to observe wildlife in the tropical forest unlike in the savanna. Hence, zoological park is a useful facility to provide visitors with the knowledge of the Amazonian wildlife.

The Quistococha Tourism Complex under the management of CTAR-Loreto is located on the Iquitos - Nauta Road. The site is also close to the Iquitos Airport. The complex has a zoological park with exhibition facilities for fishes (Paiches), giant river otters, monkeys, felines (jaguars and pumas), chelonians, crocodiles, birds and others found in PSNR. Therefore, the complex can undertake a role as an interpretation facility for those who are heading for the Pacaya - Samiria.

CTAR-Loreto gives a first priority to the improvement and rehabilitation of the Quistococha Tourism Complex. It has already started several minor improvements of the exhibition facilities for the zoological park and amusement facilities located close to a sandy beach and the Quistococha Lake. However, some more improvements of the Complex will be required to meet an international standard.

Figure 6.5 –. . . .. . . of the Quistococha Tourism Complex



Source: Municipalidad Provincial de Maynas – Oficina General de Catastro 2000

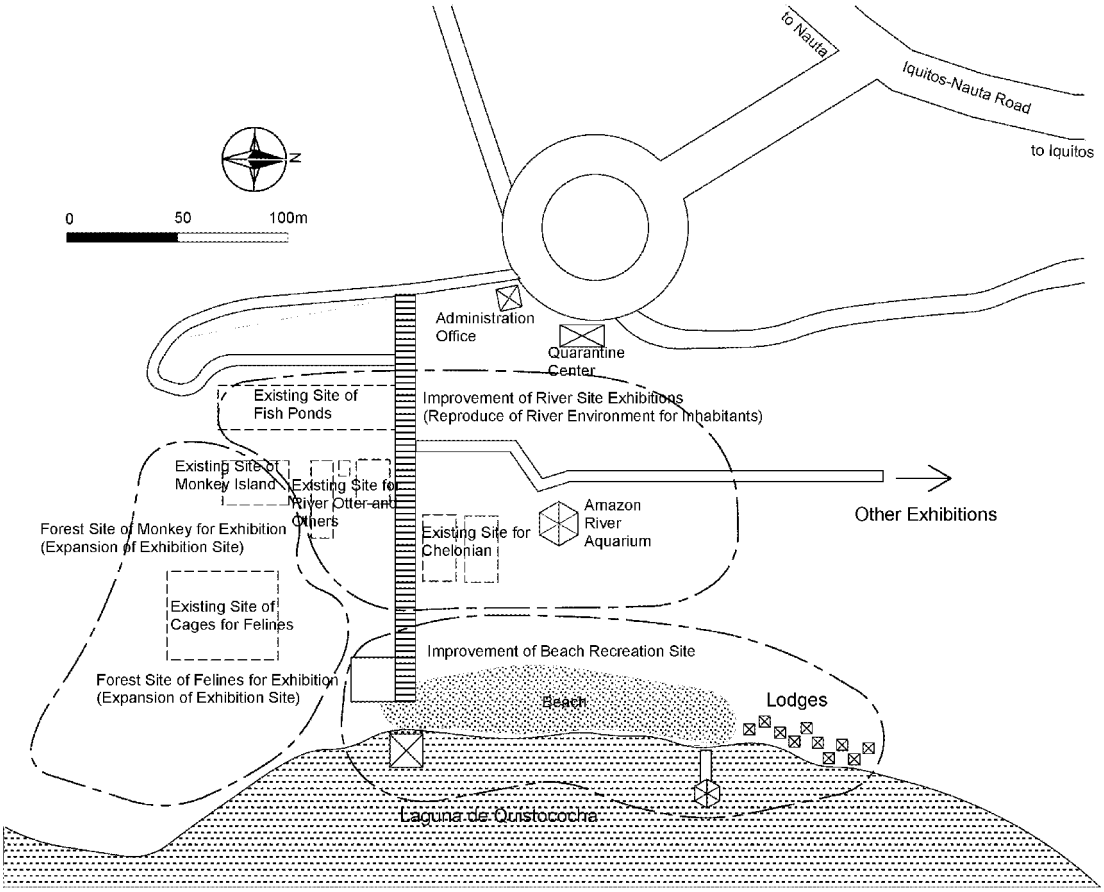
b. Objectives

- To provide recreational facilities and attractions for Iquitos' residents and its visitors.
- To make the zoo as an interpretation facility for the fauna of the Pacaya-Samiria National Reserve.

c. Site and location

The Quistococha Tourism Complex is located to the southwest of the Iquitos City about 5 km from the Iquitos Airport on the INR. The complex has a total surface area of about 369 ha including forests and the Laguna Quistococha.

Figure 6.6 –. . . . . plan of the Quistococha Tourism Complex



Source: JICA Study Team

d. Components

According to the CTAR-Loreto, they have an integrated plan for the whole area of the site. However, expansion and renovation of the zoological exhibition facilities should be given the first priority. In addition, a few new facilities should be added for an enhancement of attractions. The sub-project includes the following components.

Improvement of existing facilities

Expansion and renovation are required for the following facilities: 1) ponds for the Paiches; 2) cages for birds; 3) water pits or pond for aquatics; 4) the feline center; 5) the monkey island and others.

Construction of new facilities

- Amazon River Aquarium
- Pond for Manatees
- Lodges

e. Costs

The total cost of the sub-project is estimated about at US$ 1.72 million, which account for 21.2 % of the whole project costs of the Amazon River Tourism Corridor.

f. Sub-project Implementation

Responsible implementation body

The CTAR-Loreto would implement the project and take the responsibility of operation and maintenance.

Other stakeholders

INRENA, ProNaturaleza, local people, MITINCI

INRENA and NGOs should provide advices on the operation and maintenance of the Tourism Complex.

g. Local participation

- Sub-project Implementation Committee should be formed, which is comprised of the above-mentioned entities and stakeholders.
- Local community members are encouraged to work for the complex as well as its tourist facilities.

(3) San Juan Market Tourism Improvement

a. Background

This sub-project intends to improve the facilities of the San Juan Market, which is one of the major tourist attractions in Iquitos. It is conveniently located between the city center and Iquitos Airport. The market has 36 handicraft shops with thatched roofs selling fabrics, accessories, carvings, and ceramics. Producing and selling of handicraft to visitors directly contributes to the local economy and promote participation of a wider range of people in tourism.

The renovation of the market facilities is necessary to enhance its attractiveness for the visitors since the existing facility was built 20 years ago. Establishment of a handicraft training center is conducive to further improvement and sophistication of current handicraft products.

b. Objectives

The sub-project has the following objectives:

Center for exhibition and training of handicrafts

- To provide a tourism attraction,
- To provide training for handicraft producers, and
- To improve and inherit the designs and skills of traditional handicrafts.

Integrated industrialization

- To advise on, and support, the management of shops, workshops and commercialization of the handicrafts,
- To promote handicraft sales in the domestic and international markets,
- To increase business and employment opportunities for local people, and
- To increase tourist's expenditure.

c. Site and location

The existing handicraft market of San Juan Bautista is located in Iquitos, which is the capital of Maynas Province and Loreto Department. The market occupies an area of about 7,100m^2, and is on the Jose Abelardo Quiñónes Avenue, which runs between the Iquitos Airport and the urban center of Iquitos. The market is located about 2km from the Iquitos Airport.

d. Components

The sub-project includes the following components.

Market

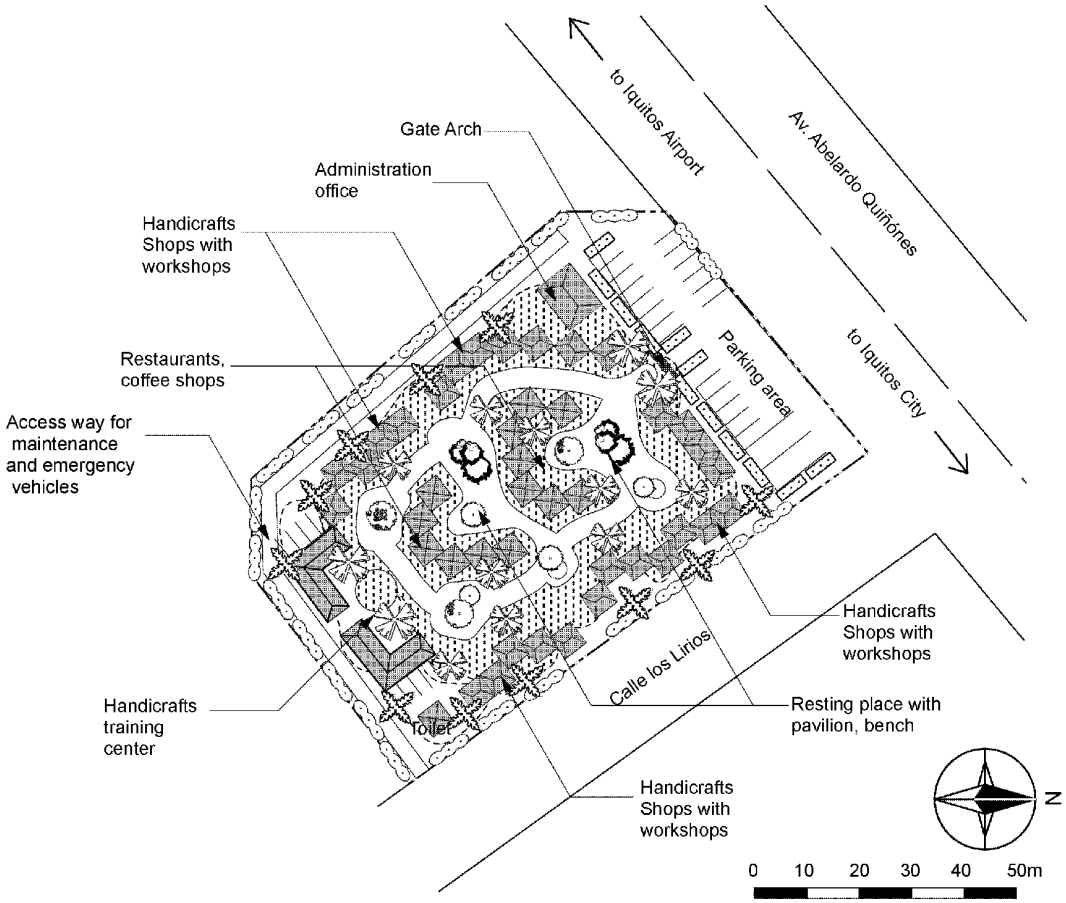
- Handicraft training center

- Handicraft shops with workshops
- Promenade and Resting place with pavilion, bench and garden
- Restaurants and coffee shops

Administration and transportation

- Parking area
- Access way for maintenance and emergency vehicles
- Administration office

Figure 6.7 –. . . . . Plan of the San Juan Market



Source: JICA Study Team

e. Costs

The total cost of the sub-project is estimated approximately at US$ 1.22 million, which account for 15.1 % of the whole project costs of the Amazon River Tourism Corridor.

f. Sub-project Implementation

Responsible implementation body

The CTAR-Loreto would implement the project and take the charge of operation and maintenance of the market. Shops, workshops, restaurants, and cafes would be leased to artisans and the private sector.

Other stakeholders

Artisans, the private sector, MITINCI.

g. Local participation

- Sub-project Implementation Committee should be formed, which is comprised of the above-mentioned entities and stakeholders.
- The committee would be restructured after the completion of the sub-project to the San Juan Handicraft Market Organization that is tasked to promote tourism and improve product quality.
- Participatory Tourism Support Program should advise handicraft producers and vendors on tourism know-how, in particular, on tourism promotion activities.
- The proposed training center is expected to play an important role to improve the quality of the handicrafts produced in Iquitos.

(4) Construction of the Nauta Tourist Pier

a. Background

With the completion of the Iquitos – Nauta Road, Nauta is expected to be an exploration base for the Pacaya – Samiria National Reserve and an important port for the river transportation in the Amazon. In this context, the Nauta Port needs improvement to meet the expected roles.

CTAR-Loreto built a pontoon (12m in width and 50m in length) and an access bridge (at 6m in width and 45m in length) to facilitate river transportation on the Marañon River in 1984. However the facilities have been left on the ground without any use since 1984 due to the lack of budget to install. An environmental impact assessment survey for the port facility has been conducted in 1998, and the construction was approved.

The existing facilities for vessels on the Marañon River are quite simple. Vessels directly touch down stern on a shore of the river, and speedboats use floating decks made of rustic wood. Passengers and loading workers use stairs, which are also made of rustic wood, on the shore in the both cases. Considering the existing conditions, the existing facilities should be improved to facilitate tourism use as well as to strengthen the functions of the port for the river transportation.

b. Objectives

The sub-project has the following objectives:

1) River transportation network for tourists in the short term

- To provide a station for speed boats at the PSNR
- To provide a station for the Amazon river cruising boats to the upstream of Río Marañon (for Yurimaguas through PSNR)

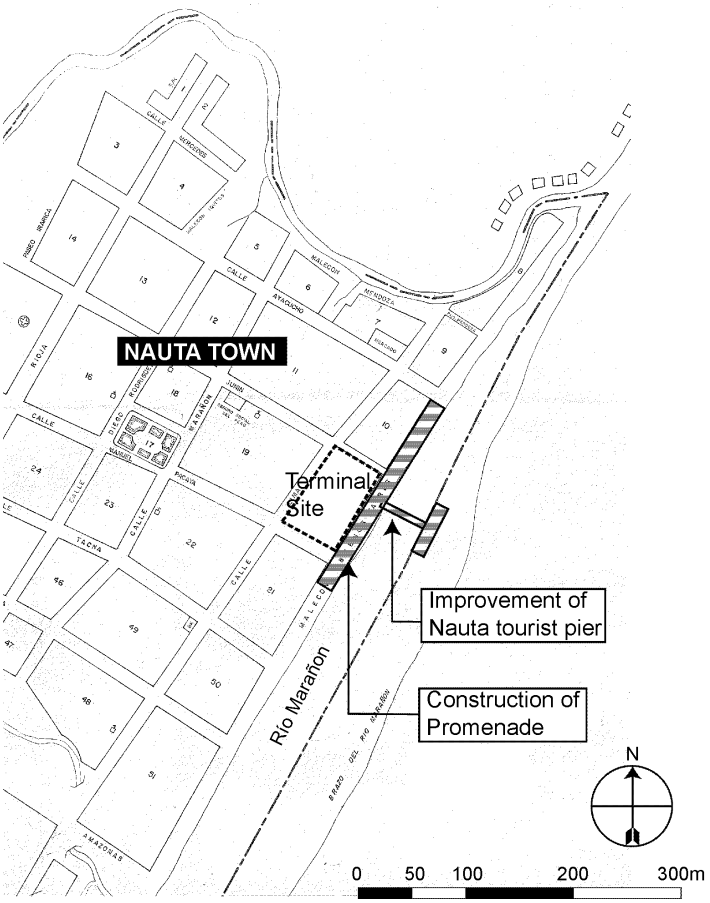
2) Local river transportation networks in the long term

- River transportation networks to the Andes area with contribution to the local transportation networks.

c. Site and location

The sub-project site is located at the Malecón Buenos Aires where vessels currently anchor. The place is located between the Manuel Pacaya street and the Junin street. Terminal facilities should be constructed behind the pontoon in the long-term.

Figure 6.8 Location of the Nauta Tourist Pier



Source: Plano Urbano – Nauta – INEI 1993, JICA Study Team

d. Components

The sub-project includes the following components.

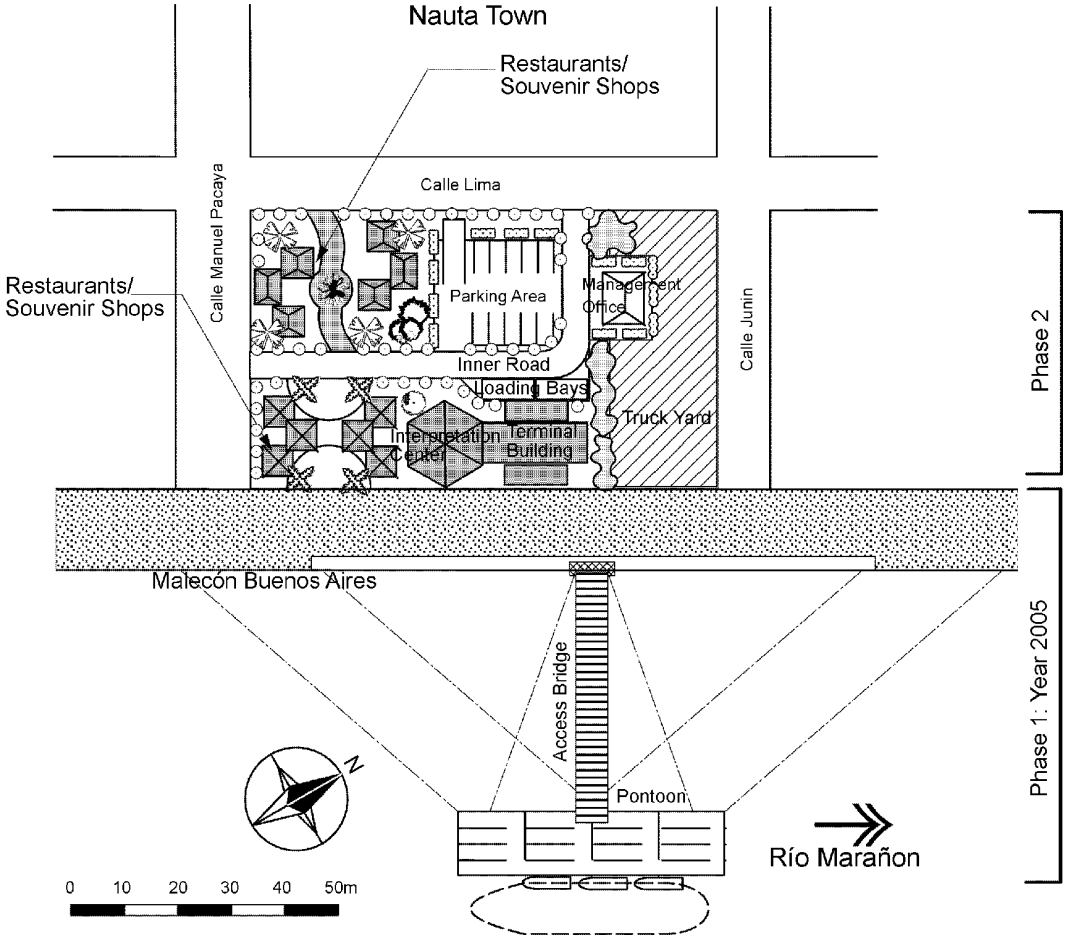
Pier facilities

- Pontoon
- Access bridge
- Substructure works

Promenade

A promenade is an important facility for the scenery on the embankment of rivers and people to stroll. For setting of the pontoon and the access bridge, underworks to settle wires are required. In addition, a level of the Malecón should be graded up at least by 1m from the existing level. A promenade should be constructed with these works.

Figure 6.9 Layout Plan of the Nauta Pier



Source: JICA Study Team

e. Costs

The total cost of the sub-project is estimated approximately at US$ 3.61 million, which account for 44.6 % of the whole project costs of the Amazon River Tourism Corridor.

f. Project implementation

Responsible implementation body

CTAR-Loreto would implement the sub-project and take the charge of operation and maintenance.

Other stakeholders

Capitania de Puertos, Servicio de Hidrografia y Navigacion de la Amazonia, MITINCI.

g. Local participation

Adequate considerations should be paid to local vendors near the proposed construction site. It is advisable to build a shopping complex for tourism-oriented vendors in the long-term.

(5) Construction of "Training Lodges" for the Pacaya-Samiria National Reserve

a. Background

Training hotel is a hotel school that also functions as a hotel. Students are given on-the-job training in a training hotel working as a hotel staff. A merit of this system is a lower education fee than ordinary hotel schools since the students learn and work in the same place. It is proposed to introduce the system with the name of "training lodge" to Pacaya – Samiria to provide tourism training for people interested in this new economic opportunity. The training lodges would also cope with the lack of adequate accommodation in the Pacaya – Samiria.

INRENA has a number of control posts in the Pacaya – Samiria for the management of the largest nature reserve in Peru. A few of them could house training lodges by attaching some facilities and infrastructure to the existing control posts.

b. Objectives

The sub-project has objectives as follows:

- Providing accommodation to train employees, which are local people in particular, on the job for tourism services.
- Supplying accommodation in the PSNR.

c. Site and location

Veinte de Enero is located at an entrance point of the PSNR on Río Yanayacu. It takes one hour to get there from Nauta by speedboat. Río Yanayacu is one of the scenic rivers in PSNR with tourism potential, and is the closest one from Nauta.

San Martin de Tipishca is also located at an entrance point of the PSNR on Río Samiria. San Martin Tipishca has about three hours distance by speed boat from Nauta. Both rivers have calm flow of black color water. Several kinds of birds and river dolphins can be seen for the visitors.

d. Components

Lodges

ProNaturaleza operates basic accommodation in Veinte de Enero for researchers and keen nature tourists. It would be improved to a training lodge with 10 twin rooms, which provides 3-star level services. Similar accommodation would be newly built in San Martin de Tipishca.

Electricity

Solar batteries should be provided for the training lodges.

Water supply

Water tanks and supplying pipes with filtering equipment should be provided for the training lodges.

Sewerage

Septic tanks will be provided for sewerage treatment. However, a toilet bowl with hole that ash is overlaid in, is one of typical toilet styles of the jungle lodges in the Amazon area.

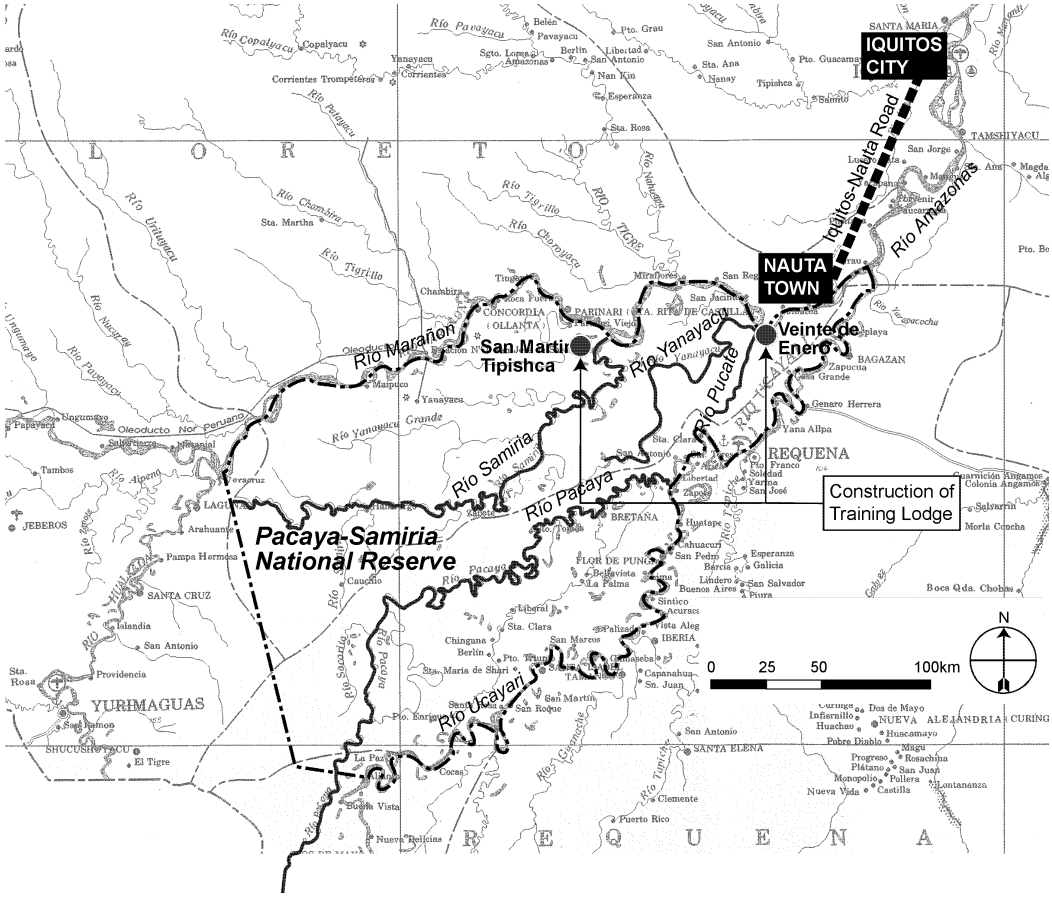
Pier

Floating platform with access bridge should be built for visitor facilitation.

e. Costs

Total cost of the sub-project is estimated at US$ 0.34 million, which accounts for 3.8 % of whole project costs of the Amazon River Tourism Corridor.

Figure 6.10 Location of Training Lodges at Veinte de Enero and San Martin Tipishca



Source: JICA Study Team

f. Sub-project Implementation

Responsible implementation body

INRENA would commission Northern Tourism Region Development Authority to implement the sub-project.

Supplementary implementation body

INRENA would commission proposed Northern Tourism Region Development Authority (NTRDA) to operate and maintain the training lodges.

Other stakeholders

ProNaturaleza, CENFOTUR, MITINCI.

ProNaturaleza and CENFOTUR would provide assistance to NTRDA to operate the training lodges.

g. Local participation

- Participatory Tourism Support Program should dispatch personnel who can operate jungle lodge and provide basic training for students/lodge staff with the cooperation from CENFOTUR.
- The training lodges should function as a classroom for community-based tourism plans. The Program should send specialist in different fields of tourism periodically to cope with different needs of training.
- The lodges should function as the places for cultural exchange between visitors and people in Pacaya – Samiria.

(6) Sign System Program

a. Background

Although signs and interpretation boards are provided at some places in the Amazon River Tourism Corridor, they are limited in number, and often lacks in systematic consistency. In Iquitos where visitors are encouraged to roam about, it is advisable if signs would be installed to guide visitors to planned walking routes. Another problem is poor availability of information for non-Spanish speakers. Taking into account the future increase of visitors from outside the Latin America, interpretation boards should be written at least in English in addition to Spanish to cater to visitors from the long-haul market.

In this context, a program that systematically installs signs and interpretation boards is necessary. It is conceived that the program should be carried out by a single entity to ensure consistency in design.

b. Objectives

Objectives of the subproject are as follows:

- To install signs and information boards to provide visitors with necessary information, and
- To provide non-Spanish speakers with above-mentioned information.

c. Site and location

The signboards should be provided at following places.

- Gate way: Iquitos airport
- Tour Routes: Iquitos-Nauta Road, major roads (at major intersections)
- Accommodation base: Iquitos and Nauta
- Tourism sites: the sub-project sites mentioned above, other appropriate tourism sites and Iquitos historical center

d. Components

Types of signboards to be installed are as follows.

Guide signs

Guide signs will be provided to indicate direction to tourism objectives and sites, location of them, and major transportation facilities: airports, and bus terminals. There are two types of signs as follows.

- Direction sign
- Location sign

Information boards

- Information board
- Route information board
  - Tourism corridor route
  - Excursion route
  - City tour route
  - On site strolling route
- Interpretation board

e. Costs

Total cost of the sub-project is estimated around at US$ 25,300, which accounts for 0.3% of whole project costs of the Amazon River Tourism Corridor.

f. Sub-project Implementation

Responsible implementation body

MITINCI would be responsible for implementation, maintenance, and operation of the sub-project. MITNCI should design the signboards for features, materials, colors and etc. in consideration of a character (theme) and unity of respective routes or sites.

Other stakeholders

Sub-project Implementation Committees, MTC, INC, CTARs, Corpac.

MITINCI should coordinate with, and, if necessary, get permission from, the above-mentioned stakeholders.

g. Local participation

Installation of the signs and interpretation boards require cooperation and participation from the above-mentioned stakeholders.

(7) Participatory Tourism Support Program

Participatory Tourism Support Program is a program that would provide tourism know-how to promote local participation in the priority project, and incubate locally conceived tourism projects for implementation after 2005. Details of the program are described in the Chapter 3: National Level Proposals.

6.5.3. Long-term Projects

The followings are comments on the long-term projects. They would be supported by the Participatory Tourism Support Program for future implementation.

(1) Mirador (viewing tower) in Nauta

The confluence of the Ucayali and Marañon Rivers, which is where the Amazon River is born, is considered important for tourists. It is proposed to build a viewing tower of the confluence in Nauta as a new tourist attraction.

(2) Beautification and conservation of the historic center of Iquitos

The historic center of Iquitos needs beautification and conservation of historical buildings such as Iron House and many tiled buildings to establish its tourism identity as a gateway city to the Amazon. It also needs to install signs and interpretation boards both in Spanish and English.

(3) Tourism improvement for control posts in the Pacaya – Samiria Reserve

INRENA and Pro-Naturaleza jointly operate a dozen of control posts all over the Pacaya – Samiria. Although the principal function of the control posts is to check illegal exploitation of the reserve, they could be utilized for tourists for resting during their trip in the Pacaya – Samiria. It is proposed that the facilities of control posts would be

improved for tourists such as toilet, drinking water, radio system, first aid, and restaurant. Since tourism facilities and services are almost non-existent in the Pacaya – Samiria, this would be a practical way to facilitate travel in the reserve.

6.5.4. Tourism Promotion Plan

(1) General directions

People living outside Peru tend to associate the Amazon with Brazil ignorant of the beauty and the bio-diversity in the Peruvian Amazon. Hence, it is crucial to increase awareness of the Peruvian Amazon through a number of tourism promotion activities stressing its strengths such as abundant fauna and flora, possibility to combine nature tourism with archaeological tourism, and diverse geological features. The Pacaya – Samiria National Reserve, which is considered to be the anchor tourism resource of this Tourism Corridor, would be marketed to the SIT and specialist markets rather than the general interest tourist market considering its invaluable ecosystem and the current lack of tourism-related facilities and services.

For the domestic market, Iquitos and its surroundings should be promoted as an attractive and comfortable jungle resort destination.

(2) Advertisement concepts for the Amazon River Tourism Corridor

Appealing points of the Amazon River Corridor for each market segment are identified as follows.

a. Toward international general interested tourists

- *Amazon*; tourists can experience the very Amazon that everybody knows by name,
- *Jungle experience*; tourists can have such a precious experience as jungle excursion and piranha fishing,
- *Comfortable*; while being in Amazon, tourists can count on comfortableness, thanks to infrastructures and facilities in City of Iquitos,
- *Accessible*; tourist can come with only one direct flight from an international hub-airport Miami (in the near future). Also, tourist can come from or go to several destinations in Peru and Ecuador with only one flight (in the near future).

b. Toward international nature lovers

- *Amazonian nature*; tourists can experience the very Amazon that is a rich repository of fauna and flora, such as Pacaya-Samiria National Reserve designated as a Ramsar site,
- *Informative*; there are a lot of interpretation and scientific facilities in the city and the reserve,

- *Tranquility*; The Pacaya – Samiria is such a huge reserve that tourists are free from congestion.
- *Comfortable*; Tourists can count on comfortableness, thanks to infrastructures and facilities in City of Iquitos,
- *Accessible*; Tourist can come with only one direct flight from an international hub-airport Miami (in the near future).

c. Toward international cruise tourists

- *Amazon River*; Tourists can experience a cruise in the world-famous Amazon River.
- *Nature observation*; Tourists can observe abundant and diverse flora and fauna during their cruise through Amazon River and its tributaries
- *Comfortable cruise*; Exploration of Amazon is done in a comfortable cruise ship, and is free from any nuisance. Iquitos is a modern city that is ideal for rest and to get informed about the Amazon.
- *Accessiblity*; tourist can come with only one direct flight from an international hub-airport Miami (in the near future)

d. Toward the domestic market

- *Relaxation in a tropical climate*; Tourists can relax and enjoy a resort in a tropical atmosphere, appreciating warm climate, and swimming even in the cool season of the Costa.
- *Entertainment*; Tourists can experience jungle excursion and piranha fishing as well as urban activities and local foods.
- *Comfortable*; Iquitos is a modern comfortable city that satisfies all the tourists' needs.
- *Easily accessible*; Direct and frequent flights from Lima take only 1.5 hours.

(3) Specific promotion measures

a. Tourism promotion program for northern Peru

It is recommendable to launch a tourism promotion program focusing the northern part of Peru including the Amazon River Tourism Corridor. A precise and quality brochure that aims at creating a favorable tourism image of the north should be published and widely distributed to increase market awareness of northern Peru. Moreover, a precise and quality video and sales manual referring to the area should be prepared for the same purpose. These promotional tools should be presented and distributed at international travel trade shows and seminars to persuade the travel trade into selling the northern Peru.

b. Hosting of a tourism event

It is also recommendable to host a tourism event for the following two purposes:

- To boost morale among the people involved in tourism development, and

- To publicize, and create market awareness of, the Tourism Corridor through the media coverage of the tourism event.

Therefore, tourism events should be planned to involve a wide range of people, and to create a sense of unity among the people involved in tourism development in the public and private sectors. A possible idea is as follows:

- Amazon Reforestation and Ecotourism Festival.

c. Awareness creation of the Peruvian Amazon

Another way to increase awareness of the Peruvian Amazon is to periodically report topics related to tourism in the Peruvian Amazon, such as bird-watching tours in the Pacaya-Samiria National Reserve and cruise tours through the Amazon and Marañon Rivers, in the quarterly magazine published by Promperu. In addition, a brochure that gives the information of the nature of the Peruvian Amazon and the way to explore the area should be published and distributed to the international travel trade, academic circles, and hobby groups.

d. Direct approach to overseas SIT market

Staff of the organization in charge of international tourism promotion should mail promotional materials to, and make direct approach to, organizations interested in nature and wildlife such as hobby circles of herbal medicine and bird-watching etc., universities, and environmental NGOs to influence them to organize SIT tours. Advertisement in magazines specialized in the nature would be also effective. In approaching to the SIT organizers, the following points should be stressed:

1) Difference between the Peruvian Amazon and the Brazilian Amazon,
2) Pacaya – Samiria National Reserve that is the largest national reserve in Peru and abounds in aquatic animals,
3) Sufficient interpretation and scientific facilities, and
4) The confluence where the Amazon River is born.

Furthermore, INRENA should study the possibility to provide participatory programs for assisting nature conservation efforts in the Pacaya-Samiria National Reserve cooperating with NGOs. Such programs would make tourists who are interested in the nature stay longer in the area.

e. Advertisement toward the domestic market

Iquitos and its surroundings are attractive not only for foreigners but also for the Peruvian as a jungle resort. Therefore, attractions available in this area, such as tropical climate, relaxing and comfortable atmosphere, and easy accessibility, should be appealed to the Peruvians through TV commercials. The cost for advertisement could be saved by using the national broadcasting station’s allocation for governmental organizations.

f. Introduction of a new type tour packages

In order to increase the number of domestic tourists to this area, travel agencies, hotels, and airline companies should cooperate each other to introduce inexpensive jungle resort packages. The tour packages would be marketed as "jungle resort" package, should be inexpensive, include discounted airfare, hotel and basic sightseeing fees, and visit tourism attractions in Iquitos City and its neighborhood.

(4) Tourism promotion activities

Table 6.11 shows the result of the evaluation of respective tourism promotion activities by market segment. It shows that indirect promotional measures such as press tours, participation in travel trade shows, and hosting of seminars are important to promote international tourism. It is noted that approach to potential SIT tour organizers has relative importance to introduce tourism to Pacaya – Samiria. Direct advertisement through the mass media would be worth a consideration for the domestic market.

Table 6.12 shows the tourism promotion plan and its cost estimation for the Amazon River Tourism Corridor based on the above-mentioned promotion strategy.

Table 6.11 Importance of promotional activities for each market segment

	International market			Domestic market
	General interested	Cruise	Nature lover	
Promotional tools				
Brochure	A	A	A	-
Map	A	A	A	-
Poster	B	B	B	-
Video	A	A	A	-
Sales manual	A	A	A	-
Advertisement				
TV	-	-	-	A
Newspaper	-	-	-	B
Special interests magazine	-	A	A	-
Trade stimulation				
Travel trade show	A	A	A	-
Familiarization trip	A	A	A	-
Seminar	A	A	A	-
Public relations				
Press tour	A	A	A	B
Press release	A	A	A	B
Others				
Event	-	-	-	-
Approach to SIT market	-	-	A	-
Approach to MICE market	-	-	-	-
Participatory program	-	-	-	-
New type of packaged tours	A	-	-	A

Note: A = very effective, B = effective, - = less effective
Source: JICA study team

Table 6.12 Tourism promotion plan

Activity	Description	Target markets	Intervals	Cost 2001-05
Promotional tools				
Image-oriented brochure	5 languages, 40,000 copies in total	International	Every 5 years	20,000
Information-oriented brochure	5 languages, 40,000 copies in total	International	Every 5 years	35,000
Map	Spanish/English, 90,000 copies per site, 6sites	International	Every 5 years	108,000
Poster	1 version, 6000 copies	International	Every 5 years	3,000
Video	5 languages, 20 minutes	International	Every 5 years	23,000
Sales manual	Spanish/English, 7,000 copies in total	International	Every 5 years	20,000
Advertisement				
TV	Spot announcement on a national broadcasting station	Domestic	Every 2 weeks	40,000
Newspaper	3 major papers in Peru, 1page	Domestic	Every 3 months	200,000
Magazine of special interests	5 magazines, 0.5 pages	North America, Europe	Every 3 months	300,000
Trade stimulation				
Travel trade show		Almost all	Every year	-
Familiarization trip	2 trips	North America, Europe	Every year	70,000
Seminar		North America, Europe	Every year	-
Public relations				
Press tour	3 trips	North America, Europe, domestic	Every year	76,000
Press release		International and domestic	Every 3 months	13,000
Others				
Approach to SIT market		International	-	-
New type of packaged tours		North America, domestic	-	-
Total				908,000

Note: The cost is in US$
Source: JICA study team

6.5.5. Project Cost

Total cost for the priority project is US$ 9,795,000. Break down of the cost is summarized in Table 4.23. Economic and financial feasibility of the cost is evaluated in the Chapter 7: Project Evaluation.

Table 6.13 Project cost for the Priority Project

			Cost (USD1000)	Remarks
Amazon River Tourism Corridor Development Plan			9,795.0	
Construction of Allpahuayo - Mishana Museum				
	a. Interpretation Center	1) Visitor center	82.0	1 story reinforced concrete and wooden building
		2) Field exhibition	61.5	1 story reinforced concrete and wooden building
		(Lawn field)	20.0	with planting
		3) Administration office	32.8	1 story reinforced concrete and wooden building
		4) Laboratory with library	82.0	1 story reinforced concrete and wooden building
		5) Conference rooms	41.0	1 story reinforced concrete and wooden building
		6) Dormitories	41.0	1 story reinforced concrete/wooden building, 50m2X2
		7) Picnic site	20.0	With barbecue pits on lawn field, and planting
		8) Multi-purpose field	40.0	Lawn field with planting
		9) Botanical garden	80.0	If allowed botanically
		10) Access way	12.0	Clay and wooden pavement, 5m X 120m
		11) Parking area	40.0	Paved of gravel
		12) Utility	8.2	1 floor reinforced concrete and wooden building
		13) Site preparation	75.0	
		Total	635.5	
	b. Field Museum	1) Nature trail	600.0	Paved of clay or wood, 2m X 10km
		2) Observatory	70.8	Wooden structure (15m in height)
		3) Resting place	0.2	With shade, bench and toilet (wooden structure)
		4) Signs	0.4	
		Total	671.4	
A)	Construction costs total		1,306.9	
B)	Engineering and design		78.4	Construction costs A) X 6%
C)	Survey, study and preparation works		13.1	Construction costs A) X 1%
D)	Contingency		69.9	Total costs A)+B)+C) X 5%
E)	Sub-project costs total		1,468.3	A)+B)+C)+D)
Improvement of the Quistococha Tourism Complex				
	a. Exhibition facilities	1) Pond for Paiches	30.0	Improvement
		2) Cages for Birds	60.0	Improvement
		3) Exhibitions for aquatics	120.0	Improvement (for River Otter, Chelonian and others)
		4) Feline center	120.0	Improvement (2 places)
		5) Monkey island	60.0	Improvement
		6) Pond for Manatee	30.0	new construction
		7) Aquarium	567.0	3 floors reinforced concrete building
		8) Lodge	132.5	
		9) Toilet	14.1	
		10) Landscaping	60.0	30% of site area
		11) Site preparation	50.0	
		Total	1,243.6	
	b. Management and Infrastructure	1) Quarantine center	82.0	
		2) Drainage	200.0	
		3) Site preparation	2.5	For the quarantine center

			Total	284.5	
A)	Construction costs total			1,528.1	
B)	Engineering and design			91.7	Construction costs A) X 6%
C)	Survey, study and preparation works			15.3	Construction costs A) X 1%
D)	Contingency			81.8	Total costs A)+B)+C) X 5%
E)	Sub-project costs total			1,716.8	A)+B)+C)+D)
San Juan market Tourism Improvement					
	a. Market	1)	Gate arch	5.0	
		2)	Handicrafts training center	164.0	2 floors reinforced concrete building X 2
		3)	Handicrafts Shops	330.0	With workshops (1 floor wooden structure, 25m^2 X 40)
		4)	Restaurants/coffee shops	41.3	1 floor wooden structure, 25m^2 X 5
		5)	Resting place	40.0	With pavilion and bench (2 places)
		6)	Promenade	80.0	Pedestrian walkway
		7)	Toilet	11.8	1 floor wooden structure
		8)	Landscaping	36.0	30% of site area
		9)	Site preparation	30.0	
			Total	738.1	
	b. Management and Transportation	1)	Administration office	16.4	1 floor reinforced concrete building
		2)	Parking area	40.0	Asphalt pavement
		3)	Access way for vehicle	9.5	For maintenance/emergency (paved from asphalt, 3mX150m)
		4)	Landscaping	12.0	30% of site area
		5)	Site preparation	10.0	
			Total	87.9	
	c. Handicrafts dev't program	1)	Promotion and training	280.0	
A)	Construction costs total			1,106.0	
B)	Engineering and design			49.6	Construction costs A) X 6% (except c. Handicrafts dev't program)
C)	Survey, study and preparation works			8.3	Construction costs A) X 1% (except c. Handicrafts dev't program)
D)	Contingency			58.2	Total costs A)+B)+C) X 5%
E)	Sub-project costs total			1,222.0	A)+B)+C)+D)
Construction of Nauta tourist pier					
	a. Pier	1)	Pontoon	1,624.5	Made of steel plates (50m X 12m) with anchor/crane
		2)	Access bridge	554.8	Made of steel plates (45m X 6m)
			Total	2,179.3	
	b. Others	1)	Substructure works	740.0	Made from concrete for access bridge and scour
		2)	Lighting	38.4	
			Total	778.4	
	c. Riverside Promenade	1)	Promenade	240.0	
		2)	Resting place	0.4	
		3)	Site Preparation	15.0	
			Total	255.4	
A)	Construction costs total			3,213.1	
B)	Engineering and design			192.8	Construction costs A) X 6%
C)	Survey, study and preparation works			32.1	Construction costs A) X 1%
D)	Contingency			171.9	Total costs A)+B)+C) X 5%
E)	Sub-project costs total			3,609.9	A)+B)+C)+D)
Construction of Training Lodges					
	a. Training Lodges	1)	Lodges	265.0	10 rooms each for Veinte de Enero and San Martin Tipischa (including other required facilities and utilities)
		2)	Landscaping	15.0	30% of site area
		3)	Site Preparation	12.5	

		Total	292.5	
	b. Pier	1) Floating platform	4.0	Made of wood (5m X 3m) for each place
		2) Access bridge	4.0	Made of wood (10m X 2m) for each place
		Total	8.0	
A)	Construction costs total		300.5	
B)	Engineering and design		18.0	Construction costs A) X 6%
C)	Survey, study and preparation works		3.0	Construction costs A) X 1%
D)	Contingency		16.1	Total costs A)+B)+C) X 5%
E)	Sub-project costs total		337.6	A)+B)+C)+D)
Sign System Program				
	Sign system program	1) Sign and information	22.5	10 sets for Iquitos and 5 sets for Nauta
A)	Construction costs total		22.5	
B)	Engineering and design		1.4	Construction costs A) X 6%
C)	Survey, study and preparation works		0.2	Construction costs A) X 1%
D)	Contingency		1.2	Total costs A)+B)+C) X 5%
E)	Sub-project costs total		25.3	A)+B)+C)+D)
Participatory Tourism Support Program				
	a. Visitor facilitation at control post	1) Toilet, radio, first aid etc.	380.0	
	b. Participatory Tourism Support Program		76.3	1 % of total development cost in each tourism corridor
A)1	Construction cost total		380.0	
A)2	Program cost total		76.3	
B)	Engineering and design		22.8	Construction costs A)1 X 6%
C)	Survey, study and preparation works		3.8	Construction costs A)1 X 1%
D)	Contingency		24.1	Total costs A)1+A)2+B)+C) X 5%
E)	Sub-project costs total		507.1	A)+B)+C)+D)
Tourism Promotion Plan				
A)	Promotional tool		209.0	
B)	Advertisement		540.0	
C)	Trade stimulation		70.0	
D)	Public relations		89.0	
E)	Cost sub-total		908.0	A)+B)+C)+D)

Note: a) Exchange rates: 1US$=106yen, 3.5 soles
b) Official tax is included in each amount.
c) Price escalation and inflation are not considered.

Source: JICA Study Team

7. Project Evaluation

7.1. Economic and Financial Feasibility

7.1.1. General

The purpose of economic analysis is to evaluate the economic feasibility of the plans from the view point of the national economy. The benefits and costs are quantified within the context of "with" and "without" assumptions in market prices and converted from market prices to economic prices. The economic feasibility is estimated using indices of economic analysis, i.e. the economic internal rate of return (EIRR), net present value (NPV) and benefit cost ratio (B/C ratio).

The objectives of the economic analysis are the three priority projects of the Trujillo – Chiclayo, Tumbes - Piura, and Amazon River Tourism Corridor Development Plans.

The purpose of financial analysis is to evaluate the financial viability of the project for the development body. Namely, the sub-projects, from which revenues are accrued, are evaluated from the viewpoint of their implementation entities. Considering the characteristics of the sub-projects, the objectives of the financial analysis are groups of sub-projects related to Northern Tourism Region Development Authority (NTRDA) which is an institutional alternative for project implementation as discussed in Chapter 3, and those of visitor facilities that charge entrance fee.

Financial analysis has been performed based on estimation of revenues and investment and operation/ maintenance costs. Additionally, financial conditions of the required fund have been assumed. Based on the said estimations and assumptions, the profit and loss statement and the cash flow are tabulated, the first year of continuous annual surplus is examined, and the financial internal rates of return (FIRR) are calculated.

7.1.2. Economic Analysis

(1) General assumptions

The following basic assumptions are made:

a. Benefits

The estimation process of economic benefits is referred to in the Chapter 2. The planning years of benefits estimation are 2005 and 2015.

b. Costs

The prices are those prevailing in January 2000. No inflation is assumed. A conversion factor of 0.71 is applied to convert financial costs into economic costs to be consistent with the Phase 1 Master Plan Study.

The costs comprise of two components of the public sector and the private sector. The public sector covers the development project related to archeological park/site, cultural park/site, museum, and transportation. It is assumed that transport-related sub-projects will contribute to sectors other than tourism; therefore 30% of the development costs are related to tourism, similar to the assumption in the Phase 1 Master Plan Study. The private sector is in charge of hotel development costs.

The costs for hotel development are estimated through multiplying the incremental number of hotel rooms by the assumed unit price per room. The incremental number of hotel rooms by Tourism Corridor are obtained as a difference of the number of rooms between those in "with project" situation and those in "without project" situation.

The unit cost per room by Tourism Corridor is estimated as follows and the unit cost by hotel category is assumed as follows:

Table 7.1 Unit cost by hotel category

High class hotel	:	US$ 90,000 per room
Middle class hotel	:	US$ 40,000 per room
Low class hotel	:	US$ 10,000 per room

Source: Information based on interviews with construction companies in Peru

The share by hotel category by Tourism Corridor is assumed by considering the visitor characteristic of each Tourism Corridor as follows:

Table 7.2 Share by hotel category

	Trujillo- Chiclayo	Tumbes- Piura	Amazon River
High class	20%	10%	30%
Middle class	50%	60%	40%
Low class	30%	30%	30%

Source: JICA Study Team

Thus, the unit cost per room by Tourism Corridor is estimated as follows:

Table 7.3 Unit cost per room by Tourism Corridor

	Trujillo-Chiclayo	Tumbes-Piura	Amazon River
Unit cost per room (US$)	41,000	36,000	46,000

Source: JICA Study Team

Operation and maintenance costs are assumed to be 30% of the total project cost. In the case of hotels, the operation and maintenance costs are assumed to be 50% of the benefits accrued from the incremental visitor expenditures.

c. Cost-benefit analysis

The cost benefit analysis follows the conventional discounted cash flow methodology. The NPV and B/C ratio are estimated using a discount rate of 12% using standard practices, following the Phase 1 Master Plan Study. The period of evaluation is from 2000 to 2025. The investment costs are distributed in accordance with the assumed implementation schedule (from 2000 to 2005). The operation and maintenance costs are distributed after 2006.

The benefits for years between 2005 and 2015 are estimated by interpolation. The annual distribution of benefits is assumed to start from 2006 and follow the above interpolation until 2010 considering a duration of investment impact, being constant after 2011.

(2) Trujillo – Chiclayo Tourism Corridor Development Plan

a. Estimation of benefits

The estimation of benefits for Trujillo – Chiclayo Tourism Corridor Development Plan is made as follows. Detailed procedures are referred to in Section 2.2 of Chapter 2:

The visitor expenditures including non-hotel users in "with project" situation for Trujillo – Chiclayo Tourism Corridor Development Plan are estimated based on the tourism demand framework. The results are shown in Table 7.4 and Trujillo – Chiclayo Tourism Corridor Development Plan are estimated based on the assumed growth ratio. The results are shown in Figure 7.5.

Table 7.4 Estimation of visitor expenditures for Trujillo – Chiclayo Tourism Corridor Development Plan ("with project")

Trujillo - Chiclayo	Demand (x 1,000) (With)			Expenditures (US$ 1,000) (With)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	2,145	3,501	6,035	12,870	21,006	36,210
Bed-nights	(7,277)	(11,638)	(20,122)			
Hotel	3,032	4,849	8,384	57,608	92,131	159,296
Non-hotel	4,245	6,789	11,738	25,469	40,732	70,426
Subtotal				95,947	153,869	265,932
(International)						
Arrivals	124	305	545	744	1,830	3,270
Bed-nights	(418)	(1,060)	(2,220)			
Hotel	209	530	1,110	24,871	63,070	132,090
Non-hotel	209	530	1,110	1,254	3,180	6,660
Subtotal				26,869	68,080	142,020
Total				122,816	221,949	407,952

Source: JICA Study Team

Table 7.5 Estimated visitor expenditures for Trujillo – Chiclayo Tourism Corridor Development Plan ("without project")

Trujillo - Chiclayo	Demand (x 1,000) (Without)			Expenditures (US$ 1,000) (Without)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	2,145	2,880	3,985	12,870	17,281	23,910
Bed-nights	(7,277)	(9,771)	(13,519)			
Hotel	3,032	4,071	5,633	57,608	77,352	107,023
Non-hotel	4,245	5,700	7,886	25,469	34,198	47,315
Subtotal				95,947	128,831	178,248
(International)						
Arrivals	124	166	230	744	999	1,382
Bed-nights	(418)	(561)	(777)			
Hotel	209	281	388	24,871	33,395	46,205
Non-hotel	209	281	388	1,254	1,684	2,330
Subtotal				26,869	36,078	49,917
Total				122,816	164,909	228,165

Source: JICA Study Team

The incremental expenditures for the Trujillo – Chiclayo Tourism Corridor Development Plan are estimated as a difference between expenditures in "with project" situation and "without project" situation, which are shown in Table 7.6. The benefits are estimated using a conversion factor of 0.59 as shown in Table 7.7.

b. Estimation of costs

The investment costs in terms of financial and economic prices for the Trujillo – Chiclayo Tourism Corridor Development Plan are summarized in Table 7.9. Among the sub-projects, "Trujillo Bypass" project is a transport-related one and, therefore, an adjustment is made. Economic costs are obtained using a conversion factor of 0.71.

The investment costs for the private sector (hotel investment) is estimated as follows:

Table 7.6 Estimated incremental visitor expenditures for the Trujillo – Chiclayo Tourism Corridor Development Plan

Trujillo - Chiclayo	Incremental Expenditures (US$ 1,000)		
	1998	2005	2015
(Domestic)			
Arrivals	0	3,725	12,300
Bed-nights			
Hotel	0	14,779	52,273
Non-hotel	0	6,534	23,111
Subtotal	0	25,038	87,684
(International)			
Arrivals	0	831	1,888
Bed-nights			
Hotel	0	29,675	85,885
Non-hotel	0	1,496	4,330
Subtotal	0	32,002	92,103
Total	0	57,040	179,787

Source: JICA Study Team

Table 7.7 Estimated benefits for the Trujillo – Chiclayo Tourism Corridor Development Plan

(US$ 1,000)

Trujillo - Chiclayo	1998	2005	2015
(Domestic)	0	14,772	51,734
(International)	0	18,881	54,341
Total	0	33,653	106,075

Source: JICA Study Team

The incremental number of hotel rooms is estimated as a difference between the number of hotel rooms for "with project" and that for "without project". The former is based on the estimated tourism demand framework (Refer to Table 7.4), and the latter is obtained from the estimated total bed-nights and the assumed occupancy rates which are the same as those in "with project" (Refer to Table 7.5 and Table 7.8.and Table 7.8.)

Table 7.8 Estimation of incremental number of hotel rooms for the Trujillo – Chiclayo Tourism Corridor Development Plan

Number of Hotel Rooms	1998	2005	2015
With Project	7,900	13,200	23,300
Without Project	7,900	10,679	14,777
Incremental	0	2,521	8,523

Source: JICA Study Team

Based on the estimated incremental number of hotel rooms and the assumed unit cost per room (refer to 2) Costs, (1) General, Section 7.1.1.), the investment costs for hotel development are estimated as summarized in Table 7.9.

c. Cost-benefit analysis

The cost-benefit analysis is made based on the above estimated benefits and costs. The results are summarized in Table 7.10, and the economic cash flow is shown in Table 7.11.

Table 7.9 Summary of investment Costs for Trujillo – Chiclayo Tourism Corridor Development Plan

	Financial Prices	Economic Prices	2000	2001	2002	2003	(US$ 2004	1,000) 2005
Public Sector								
Project Total	45,722	26,084	192	2,599	10,743	8,328	2,811	1,412
Promotion	944	671		134	134	134	134	134
(Subtotal)	46,667	26,755	192	2,733	10,877	8,463	2,945	1,546
Private Sector	103,350	73,379		14,676	14,676	14,676	14,676	14,676
Grand Total	150,017	100,133	192	17,408	25,553	23,138	17,620	16,221

Source: JICA Study Team

Table 7.10 Summary of cost-benefit analysis for Trujillo – Chiclayo Tourism Corridor Development Plan

EIRR	15.3%
NPV (US$ 1,000) at 12% of Discount Rate	24,575
B/C Ratio at 12% of Discount Rate	1.10

Source: JICA Study Team

Table 7.11 Economic cash flow for Trujillo – Chiclayo Tourism Corridor Development Plan

Year	Benefits			Costs Public			Private			Total	Net Cash Flow
	Incremental Expenditure Dom.	Intl'	Total	Invest. Cost	O/M Cost	Total	Invest. Cost	O/M Cost	Total		
2000				192		192	0		0	192	-192
2001				2,733		2,733	14,676		14,676	17,408	-17,408
2002				10,877		10,877	14,676		14,676	25,553	-25,553
2003				8,463		8,463	14,676		14,676	23,138	-23,138
2004				2,945		2,945	14,676		14,676	17,620	-17,620
2005				1,546		1,546	14,676		14,676	16,221	-16,221
2006	18,468	22,427	40,895		8,026	8,026		20,448	20,448	28,574	12,421
2007	22,164	25,973	48,137		8,026	8,026		24,069	24,069	32,095	16,042
2008	25,861	29,519	55,380		8,026	8,026		27,690	27,690	35,716	19,664
2009	29,557	33,065	62,622		8,026	8,026		31,311	31,311	39,337	23,285
2010	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2011	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2012	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2013	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2014	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2015	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2016	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2017	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2018	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2019	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2020	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2021	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2022	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2023	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2024	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906
2025	33,253	36,611	69,864		8,026	8,026		34,932	34,932	42,958	26,906

Source: JICA Study Team

The above results show that Trujillo – Chiclayo Tourism Corridor Development Plan is economically feasible.

d. Sensitivity analysis

Altering benefits and costs (initial investment costs), the effect on EIRR is examined and the results are summarized in Table 7.12.

Table 7.12 Summary of sensitivity analysis for Trujillo – Chiclayo Tourism Corridor Development Plan

	Benefits		
Costs	-10%	Base	+10%
-10%	15.3%	17.1%	18.7%
Base	13.6%	15.3%	16.9%
+10%	12.1%	13.8%	15.3%

Source: JICA Study Team

e. Other benefits (employment effect)

The other benefits are effects on employment. The employment for Trujillo – Chiclayo Tourism Corridor Development Plan is estimated as shown in Table 7.13, based on the procedure for estimation presented in Section 2.2. The figures show that there will be about 52 and 91 thousands tourism-related employment in 2005 and 2015 respectively, that is, incremental employment of about 21 and 60 thousands are expected in 2005 and 2015 respectively compared to 1998.

Table 7.13 Estimation of employment for Trujillo – Chiclayo Tourism Corridor Development Plan

Trujillo - Chiclayo	1998	2005	2015
Direct Employment in Hotel Sector	7,900	13,200	23,300
Direct Employment Outside Hotel Sector	10,349	17,292	30,523
Total Direct Employment	18,249	30,492	53,823
Indirect Employment	12,640	21,120	37,280
Total Estimated Employment	30,889	51,612	91,103

Source: JICA Study Team

According to the statistical data, the total number of economically active population (EAP) in 1993 in La Libertad and Lambayeque department is about 652 thousands. Using the estimated growth ratio of EAP in the whole Peru shown in the report of “Perú: Estimaciones y Proyecciones de la Poblacíon Economicamente Activa: 1970-2015”, (3.12% for 1995 - 2000, 2.93% for 2000 – 2005, 2.59% for 2005 – 2010 and 2.22% for 2010 – 2015), the total EAP in La Libertad and Lambayeque Departments are estimated to be about 934 and 1,185 thousands in 2005 and 2015, respectively. The share ratios of the above estimated tourism-related employment to EAP are estimated to be roughly 6% and 8% in 2005 and 2015, respectively.

(3) Tumbes - Piura Tourism Corridor Development Plan

a. Estimation of benefits

The estimation of the benefits for the Tumbes – Piura Tourism Corridor Development Plan are as follows:

The visitor expenditures including non-hotel users in "with project" situation for the Tumbes – Piura Tourism Corridor Development Plan are estimated based on the tourism demand framework. The estimation results are shown in Table 7.14.

Table 7.14 Estimation of visitor expenditures for Tumbes – Piura Tourism Corridor Development Plan ("with project")

Tumbes - Piura	Demand (x 1,000) (With)			Expenditures (US$ 1,000) (With)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	748	2,767	4,320	4,488	16,602	25,920
Bed-nights	(2,846)	(10,082)	(15,588)			
Hotel	1,186	4,201	6,495	22,534	79,819	123,405
Non-hotel	1,660	5,881	9,093	9,962	35,288	54,558
Subtotal				36,984	131,709	203,883
(International)						
Arrivals	35	81	133	210	486	798
Bed-nights	(98)	(234)	(448)			
Hotel	49	117	224	5,831	13,932	26,656
Non-hotel	49	117	224	294	702	1,344
Subtotal				6,335	15,111	28,798
Total				43,319	146,820	232,681

Source: JICA Study Team

The visitor expenditures including non-hotel users in "without project" situation for the Tumbes – Piura Tourism Corridor Development Plan are estimated based on the assumed growth ratio. The estimation results are shown in Table 7.15.

Table 7.15 Estimation of visitor expenditures for Tumbes – Piura Tourism Corridor Development Plan ("without project")

Tumbes - Piura	Demand (x 1,000) (Without)			Expenditures (US$ 1,000) (Without)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	748	1,004	1,390	4,488	6,026	8,338
Bed-nights	(2,846)	(3,822)	(5,288)			
	1,186	1,592	2,203	22,534	30,257	41,863
Non-hotel	1,660	2,230	3,085	9,962	13,377	18,508
Subtotal				36,984	49,660	68,709
(International)						
Arrivals	35	47	65	210	282	390
Bed-nights	(98)	(132)	(182)			
Hotel	49	66	91	5,831	7,829	10,833
Non-hotel	49	66	91	294	395	546
Subtotal				6,335	8,506	11,769
Total				43,319	58,166	80,478

Source: JICA Study Team

The incremental expenditures for the Tumbes – Piura Tourism Corridor Development Plan are estimated as a difference between expenditures in "with project" and "without project" situations, which are shown in Table 7.16.

Table 7.16 Estimation of incremental visitor expenditures for the Tumbes – Piura Tourism Corridor Development Plan

Tumbes - Piura	Incremental Expenditures (US$ 1,000)		
	1998	2005	2015
(Domestic)			
Arrivals	0	10,576	17,582
Bed-nights			
Hotel	0	49,562	81,542
Non-hotel	0	21,911	36,050
(Subtotal)	0	82,049	135,174
(International)			
Arrivals	0	204	408
Bed-nights			
Hotel	0	6,094	15,823
Non-hotel	0	307	798
(Subtotal)	0	6,605	17,029
Total	0	88,654	152,203

Source: JICA Study Team

The benefits are estimated using a conversion factor of 0.59 as shown in Table 7.17.

Table 7.17 Estimation of benefits for the Tumbes – Piura Tourism Corridor Development plan

(US$ 1,000)

Tumbes - Piura	1998	2005	2015
(Domestic)	0	48,409	79,753
(International)	0	3,897	10,047
Total	0	52,306	89,800

Source: JICA Study Team

b. Estimation of costs

The investment costs in terms of financial and economic prices for the Tumbes – Piura Tourism Corridor Development Plan are summarized in Table 7.19. "Tumbes Airport" project is regarded as a transport related one so that an adjustment is made. After the above adjustment, economic costs are obtained using a conversion factor of 0.71.

The investment costs for the private sector (hotel investment) is estimated as follows:

The incremental number of hotel rooms is estimated as a difference between the numbers of hotel rooms for "with project" and "without project". The former is based on the estimated tourism demand framework (Refer to Table 7.14), and the latter is obtained from the estimated total bed-nights and the assumed occupancy rates which are the same as those in "with project" (Refer to Table 7.15). Here, some adjustment is made for the latter. That is, when comparing the numbers in 1998 and 2005, the number in 2005 is less

than that in 1998.The number in 1998 is applied as the number in 2005. (Refer to Table 7.18.)

Table 7.18 Estimation of incremental number of hotel rooms for Tumbes – Piura Tourism Corridor Development Plan

Number of Hotel Rooms	1998	2005	2015
With Project	4,200	10,600	16,500
Without Project			
Before Adjustment	4,200	4,071	5,634
Adjusted	4,200	4,200	5,634
Incremental	0	6,400	10,866

Source: JICA Study Team

Based on the above estimated incremental number of hotel room and the assumed unit cost per room, the investment costs for hotel development are estimated as summarized in Table 7.19.

Table 7.19 Summary of investment costs for Tumbes – Piura Tourism Corridor Development Plan

Tumbes-Piura	Financial Prices	Economic Prices	2000	2001	2002	2003	(US$ 1,000) 2004	2005
Public Sector								
Project Total	15,018	8,031	27	569	2,100	1,883	2,213	1,239
Promotion	483	345		69	69	69	69	69
(Subtotal)	15,501	8,375	27	638	2,169	1,952	2,282	1,308
Private Sector	230,400	163,584		32,717	32,717	32,717	32,717	32,717
Grand Total	245,901	171,959	27	33,355	34,886	34,668	34,999	34,025

Source: JICA Study Team

c. Cost-benefit analysis

The cost-benefit analysis are made based on the above estimated benefits and costs. The results are summarized in Table 7.20, and the economic cash flow is shown in Table 7.21.

Table 7.20 Summary of the cost-benefit analysis for the Tumbes – Piura Tourism Corridor Development Plan

EIRR	12.8%
NPV (US$ 1,000) at 12% of Discount Rate	8,870
B/C Ratio at 12% of Discount Rate	1.03

Source: JICA Study Team

The above results show that Tumbes– Piura Tourism Corridor Development Plan is economically feasible.

Table 7.21 Economic cash flow for the Tumbes – Piura Tourism Corridor Development Plan

(US$ 1,000)

Year	Benefits			Costs						Total	Net Cash Flow
				Public			Private				
	Incremental Expenditure			Invest. Cost	O/M Cost	Total	Invest. Cost	O/M Cost	Total		
	Dom.	Intl'	Total								
2000				27		27	0		0	27	-27
2001				638		638	32,717		32,717	33,355	-33,355
2002				2,169		2,169	32,717		32,717	34,886	-34,886
2003				1,952		1,952	32,717		32,717	34,668	-34,668
2004				2,282		2,282	32,717		32,717	34,999	-34,999
2005				1,308		1,308	32,717		32,717	34,025	-34,025
2006	51,543	4,512	56,055		2,201	2,201		28,028	28,028	30,228	25,827
2007	54,678	5,127	59,805		2,201	2,201		29,903	29,903	32,103	27,702
2008	57,812	5,742	63,554		2,201	2,201		31,777	31,777	33,978	29,576
2009	60,947	6,357	67,304		2,201	2,201		33,652	33,652	35,853	31,451
2010	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2011	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2012	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2013	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2014	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2015	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2016	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2017	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2018	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2019	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2020	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2021	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2022	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2023	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2024	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326
2025	64,081	6,972	71,053		2,201	2,201		35,527	35,527	37,727	33,326

Source: JICA Study Team

d. Sensitivity analysis

Altering benefits and costs (initial investment costs), the effect on EIRR is examined and the results are summarized in Table 7.22. In some severer cases, EIRR values show a level below 12%.

Table 7.22 Summary of sensitivity analysis for the Tumbes – Piura Tourism Corridor Development Plan

	Benefits		
Costs	-10%	Base	+10%
-10%	12.8%	14.2%	15.5%
Base	11.5%	12.8%	14.1%
+10%	10.3%	11.6%	12.8%

Source: JICA Study Team

e. Other benefits (employment effect)

The other benefits are effects on employment. The employment for Tumbes – Piura Tourism Corridor Development Plan is estimated as shown in Table 7.23. The figures

show that there will be about 41 and 65 thousands tourism-related employment in 2005 and 2015 respectively, that is, incremental employment of about 25 and 48 thousands are expected in 2005 and 2015, respectively compared to 1998.

Table 7.23 Estimation of employment for the Tumbes – Piura Tourism Corridor

	1998	2005	2015
Direct Employment in Hotel Sector	4,200	10,600	16,500
	5,502	13,886	21,615
Total Direct Employment	9,702	24,486	38,115
Indirect Employment	6,720	16,960	26,400
Total Estimated Employment	16,422	41,446	64,515

Source: JICA Study Team

According to the statistical data, the total number of economically active population (EAP) in 1993 in Tumbes and Piura department is about 449 thousands. Using the estimated growth ratio of EAP for the whole Peru in the same report as used for the Trujillo - Chiclayo Tourism Corridor, the total EAP in Tumbes and Piura Departments are estimated to be about 644 and 817 thousands in 2005 and 2015, respectively. The share ratio of the above estimated tourism-related employment to EAP is estimated to be roughly 6% and 8% in 2005 and 2015, respectively.

(4) Amazon River Tourism Corridor Development Plan

a. Estimation of benefits

The estimation of benefits for Amazon River Tourism Corridor Development Plan are as follows:

The visitor expenditures including non-hotel users in “with project” situation for Amazon River Tourism Corridor Development Plan are estimated based on the tourism demand framework. The estimation results are shown in Table 7.24.

The visitor expenditures including non-hotel users in “without project” situation for Amazon River Tourism Corridor Development Plan are estimated based on the assumed growth ratio. The estimation results are shown in Table 7.25.

Table 7.24 Estimation of visitor expenditures for the Amazon River Tourism Corridor Development Plan ("with project")

Amazon	Demand (x 1,000) (With)			Expenditures (US$ 1,000) (With)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	282	787	1,204	1,692	4,722	7,224
Bed-nights	(1,229)	(3,293)	(4,992)			
Hotel	512	1,372	2,080	9,728	26,068	39,520
Non-hotel	717	1,921	2,912	4,301	11,525	17,472
Subtotal				15,721	42,315	64,216
(International)						
Arrivals	106	291	500	636	1,746	3,000
	(330)	(934)	(1,890)			
Hotel	165	467	945	19,635	55,573	112,455
Non-hotel	165	467	945	990	2,802	5,670
Subtotal				21,261	60,121	121,125
Total				36,982	102,436	185,341

Source: JICA Study Team

Table 7.25 Estimation of visitor expenditures for the Amazon River Tourism Corridor Development Plan ("without project")

Amazon	Demand (x 1,000) (Without)			Expenditures (US$ 1,000) (Without)		
	1998	2005	2015	1998	2005	2015
(Domestic)						
Arrivals	282	379	524	1,692	2,272	3,143
Bed-nights	(1,229)	(1,650)	(2,283)			
Hotel	512	688	951	9,728	13,062	18,072
Non-hotel	717	962	1,332	4,301	5,775	7,990
Subtotal				15,721	21,109	29,205
(International)						
Arrivals	106	142	197	636	854	1,182
Bed-nights	(330)	(443)	(613)			
Hotel	165	221	306	19,635	26,365	36,477
	165	221	306	990	1,329	1,839
Subtotal				21,261	28,548	39,498
Total				36,982	49,657	68,703

Source: JICA Study Team

The incremental expenditures for the Amazon River Tourism Corridor Development Plan are estimated as a difference between the expenditures in "with project" and "without project" situations as shown in Table 7.26. The benefits are estimated using a conversion factor of 0.59 as shown in Table 7.27.

Table 7.26 Estimation of incremental visitor expenditures for Amazon River Tourism Corridor Development Plan

Amazon	Incremental Expenditures (US$ 1,000)		
	1998	2005	2015
(Domestic)			
Arrivals	0	2,450	4,081
Bed-nights			
Hotel	0	13,006	21,448
Non-hotel	0	5,750	9,482
Subtotal	0	21,206	35,011
(International)			
Arrivals	0	892	1,818
Bed-nights			
Hotel	0	29,208	75,978
Non-hotel	0	1,473	3,831
Subtotal	(0)	31,573	81,627
Total	0	52,779	116,638

Source: JICA Study Team

Table 7.27 Estimation of benefits for the Amazon River Tourism Corridor Development Plan

(US$ 1,000)

Amazon	1998	2005	2015
(Domestic)	0	12,512	20,656
(International)	0	18,628	48,160
Total	0	31,140	68,816

Source: JICA Study Team

b. Estimation of costs

The investment costs in terms of financial and economic prices for Amazon River Tourism Corridor Development Plan are summarized in Table 7.29. Economic costs are obtained using a conversion factor of 0.71.

The investment costs for the private sector (hotel investment) is estimated as follows:

The incremental number of hotel room is estimated as a difference between the numbers of hotel room for "with project" and "without project". The former is based on the estimated tourism demand framework (Refer to Table 7.24), and the latter is obtained by the estimated total bed-nights and the assumed occupancy rates which are the same as

Table 7.28 Estimation of incremental numbers of hotel rooms for Amazon River Tourism Corridor Development Plan

Number of Hotel Rooms	1998	2005	2015
With Project	2,100	4,500	7,300
Without Project	2,100	2,224	3,035
Incremental	0	2,276	4,265

Source: JICA Study Team

Based on the above estimated incremental number of hotel room and the assumed unit cost per room (refer to 2) Costs, (1) General, Section 7.1.1.), the investment costs for hotel development are estimated as summarized in Table 7.29.

Table 7.29 Summary of investment costs for the Amazon River Tourism Corridor Development Plan

	Financial Prices	Economic Prices	2000	2001	2002	2003	2004	2005
							(US$ 1,000)	
Public Sector								
Project Total	8,887	6,310	57	339	5,715	66	66	66
Promotion	910	646		129	129	129	129	129
(Subtotal)	9,797	6,956	57	468	5,844	196	196	196
Private Sector	104,680	74,323		14,865	14,865	14,865	14,865	14,865
Grand Total	114,477	81,279	57	15,333	20,709	15,060	15,060	15,060

Source: JICA Study Team

c. Cost-benefit analysis

The cost-benefit analysis is made based on the above estimated benefits and costs. The results are summarized in Table 7.30, and the economic cash flow is shown in Table 7.31.

Table 7.30 Summary of cost-benefit analysis for the Amazon River Tourism Corridor Development Plan

EIRR	17.0%
NPV at 12% of Discount Rate	29,402
B/C Ratio at 12% of Discount Rate	1.18

Source: JICA Study Team

The above results show that the Amazon River Tourism Corridor Development Plan is economically feasible.

Table 7.31 Summary of cost-benefit analysis for the Amazon River Tourism Corridor Development Plan

(US$ 1,000)

Year	Benefits			Costs							Net Cash Flow
				Public			Private			Total	
	Incremental Expenditure			Invest. Cost	O/M Cost	Total	Invest. Cost	O/M Cost	Total		
	Dom.	Intl'	Total								
2000				57		57	0		0	57	-57
2001				468		468	14,865		14,865	15,333	-15,333
2002				5,844		5,844	14,865		14,865	20,709	-20,709
2003				196		196	14,865		14,865	15,060	-15,060
2004				196		196	14,865		14,865	15,060	-15,060
2005				196		196	14,865		14,865	15,060	-15,060
2006	13,326	21,581	34,907		2,087	2,087		17,454	17,454	19,540	15,367
2007	14,141	24,534	38,675		2,087	2,087		19,338	19,338	21,424	17,251
2008	14,955	27,488	42,443		2,087	2,087		21,222	21,222	23,308	19,135
2009	15,770	30,441	46,211		2,087	2,087		23,106	23,106	25,192	21,019
2010	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2011	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2012	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2013	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2014	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2015	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2016	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2017	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2018	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2019	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2020	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2021	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2022	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2023	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2024	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902
2025	16,584	33,394	49,978		2,087	2,087		24,989	24,989	27,076	22,902

Source: JICA Study Team

d. Sensitivity analysis

Altering benefits and costs (initial investment costs), the effect on EIRR is examined and the results are summarized in Table 7.32.

Table 7.32 Summary of sensitivity analysis for the Amazon River Tourism Corridor Development Plan

	Benefits		
Costs	-10%	Base	+10%
-10%	17.0%	18.5%	20.0%
Base	15.5%	17.0%	18.4%
+10%	14.1%	15.6%	17.0%

Source: JICA Study Team

e. Other benefits (employment effect)

The other benefits are effects on employment. The employment for Amazon River Tourism Corridor Development Plan is estimated as shown in Table 7.33. The figures

show that there will be about 18 and 29 thousands tourism-related employment in 2005 and 2015, respectively, that is, incremental employment of about 9 and 20 thousands are expected in 2005 and 2015, respectively compared to 1998.

Table 7.33 Estimation of employment for the Amazon River Tourism Corridor Development Plan

	1998	2005	2015
Direct Employment in Hotel Sector	2,100	4,500	7,300
Direct Employment Outside Hotel Sector	2,751	5,895	9,563
Total Direct Employment	4,851	10,395	18,863
Indirect Employment	3,360	7,200	11,680
Total Estimated Employment	8,211	17,595	28,543

Source: JICA Study Team

According to the statistical data, the total number of economically active population (EAP) in 1993 in Loreto department is about 200 thousands. Using the estimated growth ratio of EAP in the whole Peru, the EAP in Loreto Department are estimated to be 287 and 364 thousands in 2005 and 2015, respectively. The share ratios of the above estimated tourism-related employment to EAP are estimated to be 6% and 8% in 2005 and 2015, respectively.

7.1.3. Financial Analysis

(1) General

The financial analysis is made for the following categories:

- Sub-projects related to NTRDA, and
- Sub-projects of visitor facilities that charge entrance fee.

a. NTRDA

As discussed previously, NTRDA has two functions represented by its Planning Division and Project Management Division. The Project Management Division is proposed to have a function to carry out the following sub-projects:

- Hermosa Beach Resort Estate Development sub-project in Tumbes,
- Parque del Baluarte sub-project in Trujillo, and
- Training Lodges sub-project in Pacaya-Samiria.

In this financial analysis, at first these three sub-projects are treated individually, and then, a financial condition of the whole NTRDA is examined.

Hermosa Beach Resort Estate Development sub-project

NTRDA will carry out land acquisition, land development, infrastructure construction, and the land sales. The developed land will be sold to the private investors who will construct and operate hotels.

Parque del Baluarte sub-project

The scope of financial analysis regarding NTRDA is a partial floor in the building of "Local Products Promotion Center and Traditional Food Court" and a building of "Car parking". NTRDA is assumed to lease these facilities to the private sector.

Traning Lodge sub-project in Pacaya-Samiria

NTRDA is assumed to build and manage the Training Lodges in the Pacaya-Samiria National Reserve. The training lodges have two functions of school and lodge. Financial analysis will be made focusing an aspect of hotel operation.

b. Visitor facilities that charge entrance fee

Financial analysis will be made for the following sub-projects of visitor facilities that charge entrance fee:

- Chan Chan Archaeological Park,
- Huacas del Sol y la Luna Archaeological Sites,
- El Brujo Archaeological Site,
- Sipan Archaeological Site,
- Batan Grande Reserve Zone,
- Allpahuayo – Mishana Museum, and
- Quistococha Tourism Complex.

The financial analysis will be made from a viewpoint to show whether the estimated revenues will cover project costs or not, and in case of deficit in cash flow, entrance fees may be revised.

c. Further financial analysis

Since the above financial analyses include assumptions for some conditions, the financial analyses should be viewed as preliminary one. The further financial analyses are to be carried out after the conditions become more concrete.

(2) Basic assumption for analysis

The following basic common assumptions are made:

a. Calculation period

The calculation period for the financial analysis is from 2000 to 2025.

b. Prices

The prices are those prevailing in January 2000. No inflation is assumed.

c. Maintenance cost

The infrastructure repair cost is assumed to be 2% of the initial investment cost for infrastructure construction.

d. Fund raising plan (equity / loan ratio)

The financial sources of the investment cost are assumed to be provided by equity and loan (long-term loan). The equity/ loan ratio is assumed as equity : 30% and loan : 70%. Disbursement of equity is assumed to be made prior to that of loan.

e. Long-term loan conditions

It is assumed that the following long-term loan is basically available:

Interest rate	:	3% per annum
Repayment Period	:	From 2005 to 2024 (20 years)

However, for the case of "Hermosa Beach Resort Estate Development sub-project", different repayment periods are assumed considering the land sale schedule.

f. Depreciation

Depreciation of the assets follows the straight line method. The life expectancies for each asset are assumed as below:

- Infrastructure / facilities : 33 years
- Establishment cost related to administration company : 5 years

Since the life expectancy for the infrastructure is longer than the calculation period, there will be some undepreciated amount. In this financial analysis, the undepreciated amount is included into the depreciated amount in the final year of the calculation period.

g. Short-term loan

It is assumed that in the case of cash flow deficit of the total financial source against the total financial use, the deficit is financed by a short-term loan. The repayment of principal and payment of interest are assumed to be made in the year following the borrowing. The interest rate of short-term loan is assumed to be 15% per annum.

(3) Financial Analysis of NTRDA

a. Hermosa Beach Resort Estate Development sub-project in Tumbes

Land development plan

The plan of the land development is designed as follows:

Hotel lots (middle class category)	:	20 ha
Hotel lots (low class category)	:	4 ha
Commercial area	:	3 ha
(Subtotal for sale)	:	27 ha
Others (roads, utilities, etc.)	:	6 ha
(Total)	:	33 ha

Implementation schedule

The implementation schedule is assumed as follows:

Design, land development and infrastructure construction is from 2000 to 2005. For the land sale schedule, the following two plans are assumed :

- Land sale plan (A) : from 2005 to 2009.
- Land sale plan (B) : from 2005 to 2014.

The details of land sale plan are shown later.

Estimated project costs

Initial investment costs

The initial investment costs for the development are referred to in Table 7.34.

Establishment costs

The costs for the establishment of administration office such as personnel cost, start-up cost, and miscellaneous cost including costs for advertisement, promotion, etc. are assumed as shown in Table 7.34. The miscellaneous cost is assumed to be constant in the both cases of the land sale plans.

Operation and maintenance costs

The annual administrative cost in the operation and maintenance costs are assumed as below:

- Personnel cost : US$ 135,000 in total annually after 2006.
- Office cost : US$ 10,000 annually after 2006.
- Miscellaneous cost : US$ 50,000 annually from 2006 to 2009, including costs for advertisement, promotion, etc. This cost is assumed to be constant in the both cases of the land sale plan of Plan (A) and Plan (B).

Table 7.34 Hermosa Beach Resort Estate : summary of estimated project costs

(US$1 ,000)

						2000	2001	2002	2003	2004	2005	2006
Initial Project Costs (Year 2000 to 2005)					(Amount)							
(A.1)	Development Cost				US$1000							
	(A.1.1) Land Acquisition				1,040		520	520				
	(A.1.2) Infrastructure Development				5,988	19	19	19	1,315	2,995	1,622	
	(Subtotal)				7,028	19	538	538	1,315	2,995	1,622	
(A.2)	Establishment Cost	(Qntity)	(Rate)	(Rate)	(Amount)							
	(A.2.1) Personnel Cost (Annual)		(Month)	(Year)	US$1000							
	General Director	1	2.5	32.5	33							
	Deputy G. Director	1	1.5	19.5	20							
	Staff	4	1.0	13.0	52							
	Clerk	4	0.6	7.8	31							
	(Subtotal - Annual)	10			135	135	135	135	135	135	135	
	(A.2.2) Start-up Cost (Total)				210	60	60	60	10	10	10	
	(A.2.3) Miscellaneous Cost (Total)				140	10	10	10	10	50	50	
	(Subtotal)					205	205	205	155	195	195	
Total						224	744	744	1,471	3,190	1,818	

Note: Operation and maintenance costs are omitted.

Source: JICA Study Team

Estimated project revenue

Estimated land area for sale

The following two cases of the land sale plan are assumed:

1) Land sale plan (A)

- Hotel lots (middle class category) : annually 4 ha from 2005 to 2009.
- Hotel lots (low class category) : annually 1 ha from 2006 to 2009.
- Commercial area : in 2009 (3 ha).

2) Land sale plan (B)

- Hotel lots (middle class category): annually 2 ha from 2005 to 2014
- Hotel lots (low class category): annually 1ha in 2006, 2008, 2010 and 2012
- Commercial area: in 2009 (3 ha)

Assumption on unit land sale price

The level of unit land sale price is assumed based on the following examination from a viewpoint of "cost recovery":

Regarding the unit land sale price, while "hotel lots (middle class category)" is the same as "commercial area", "hotel lots (low class category)" is two thirds of "hotel lots (middle class category)". The land area for sale is converted in terms of "hotel lots (middle class category) equivalent unit" as shown below:

The unit cost per square meter in terms of "Hotel lots (middle class category) equivalent unit" is estimated as follows:

		Gross	Factor	Middle Class Category Equivalent Unit
Hotel lots (middle class category)	:	20 ha	1	20 ha
Hotel lots (low class category)	:	4 ha	2/3	2.7 ha
Commercial area	:	3 ha	1	3 ha
(Total)	:	27 ha		25.7 ha

The estimated total development cost is US$ 7,028 thousands, which is equivalent to US$ 27.3 per square meter. The assumed establishment cost is US$ 1,160 thousands, which is equivalent to US$ 4.5 per square meter. The financing cost (interest cost for long-term loan) is different by the assumed long-term loan conditions which are shown in later. Under the assumed equity/ loan ratio, the financing cost per square meter is estimated as follows:

		Estimated Total Interest Amount	Financing Cost per Square Meter
Loan (A)	:	US$ 484 thousands	US$ 1.9
Loan (B)	:	US$ 914 thousands	US$ 3.6

While the condition of Loan (A) is an interest rate of 3% per annum with repayment period from 2005 to 2009 (5 years), that of Loan (B) is an interest rate of 3% per annum with repayment period from 2005 to 2014 (10 years), in accordance with the schedule of "Land Sale Plan (A)" and "Land Sale Plan (B)."

As a result, the total costs per square meter to be covered by land price are estimated as follows:

In Case of Loan (A)	:	US$ 33.7
In Case of Loan (B)	:	US$ 35.4

Consequently, the level of unit land sale price for "Hotel lots (middle class category)" is assumed to be the two cases of US$ 34 and US$ 36.

Administration / utility charge

The unit prices of administration/ utility charges are assumed to be US$ 2.0 per square meter per annum. The charges for the period of first five years of 2005 to 2009 will be exempted for the sake of promotion purpose.

Calculation cases

The following calculation cases are assumed:

Basic Case No.	Case No.	Unit Land Sale Price	Land Sale Plan	Loan Condition (Interest Rate, Repayment Period)
(1)	(1-a)	US$ 34	Plan (A): 2005 to 2009	Loan (A): 3% : 5 years (2005-2009)
(2)	(2-a)		Plan (B): 2005 to 2014	Loan (B): 3% : 10 years (2005-2014)
(1)	(1-b)	US$ 36	Plan (A): 2005 to 2009	Loan (A): 3% : 5 years (2005-2009)
(2)	(2-b)		Plan (B): 2005 to 2014	Loan (B): 3% : 10 years (2005-2014)

Financial analysis results

The financial analysis results for the two cases are summarized in Table 7.35.

For the case of unit land price of US$ 34, Case (1-a) shows a stable financial condition, representing FIRR value of 5.4% (which is over 3.0%, a level of interest rate in the assumed loan), a first year for an annual surplus in profit and loss in 2005 and an annual surplus in cash flow in 2009, which is equivalent to the final year of land sale.

Table 7.35 Hermosa Beach Resort Estate : summary of financial analysis (unit land sale price : US$ 34 and US$ 36 in "the middle class category")

Unit Land Sale Price	US$ 34		US$ 36	
Basic Case No.	(1)	(2)	(1)	(2)
Land Sale Plan	Sale (A)	Sale (B)	Sale (A)	Sale (B)
Loan	Loan (A)	Loan (B)	Loan (A)	Loan (B)
Case No.	Case (1-a)	Case (2-a)	Case (1-b)	Case (2-b)
FIRR	5.4%	3.7%	6.3%	4.4%
First Year of Surplus (Year)				
1) Annual Surplus in Profit & Loss	2005	2009	2005	2008
2) Accumulated Surplus in Profit & Loss	2005	2009	2005	2008
3) Annual Surplus in Cash Flow	2009	2012	2006	2010
Short-term Loan				
1) Final Year of Borrow	2008	2011	2005	2009
2) Maximum Annual Amount (US$ 1,000)	139	1,013	83	652
3) Year of Maximum Amount (Year)	2006	2008	2004	2007

Source: JICA Study Team

For the case of unit land price of US$ 36, Case (2-b) shows a stable financial condition, representing FIRR value of 4.4%, a first year for an annual surplus in profit and loss in 2008 and an annual surplus in cash flow in 2010.

When supposing such a severe case as with a loan condition of interest rate of 10% per annum and repayment period of 5 years (without grace period) and the 10 years land sale schedule from 2005 to 2014, a trial by changing unit land price reveals that the price level of US$ 46 will make such a case financially improved representing an annual surplus in cash flow in 2014 which is equivalent to the final year of land sale. However, considering a large amount of short-term loan with a maximum annual amount of about US$ 5 million in 2008, its financial condition is judged to be still very severe.

As examples, the tabulations of the profit and loss, the cash flow and FIRR for the calculation case of (1-a) in the unit land sale price of US$ 34 are shown from Table 7.47 to Table 7.49.

b. Parque del Baluarte sub-project in Trujillo

General

The following components of the Parque del Baluarte sub-project in Trujillo are assumed to be the objectives of financial analysis:

Out of the above components, from (*1) to (*3) are assumed to be carried out by the Project Management Division of NTRDA. The total floor areas of (*1) and (*2) are assumed to be a half of total area of the building. The assumed total floor areas related to the sub-project is 6,750 m^2. NTRDA is assumed to lease these spaces to private sector companies.

Building / Section		Floor Area
1) Building of "Local Products Promotion Centers and Traditional Foods Court"		3,500 m^2
- Handicrafts Shops (for small-medium enterprises)		
- Handicraft Training Center		
- Handicraft Shops (up-market)	(*1)	((*1)+(*2) =
- Restaurant	(*2)	1,750 m^2)
2) Car Parking Building	(*3)	5,000 m^2

Implementation schedule

The implementation schedule is assumed that construction is from 2001 to 2004, and the operation will start from 2005.

Estimated project costs

Initial construction cost

The initial construction cost are referred to in Table 7.36. The total construction cost for (*1) and (*2) is assumed to be a half of that of the building of "the Local Products Promotion Center and Traditional Foods Court."

Establishment cost

The costs for the establishment of an administration office such as personnel cost, start-up cost, and miscellaneous cost including costs for advertisement, promotion, etc. are assumed as shown in Table 7.36.

Operation and maintenance costs

The annual administrative cost in the operation and maintenance costs are assumed as follows:

- Personnel cost : US$ 61,000 in total annually after 2005.

- Office cost : US$ 5,000 annually after 2005 .
- Miscellaneous cost : US$ 10,000 annually from 2005 to 2007 including costs for advertisement, promotion, etc.

Table 7.36 Parque del Baluarte : Summary of Estimated Project Cost

(US$1 ,000)

						2000	2001	2002	2003	2004	2005	2006
Initial Project Costs (Year 2000 to 2005)					(Amount)							
(A.1)	Development Cost				US$1000							
	(A.1.1)											
	(A.1.2)	Construction			2,669		25	150	1,247	1,247		
	(Subtotal)				2,669		25	150	1,247	1,247		
(A.2)	Establishment Cost	(Qntity)	(Rate)	(Rate)	(Amount)							
	(A.2.1)	Personnel Cost (Annual)		(Month)	(Year)	US$1000						
		General Director		2.5	32.5							
		Deputy G. Director	1	1.5	19.5	20						
		Staff	2	1.0	13.0	26						
		Clerk	2	0.6	7.8	16						
		(Subtotal - Annual)	5			61		61	61	61	61		
	(A.2.2)	Start-up Cost (Total)				60		25	25	5	5		
	(A.2.3)	Miscellaneous Cost (Total)				60		10	10	20	20		
	(Subtotal)							96	96	86	86		
(Total)							121	246	1,333	1,333		

Note: Operation and maintenance costs are omitted.

Source: JICA Study Team

Estimated project revenues

It is assumed that lease fee and administration/utility charge are the main revenue items for NTRDA. The annual lease fee is estimated by using the following formula:

$$L = P \times (r \times (1 + r)^n) / ((1 + r)^n - 1)$$

where; L : Annual lease fee
P : Price of property
R : Interest rate
N : Lease period

Price of property is US$ 3,033,000 including construction cost and establishment cost. It is assumed that interest rate is 4% (the interest rate of 3% of the assumed long-term loan plus 1%) and lease period is 20 years. As a result, the annual lease fee of US$ 223,000 is obtained.

The administration/utility charge is assumed to be US$ 20 per square meter per annum.

The occupancy rates are assumed to be 0.5, 0.75 and 1.0 for the first, second, and after-third years, respectively.

Financial analysis results

The financial analysis results are shown in Table 7.37.

Table 7.37 Parque del Baluarte : Summary of Financial Analysis Results

FIRR	3.5%
First Year of Surplus (Year)	
1) Annual Surplus in Profit & Loss	2008
2) Accumulated Surplus in Profit & Loss	2013
3) Annual Surplus in Cash Flow	2011
Short-term Loan	
1) Final Year of Borrow	2010
2) Maximum Annual Amount (US$ 1,000)	239
3) Year of Maximum Amount (Year)	2006

Source: JICA Study Team

In profit and loss, first year for an annual surplus is 2008 and accumulated surplus is 2013. Annual surplus in cash flow is 2011, which is equivalent to the sixth year after operation. FIRR value is larger than the interest rate of the assumed loan. As a whole, it can be said that financial condition is fair.

For references, the tabulations of the profit and loss, the cash flow and FIRR are shown from Table 7.50 to Table 7.52.

c. Training Lodges sub-project in the Pacaya-Samiria National Reserve

General

The proposed training lodge in Pacaya-Samiria has two functions of tourism school lodge for visitors. This financial analysis will focus on the aspect of operation of lodges. The proposed number of rooms is twenty in total.

Implementation schedule

The implementation schedule is assumed that construction is from 2000 to 2002, and operation will start from 2003.

Estimated project costs

Initial construction cost

The initial construction cost are referred to Table 7.38.

Establishment cost

The cost for the establishment of administration office such as personnel cost, start-up cost and miscellaneous cost including costs for advertisement, promotion, etc. are assumed as shown in Table 7.38.

Operation and maintenance costs

The annual administrative cost in the operation and maintenance costs is assumed as below:

- Personnel cost : US$ 48,000 in total annually after 2003.
- Office cost : US$ 5,000 annually after 2003.
- Miscellaneous cost : US$ 10,000 annually from 2003 to 2005 including costs for advertisement, promotion, etc.

Besides the above costs, the teaching cost including personnel cost for lecturers is assumed to be USD 40,000 per annum, and the operating cost for lodges is assumed to be 30% of the lodge room revenues.

Table 7.38 Training Lodge : summary of estimated project cost

(US$1 ,000)

						2000	2001	2002	2003	2004	2005	2006
Initial Project Costs (Year 2000 to 2005)					(Amount)							
(A.1)	Development Cost				US$1000							
	(A.1.1)											
	(A.1.2)	Construction			338	3	19	316				
	(Subtotal)				338	3	19	316				
(A.2)	Establishment Cost	(Qntity)	(Rate)	(Rate)	(Amount)							
	(A.2.1)	Personnel Cost (Annual)		(Month)	(Year)	US$1000							
		General Director		2.5	32.5							
		Deputy G. Director	1	1.5	19.5	20						
		Staff	1	1.0	13.0	13						
		Clerk	2	0.6	7.8	16						
		(Subtotal - Annual)	4			48	48	48	48			
	(A.2.2)	Start-up Cost (Total)				30	10	10	10			
	(A.2.3)	Miscellaneous Cost (Total)				30	10	10	10			
	(Subtotal)						68	68	68			
(Total)							71	87	384			

Note: Operation and maintenance costs are omitted.

Source: JICA Study Team

Estimated project revenues

While the occupancy rate of rooms is assumed to be 0.6, 0.4 and 0.5 for the first /second years and for third/fourth years of operation are assumed respectively. The room rate is assumed to be US$ 50.

The revenues of schooling fee from trainee is not included in this financial analysis.

Financial analysis results

The financial analysis results are shown in Table 7.39.

Table 7.39 Training Lodges : summary of financial analysis results

FIRR	5.0%
First Year of Surplus (Year)	
1) Annual Surplus in Profit & Loss	2008
2) Accumulated Surplus in Profit & Loss	2016
3) Annual Surplus in Cash Flow	2011
Short-term Loan	
1) Final Year of Borrow	2010
2) Maximum Annual Amount (US$ 1,000)	79
3) Year of Maximum Amount (Year)	2006

Source: JICA Study Team

FIRR shows 5.0%. In profit and loss, first year for an annual surplus is 2008 and accumulated surplus is 2016. Annual surplus in cash flow is 2011, which is equivalent to the eighth year after operation. FIRR value shows over the level of the interest rate of the assumed loan. As a whole, it can be said that financial condition is stable.

For references, the tabulations of the profit and loss, the cash flow and FIRR are shown from Table 7.53 to Table 7.55.

d. Financial condition of the whole NTRDA

General

By combining the financial statements regarding the three sub-projects carried out by NTRDA's Project Management Division and the administrative costs for its Planning Division, the aggregated financial statements of NTRDA as a whole is obtained. The administrative cost for the Planning Division is assumed to be financed by the subsidy from the national government.

Estimation of administrative cost of planning division

Personnel cost

Based on the number of personnel proposed for NTRDA in Chapter 3 and the assumed unit personnel cost, the personnel cost of Planning Division is estimated.

Office cost

The office cost is assumed to be 20 % of the above personnel cost. The summary of the estimated administrative cost the Planning Division is shown in Table 7.40.

Table 7.40 Summary of annual administrative cost for project management division of NTRDA

Administrative Cost (Annual)		(Quantity)	(Rate) (Month)	(Rate) (Year)	(Amount) US$1000
(1)	Personnel Cost				
	General Director	1	2.5	32.5	33
	Deputy G.Director	3	1.5	19.5	59
	Staff	7	1.0	13.0	91
	Clerk	11	0.6	7.8	86
	(Subtotal)	22			268
(2)	Office Cost				54
(Total)					322

Source: JICA Study Team

Financial condition of NTRDA

The aggregated financial statements of NTRDA as a whole are shown in from Table 7.56 to Table 7.58. The administrative cost for Planning Division is reckoned both in a cost (or cash-out) item and a revenue (or cash-in) item as a subsidy.

Since the magnitude of revenues and costs of "Hermosa Beach Resort Estate" sub-project is dominant compared with other sub-projects, naturally, the financial analysis results of "whole NTRDA" are affected by the "Hermosa Beach Resort Estate" sub-project. The financial analysis results of "whole NTRDA" are shown in Table 7.41.

For the calculation case of (1-a) in "Hermosa Beach Resort Estate" sub-project, in profit and loss, first year for an annual surplus is 2005 and accumulated surplus is 2005. Annual surplus in cash flow is 2009. FIRR values show over 3.0% for each case. As a whole, it can be said that financial condition is stable.

Table 7.41 Whole NTRDA : summary of financial analysis results

	Hermosa Beach	Parque del Baluarte	Training Loadge	Whole NTRDA
FIRR	4.7%	3.7%	5.2%	4.1%
First Year of Surplus (Year)				
1) Annual Surplus in Profit & Loss	2005	2009	2005	2008
2) Accumulated Surplus in Profit & Loss	2005	2009	2005	2009
3) Annual Surplus in Cash Flow	2009	2011	2008	2010
Short-term Loan				
1) Final Year of Borrow	2008	2010	2007	2009
2) Maximum Annual Amount(US$ 1,000)	456	1,221	300	999
3) Year of Maximum Amount (Year)	2006	2008	2005	2008
Corresponding Calculation Case in "Hermosa Beach Resort Estate" sub-project				
Case No.	(1-a)	(2-a)	(1-b)	(2-b)
Unit Land Sale Price	US$ 34	US$ 34	US$ 36	US$ 36
Land Sale Plan	2005 - 2009	2005 - 2014	2005 - 2009	2005 - 2014
Loan Repayment Period	2005 - 2009	2005 - 2014	2005 - 2009	2005 - 2014

Source: JICA Study Team

(4) Financial analysis of visitor facilities that charge entrance fee

a. General

The following assumptions are made for the financial analysis of the 7 visitor facilities:

Incremental revenues are treated as differences between numbers of visitors in existing and those in 2005 / 2015. The revenues are composed of entrance fee and miscellaneous revenues mainly generated from souvenir sales. The entrance fee revenues are estimated by multiplying number of visitors and entrance fee. The miscellaneous revenues are estimated to be 25% and 50% of entrance fee revenues for domestic and international visitors, respectively. The revenues for years between 2005 and 2015 are estimated by interpolation. The annual distribution of revenues follows the above interpolation until 2010 considering a duration of investment impact, being constant after 2011. The annual revenues in 2003 and 2004 regarding the facilities to be opened at 2003 are estimated from the figures in 2005 and 2015.

The miscellaneous cost including promotion cost (e.g. preparation of pamphlet, etc.) is assumed to be spent in the opening year for each facility. The ratio of operating costs is assumed to be 50% for each of entrance fee revenues and miscellaneous revenues.

b. Demand and fee of visitor facilities

Numbers of visitors to respective visitor facilities are set as shown in Table 7.42. The figures are calculated from the tourism demand framework of respective Departments and visit ratios of respective facilities, which is set considering the current visit ratios and the potential of respective facilities.

As a reference, visit ratio of Machu Picchu, which is a typical “must-see” tourism site in Peru, was calculated based on the number of visitors to the World Heritage Site and the estimated number of visitor arrivals to Cusco. It shows that some 20% of the domestic visitors and 40% of the international visitors who stayed at hotels in Cusco visited Macchu Picchu. The figures are considered to be the maximum limits for the visit ratios, and those for visitor facilities in the Study Areas would not exceed the figures.

Visit ratio of the international visitors for the visitor facilities are set from 10% (El Brujo) to 30% (Chan Chan), while those of the domestic visitors are set from 1% (El Brujo) to 10% (Allpahuayo Mishana Museum).

Entrance fees are set considering the existing entrance fees for the similar visitor facilities. Some facilities are planned charge extra fees for special exhibitions and attractions in order to increase revenue.

Table 7.42 Demand framework for the visitor facilities

			1997 Arrivals	% of visit	2005 Arrivals	% of visit	2015 Arrivals	% of visit	Fee (US$)
Chan Chan Archaeological Park	1) Park Area	International	19,045	23%	59,400	30%	106,200	30%	3
		Domestic	44,037	4%	142,140	6%	266,340	3%	3
		Total	63,082	5%	201,540	8%	372,540	4%	3
	2) Special Exhibition	International	0	0%	29,700	15%	53,100	15%	2
		Domestic	0	0%	23,690	1%	44,390	3%	2
		Total	0	0%	53,390	2%	97,490	4%	2
Huaca del Sol y la Luna	1) Park Area	International	NA	-	29,700	15%	53,100	15%	3
		Domestic	NA	-	71,070	3%	133,170	3%	3
		Total	38,189	3%	100,770	4%	186,270	4%	3
	2) Sound & Light Show	International	0	0%	19,800	10%	35,400	10%	5
		Domestic	0	0%	23,690	1%	44,390	1%	5
		Total	0	0%	43,490	2%	79,790	2%	5
El Brujo		International	0	0%	29,700	15%	53,100	15%	3
		Domestic	0	0%	23,690	1%	44,390	1%	3
		Total	0	0%	53,390	2%	97,490	2%	3
Sipan Archaeological Park		International	3,016	7%	27,000	25%	47,750	25%	3
		Domestic	78,506	9%	113,200	10%	191,520	12%	3
		Total	81,522	9%	140,200	11%	239,270	13%	3
Batan Grande/ Sican		International	0	0%	16,200	15%	28,650	15%	3
		Domestic	0	0%	113,200	10%	159,600	10%	3
		Total	0	0%	129,400	10%	188,250	11%	3
Allpahuayo - Mishana Museum		International	0	0%	72,750	25%	125,000	25%	3
		Domestic	0	0%	78,700	10%	120,400	10%	3
		Total	0	0%	151,450	14%	245,400	14%	3
Complex Quistococha	Recreational park	International	3,180	3%	34,920	12%	60,000	12%	0.5
		Domestic	8,460	3%	78,700	10%	120,400	10%	0.5
		Total	11,640	3%	113,620	11%	180,400	11%	0.5
	Zoo	International	0	0%	29,100	10%	50,000	10%	2
		Domestic	0	0%	39,350	5%	60,200	5%	2
		Total	0	0%	68,450	6%	110,200	6%	2

Source: JICA Study Team

c. Estimated revenues

Table 7.43 shows a summary of estimated revenues as a "base case" in 2005 and 2010 based on the above demand framework and entrance fees.

Table 7.43 Summary of revenues of visitor facilities (base case)

Visitor Facilities	Chan Chan	Huacas del Sol y la Luna	El Brujo	Sipan	Aggrega-tion of INC projects	Batan Grande	Allpahuayo Mishana Museum	Aggrega-tion of INRENA	Quisto-cocha
2005									
Entrance Fee Rev.	454	407	159	171	(1,191)	390	411	(801)	173
Miscellaneous Rev.	157	139	62	57	(415)	107	146	(253)	58
Total	611	546	221	228	(1,606)	497	557	(1,054)	231
2010									
Entrance Fee Rev.	723	626	226	275	(1,850)	481	561	(1,042)	235
Miscellaneous Rev.	247	212	87	92	(638)	136	206	(342)	81
Total	970	838	313	367	(2,488)	617	767	(1,384)	316

Note: US$1,000
Source: JICA Study Team

d. Financial analysis results

Table 7.44 show a summary of financial analysis results in "base case".

"Chan Chan" shows a sound financial condition. "Huacas del Sol y de la Luna" shows a stable condition. Due to unsound conditions of "El Brujo" and "Sipan" from deficits in revenues amount, an aggregation of these four facilities (aggregation of INC sub-projects) represents a still poor condition. "Batan Grande" shows fair. "Allpahuayo – Mishana" and an aggregation of these two facilities (aggregation of INRENA sub-projects) show a sound condition. "Quistococha" shows a fair condition.

Table 7.44 Visitor facilities: summary of financial analysis results (base case)

Visitor Facilities	Chan Chan	Sol/ Luna	El Brujo	Sipan	Aggre-gation of INC Projects	Batan Grande	Allpahuayo – Mishana	Aggre-gation of INRENAP rojects	Quisto-Cocha
FIRR	11.0%	4.1%	(*1)	(*1)	2.0%	3.8%	18.5%	9.3%	3.4%
First Year of Surplus									
Annual Surplus in Profit & Loss	2005	2007	(*2)	(*2)	2010	2005	2003	2003	2006
Accum. Surplus in Profit & Loss	2005	2011	(*2)	(*2)	2024	2008	2003	2003	2010
Annual Surplus in Cash Flow	2005	2012	(*2)	(*2)	(*2)	2011	2003	2003	2007
Short-term Loan									
1) Final Year of Borrow	2004	2011	-	-	-	2010	2002	2002	2003
2) Maximum Annual Amount (US$ 1,000)	41	395	-	-	2,235	197	15	44	18
Year of Maximum Amount (Year)	2004	2007	-	-	2016	2005	2002	2002	2002

Note: (*1) : Impossible to calculate.
(*2) : No first year of surplus within the calculation period.
Source: JICA Study Team

A few alternatives should be considered in order to improve the financial conditions of INC sub-projects such as "El Brujo" and "Sipan."

Alternative case 1

As an alternative, the revision of entrance fees of "El Brujo" and "Sipan" are assumed. Trials by changing of fees reveal that an increase of the entrance fees from US$ 3 to US$ 6.8 and 6.1 will make improve financial conditions of "El Brujo" and "Sipan", respectively. Here, the criteria on FIRR value of 3.0% (a level of interest rate of the assumed loan) is assumed. Table 7.45 shows a summary of financial analysis results in "alternative case 1". The first years of accumulated surplus in cash flow are 2015 and 2013 for "El Brujo" and "Sipan", respectively. As a result, also the financial condition of the aggregation of INC sub-projects become improved.

Table 7.45 Visitor facilities : summary of financial analysis results (alternative case1 : fee revision of "El Brujo" and "Sipan")

Visitor Facilities	Chan Chan	Sol / Luna	El Brujo	Sipan	Aggre-gation of INC Project s	Batan Grande	Allpahu -ayo – Mishan a	Aggre-gation of INREN A Project s	Quisto-Cocha
FIRR	11.0%	4.1%	3.1%	3.1%	5.0%	3.8%	18.5%	9.3%	3.4%
First Year of Surplus									
Annual Surplus in Profit & Loss	2005	2007	2008	2008	2005	2005	2003	2003	2006
Accum. Surplus in Profit & Loss	2005	2011	2012	2010	2007	2008	2003	2003	2010
Annual Surplus in Cash Flow	2005	2012	2015	2013	2009	2011	2003	2003	2007
Short-term Loan									
1) Final Year of Borrow	2004	2011	2014	2012	2008	2010	2002	2002	2003
2) Maximum Annual Amount (US$ 1,000)	41	395	374	252	747	197	15	44	18
Year of Maximum Amount (Year)	2004	2007	2008	2008	2006	2005	2002	2002	2002

Note : Fee revision of "El Brujo" (US$ 6.8 from US$ 3.0) and "Sipan" (US$ 6.1 from US$ 3.0)
Source: JICA Study Team

Alternative case 2

Another alternative case is one aiming at an improvement of the financial condition of the "aggregation of INC sub-projects" as a whole. Improvement of the financial condition of the "aggregation of INC sub-projects" is intended by increasing an entrance fee of "Chan Chan" instead of individual fee revision of "El Brujo" and "Sipan.". An increase by US$ 1.0 each for the park area and the special exhibition area of Chan Chan will present a sound financial condition of the "aggregation of INC sub-projects." It can be said that the entrrance fee increase of "Chan Chan" is reasonable considering its tourism potential

since it is one of the World Heritage Sites like Machu Picchu that currently charges as much as US$ 10. . ラ. ！ブックマ. ク. 自己参照. 行. . . . . shows a summary of the financial analysis results in "alternative case 2". Due to increase in revenues, FIRR value of "Chan Chan" increased from 11.0% to 15.8%. The aggregation of INC sub-projects shows FIRR value of 3.5% (which is over 3.0%, a level of interest rate in the assumed loan) and the first year of accumulated surplus in cash flow is 2013.

Table 7.46 Summary of financial analysis results for visitor facilities (alternative case 2 : entrance fee revision of "Chan Chan")

Visitor Facilities	Chan Chan	Sol / Luna	El Brujo	Sipan	Aggre-gation of INC Projects	Batan Grande	Allpahu-ayo – Mishana	Aggre-gation of INRENA Projects	Quisto-Cocha
FIRR	15.8%	4.1%	(*1)	(*1)	3.5%	3.8%	18.5%	9.3%	3.4%
First Year of Surplus									
Annual Surplus in Profit & Loss	2005	2007	(*2)	(*2)	2008	2005	2003	2003	2006
Accum. Surplus in Profit & Loss	2005	2011	(*2)	(*2)	2010	2008	2003	2003	2010
Annual Surplus in Cash Flow	2005	2012	(*2)	(*2)	2013	2011	2003	2003	2007
Short-term Loan									
1) Final Year of Borrow	2004	2011	-	-	2012	2010	2002	2002	2003
2) Maximum Annual Amount (US$ 1,000)	41	395	-	-	1,164	197	15	44	18
Year of Maximum Amount (Year)	2004	2007	-	-	2007	2005	2002	2002	2002

Note : Fee revision of "Chan Chan" (Park area : US$ 4.0 from US$ 3.0, and special exhibition area : US$ 3.0 from US$ 2.0)
(*1) : Impossible to calculate.
(*2) : No first year of surplus within the calculation period.
Source: JICA Study Team

As references, the tabulations of the profit and loss, the cash flow, and FIRR of the aggregation of the INC sub-projects for the alternative case 2 are shown in Table 7.59 to Table 7.61. Table 7.62 to Table 7.64 refer to the aggregation of INRENA sub-projects (Batan Grande and Allpahuayo – Mishana). Table 7.65 to Table 7.67 refer to the Quistococha sub-project (CTAR Loreto).

Table 7.47 Hermosa Beach Resort Estate : profit and loss (Case (1-a) in unit land sale price of US$ 34)

(US$ 1,000)

	(A) Revenues				(B) Expenditures					
	Land Sale	Utility Charge		Total	(B-1) Operational					Gross Profit
					Maint. Repair	Admin. Costs			Total	
2000	0	0		0	0	0			0	0
2001	0	0		0	0	0			0	0
2002	0	0		0	0	0			0	0
2003	0	0		0	0	0			0	0
2004	0	0		0	0	0			0	0
2005	1,360	0		1,360	120	0			120	1,240
2006	1,590	0		1,590	120	195			315	1,275
2007	1,590	0		1,590	120	195			315	1,275
2008	1,590	0		1,590	120	195			315	1,275
2009	2,610	0		2,610	120	195			315	2,295
2010	0	540		540	120	145			265	275
2011	0	540		540	120	145			265	275
2012	0	540		540	120	145			265	275
2013	0	540		540	120	145			265	275
2014	0	540		540	120	145			265	275
2015	0	540		540	120	145			265	275
2016	0	540		540	120	145			265	275
2017	0	540		540	120	145			265	275
2018	0	540		540	120	145			265	275
2019	0	540		540	120	145			265	275
2020	0	540		540	120	145			265	275
2021	0	540		540	120	145			265	275
2022	0	540		540	120	145			265	275
2023	0	540		540	120	145			265	275
2024	0	540		540	120	145			265	275
2025	0	540		540	120	145			265	275
	8,740	8,640	0	17,380	2,515	3,104	0	0	5,619	11,761

Source: JICA Study Team

Hermosa Beach Resort Estate: profit and loss (case (1-a) in unit land sale price of US$ 34) (Continued)

(US$ 1,000)

	(B) Expenditure					Oprtng. Profit	(B) Expenditure		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Infra.	Establis hment	Others		Total		Long-term Loan	Short-term Loan			
2000	0	0			0	0	0	0	0	0	0
2001	0	0			0	0	0	0	0	0	0
2002	0	0			0	0	0	0	0	0	0
2003	0	0			0	0	11	0	11	-11	-11
2004	0	0			0	0	70	2	72	-72	-83
2005	0	0			0	1,240	128	12	260	1,100	1,017
2006	181	232			414	861	120	19	868	722	1,740
2007	181	232			414	861	86	21	836	754	2,494
2008	181	232			414	861	52	18	799	791	3,285
2009	181	232			414	1,881	17	9	755	1,855	5,141
2010	181	232			414	-139	0	0	679	-139	5,002
2011	181	0			181	94	0	0	446	94	5,095
2012	181	0			181	94	0	0	446	94	5,189
2013	181	0			181	94	0	0	446	94	5,283
2014	181	0			181	94	0	0	446	94	5,376
2015	181	0			181	94	0	0	446	94	5,470
2016	181	0			181	94	0	0	446	94	5,563
2017	181	0			181	94	0	0	446	94	5,657
2018	181	0			181	94	0	0	446	94	5,751
2019	181	0			181	94	0	0	446	94	5,844
2020	181	0			181	94	0	0	446	94	5,938
2021	181	0			181	94	0	0	446	94	6,031
2022	181	0			181	94	0	0	446	94	6,125
2023	181	0			181	94	0	0	446	94	6,218
2024	181	0			181	94	0	0	446	94	6,312
2025	2,540	0			2,540	-2,265	0	0	2,805	-2,265	4,047
	5,988	1,161	0	0	7,149	4,612	484	81	13,333	4,047	

Source: JICA Study Team

Table 7.48 Hermosa Beach Resort Estate : cash flow (case (1-a) in unit land sale price of US$ 34)

(US$ 1,000)

	(A) Cash-In						Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational				(B-1) Financial					
	Equity	Loan	Total	Land Sale	Utility Charge	Total		Invest-ment	Loan Prncpl. Repay	Loan Int. Pay	Repay Short Loan	Pay Short L Int.	Total
2000	224	0	224	0	0	0	224	224	0	0	0	0	224
2001	744	0	744	0	0	0	744	744	0	0	0	0	744
2002	744	0	744	0	0	0	744	744	0	0	0	0	744
2003	746	725	1,471	0	0	0	1,471	1,471	0	11	0	0	1,482
2004	0	3,190	3,190	0	0	0	3,190	3,190	0	70	11	2	3,273
2005	0	1,818	1,818	1,360	0	1,360	3,178	1,818	1,146	128	83	12	3,187
2006			0	1,590	0	1,590	1,590		1,146	120	129	19	1,414
2007			0	1,590	0	1,590	1,590		1,146	86	139	21	1,392
2008			0	1,590	0	1,590	1,590		1,146	52	117	18	1,333
2009			0	2,610	0	2,610	2,610		1,148	17	58	9	1,232
2010			0	0	540	540	540		0	0	0	0	0
2011			0	0	540	540	540		0	0	0	0	0
2012			0	0	540	540	540		0	0	0	0	0
2013			0	0	540	540	540		0	0	0	0	0
2014			0	0	540	540	540		0	0	0	0	0
2015			0	0	540	540	540		0	0	0	0	0
2016			0	0	540	540	540		0	0	0	0	0
2017			0	0	540	540	540		0	0	0	0	0
2018			0	0	540	540	540		0	0	0	0	0
2019			0	0	540	540	540		0	0	0	0	0
2020			0	0	540	540	540		0	0	0	0	0
2021			0	0	540	540	540		0	0	0	0	0
2022			0	0	540	540	540		0	0	0	0	0
2023			0	0	540	540	540		0	0	0	0	0
2024			0	0	540	540	540		0	0	0	0	0
2025			0	0	540	540	540		0	0	0	0	0
	2,457	5,732	8,189	8,740	8,640	17,380	25,569	8,189	5,732	484	536	81	15,022

Source: JICA Study Team

Hermosa Beach Resort Estate : cash flow (case (1-a) in unit land sale price of US$ 34) (continued)

(US$ 1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-Out	Short term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Admin. Costs			Total					
2000	0	0			0	224	0	0	0	0
2001	0	0			0	744	0	0	0	0
2002	0	0			0	744	0	0	0	0
2003	0	0			0	1,482	-11	11	0	0
2004	0	0			0	3,273	-83	83	0	0
2005	120	0			120	3,306	-129	129	0	0
2006	120	195			315	1,729	-139	139	0	0
2007	120	195			315	1,707	-117	117	0	0
2008	120	195			315	1,648	-58	58	0	0
2009	120	195			315	1,547	1,063	0	1,063	1,063
2010	120	145			265	265	275	0	275	1,339
2011	120	145			265	265	275	0	275	1,614
2012	120	145			265	265	275	0	275	1,889
2013	120	145			265	265	275	0	275	2,164
2014	120	145			265	265	275	0	275	2,439
2015	120	145			265	265	275	0	275	2,714
2016	120	145			265	265	275	0	275	2,989
2017	120	145			265	265	275	0	275	3,264
2018	120	145			265	265	275	0	275	3,539
2019	120	145			265	265	275	0	275	3,814
2020	120	145			265	265	275	0	275	4,089
2021	120	145			265	265	275	0	275	4,364
2022	120	145			265	265	275	0	275	4,639
2023	120	145			265	265	275	0	275	4,914
2024	120	145			265	265	275	0	275	5,189
2025	120	145			265	265	275	0	275	5,464
	2,515	3,104	0	0	5,619	20,641		536	5,464	

Source: JICA Study Team

Table 7.49 Hermosa Beach Resort Estate : FIRR (case (1-a) in unit land sale price of US$ 34)

FIRR = 5.4%

(US$ 1,000)

	Costs				Total Revenue	Net Cash Flow for FIRR
	Total Investment Costs	Maint Repair	Admini. Cost	Total		
2000	224	0	0	224	0	-224
2001	744	0	0	744	0	-744
2002	744	0	0	744	0	-744
2003	1,471	0	0	1,471	0	-1,471
2004	3,190	0	0	3,190	0	-3,190
2005	1,818	120	0	1,937	1,360	-577
2006		120	195	315	1,590	1,275
2007		120	195	315	1,590	1,275
2008		120	195	315	1,590	1,275
2009		120	195	315	2,610	2,295
2010		120	145	265	540	275
2011		120	145	265	540	275
2012		120	145	265	540	275
2013		120	145	265	540	275
2014		120	145	265	540	275
2015		120	145	265	540	275
2016		120	145	265	540	275
2017		120	145	265	540	275
2018		120	145	265	540	275
2019		120	145	265	540	275
2020		120	145	265	540	275
2021		120	145	265	540	275
2022		120	145	265	540	275
2023		120	145	265	540	275
2024		120	145	265	540	275
2025		120	145	265	540	275
	8,189	2,515	3,104	13,808	17,380	

Source: JICA Study Team

Table 7.50 Parque del Baluarte : profit and loss

(US$ 1,000)

	(A) Revenues				(B) Expenditures				Gross Profit
	Building Lease	Utility Charge		Total	(B-1) Operational				
					Maint. Repair	Admini. Costs		Total	
2000	0	0		0	0	0		0	0
2001	0	0		0	0	0		0	0
2002	0	0		0	0	0		0	0
2003	0	0		0	0	0		0	0
2004	0	0		0	0	0		0	0
2005	112	68		180	53	76		129	50
2006	167	101		268	53	76		129	139
2007	223	135		358	53	76		129	229
2008	223	135		358	53	66		119	239
2009	223	135		358	53	66		119	239
2010	223	135		358	53	66		119	239
2011	223	135		358	53	66		119	239
2012	223	135		358	53	66		119	239
2013	223	135		358	53	66		119	239
2014	223	135		358	53	66		119	239
2015	223	135		358	53	66		119	239
2016	223	135		358	53	66		119	239
2017	223	135		358	53	66		119	239
2018	223	135		358	53	66		119	239
2019	223	135		358	53	66		119	239
2020	223	135		358	53	66		119	239
2021	223	135		358	53	66		119	239
2022	223	135		358	53	66		119	239
2023	223	135		358	53	66		119	239
2024	223	135		358	53	66		119	239
2025	0	0		0	0	0		0	0
	4,293	2,599	0	6,892	1,068	1,352	0	2,420	4,472

Source: JICA Study Team

Parque del Baluarte : profit and loss (continued)

(US$ 1,000)

	(B) Expenditure					Oprting. Profit	(B) Expenditure		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Infra.	Establi-shment	Others		Total		Long-term Loan	Short-term Loan			
2000	0	0			0	0	0	0	0	0	0
2001	0	0			0	0	0	0	0	0	0
2002	0	0			0	0	0	0	0	0	0
2003	0	0			0	0	12	0	12	-12	-12
2004	0	0			0	0	44	2	46	-46	-58
2005	81	73			154	-104	62	9	354	-175	-233
2006	81	73			154	-15	59	28	370	-102	-335
2007	81	73			154	75	56	36	375	-17	-352
2008	81	73			154	85	53	31	357	1	-351
2009	81	73			154	85	49	24	346	12	-339
2010	81	0			81	158	46	15	261	97	-243
2011	81	0			81	158	43	4	247	111	-132
2012	81	0			81	158	40	0	240	118	-15
2013	81	0			81	158	37	0	237	121	106
2014	81	0			81	158	33	0	233	125	231
2015	81	0			81	158	30	0	230	128	358
2016	81	0			81	158	27	0	227	131	489
2017	81	0			81	158	24	0	224	134	623
2018	81	0			81	158	21	0	221	137	759
2019	81	0			81	158	18	0	218	140	899
2020	81	0			81	158	14	0	214	144	1,043
2021	81	0			81	158	11	0	211	147	1,189
2022	81	0			81	158	8	0	208	150	1,339
2023	81	0			81	158	5	0	205	153	1,492
2024	81	0			81	158	2	0	202	156	1,647
2025	1,051	0			1,051	-1,051	0	0	1,051	-1,051	596
	2,669	364	0	0	3,033	1,439	694	149	6,296	596	

Source: JICA Study Team

Table 7.51 Parque del Baluarte : cash flow

(US$ 1,000)

	(A) Cash-In						Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational				(B-1) Financial					
	Eqyity	Loan	Total	Bld. Lease	Utility Charge	Total		Invest-ment	Loan Prncpl. Repay.	Loan Int. Pay.	Repay Short Loan	Pay Short L Int.	Total
2000	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	121	0	121	0	0	0	121	121	0	0	0	0	121
2002	246	0	246	0	0	0	246	246	0	0	0	0	246
2003	543	790	1,333	0	0	0	1,333	1,333	0	12	0	0	1,345
2004	0	1,333	1,333	0	0	0	1,333	1,333	0	44	12	2	1,391
2005	0	0	0	112	68	180	180	0	106	62	58	9	235
2006			0	167	101	268	268		106	59	185	28	378
2007			0	223	135	358	358		106	56	239	36	437
2008			0	223	135	358	358		106	53	209	31	399
2009			0	223	135	358	358		106	49	160	24	339
2010			0	223	135	358	358		106	46	101	15	268
2011			0	223	135	358	358		106	43	29	4	182
2012			0	223	135	358	358		106	40	0	0	146
2013			0	223	135	358	358		106	37	0	0	143
2014			0	223	135	358	358		106	33	0	0	139
2015			0	223	135	358	358		106	30	0	0	136
2016			0	223	135	358	358		106	27	0	0	133
2017			0	223	135	358	358		106	24	0	0	130
2018			0	223	135	358	358		106	21	0	0	127
2019			0	223	135	358	358		106	18	0	0	124
2020			0	223	135	358	358		106	14	0	0	120
2021			0	223	135	358	358		106	11	0	0	117
2022			0	223	135	358	358		106	8	0	0	114
2023			0	223	135	358	358		106	5	0	0	111
2024			0	223	135	358	358		109	2	0	0	111
2025			0	0	0	0	0		0	0	0	0	0
	910	2,123	3,033	4,293	2,599	6,892	9,925	3,033	2,123	694	993	149	6,993

Source: JICA Study Team

Parque del Baluarte : cash flow (continued)

(US$ 1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Admini. Costs			Total					
2000	0	0			0	0	0	0	0	0
2001	0	0			0	121	0	0	0	0
2002	0	0			0	246	0	0	0	0
2003	0	0			0	1,345	-12	12	0	0
2004	0	0			0	1,391	-58	58	0	0
2005	53	76			129	364	-185	185	0	0
2006	53	76			129	507	-239	239	0	0
2007	53	76			129	567	-209	209	0	0
2008	53	66			119	518	-160	160	0	0
2009	53	66			119	459	-101	101	0	0
2010	53	66			119	387	-29	29	0	0
2011	53	66			119	302	56	0	56	56
2012	53	66			119	265	93	0	93	149
2013	53	66			119	262	96	0	96	244
2014	53	66			119	258	100	0	100	344
2015	53	66			119	255	103	0	103	446
2016	53	66			119	252	106	0	106	552
2017	53	66			119	249	109	0	109	661
2018	53	66			119	246	112	0	112	772
2019	53	66			119	243	115	0	115	887
2020	53	66			119	239	119	0	119	1,005
2021	53	66			119	236	122	0	122	1,127
2022	53	66			119	233	125	0	125	1,251
2023	53	66			119	230	128	0	128	1,379
2024	53	66			119	231	127	0	127	1,506
2025	0	0			0	0	0	0	0	1,506
	1,068	1,352	0	0	2,420	9,412		993	1,506	

Source: JICA Study Team

Table 7.52 Parque del Baluarte : FIRR

FIRR = 3.5%

(US$ 1,000)

	Costs				Total	Net Cash
	Total Investment Costs	Maint Repair	Admini. Cost	Total	Revenue	Flow for FIRR
2000	0	0	0	0	0	0
2001	121	0	0	121	0	-121
2002	246	0	0	246	0	-246
2003	1,333	0	0	1,333	0	-1,333
2004	1,333	0	0	1,333	0	-1,333
2005	0	53	76	129	180	50
2006		53	76	129	268	139
2007		53	76	129	358	229
2008		53	66	119	358	239
2009		53	66	119	358	239
2010		53	66	119	358	239
2011		53	66	119	358	239
2012		53	66	119	358	239
2013		53	66	119	358	239
2014		53	66	119	358	239
2015		53	66	119	358	239
2016		53	66	119	358	239
2017		53	66	119	358	239
2018		53	66	119	358	239
2019		53	66	119	358	239
2020		53	66	119	358	239
2021		53	66	119	358	239
2022		53	66	119	358	239
2023		53	66	119	358	239
2024		53	66	119	358	239
2025		0	0	0	0	0
	3,033	1,068	1,352	5,453	6,892	

Source: JICA Study Team

Table 7.53 Training Lodge : profit and loss

(US$ 1,000)

	(A) Revenues				(B) Expenditures					Gross Profit
	Room Rev.			Total	(B-1) Operational					
					Maint. Repair	Admini. Costs	Oprting Cost	Teach Cost	Total	
2000	0			0	0	0	0		0	0
2001	0			0	0	0	0		0	0
2002	0			0	0	0	0		0	0
2003	146			146	7	63	44	40	154	-8
2004	146			146	7	63	44	40	154	-8
2005	183			183	7	63	55	40	165	18
2006	183			183	7	53	55	40	155	28
2007	219			219	7	53	66	40	166	53
2008	219			219	7	53	66	40	166	53
2009	219			219	7	53	66	40	166	53
2010	219			219	7	53	66	40	166	53
2011	219			219	7	53	66	40	166	53
2012	219			219	7	53	66	40	166	53
2013	219			219	7	53	66	40	166	53
2014	219			219	7	53	66	40	166	53
2015	219			219	7	53	66	40	166	53
2016	219			219	7	53	66	40	166	53
2017	219			219	7	53	66	40	166	53
2018	219			219	7	53	66	40	166	53
2019	219			219	7	53	66	40	166	53
2020	219			219	7	53	66	40	166	53
2021	219			219	7	53	66	40	166	53
2022	219			219	7	53	66	40	166	53
2023	219			219	7	53	66	40	166	53
2024	219			219	7	53	66	40	166	53
2025	219			219	7	53	66	40	166	53
	4,819	0	0	4,819	155	1,251	1,446	920	3,772	1,047

Source: JICA Study Team

Training Lodge : profit and loss (continued)

(US$ (1,000)

	(B) Expenditures					Oprting Profit	(B) Expenditures		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Infra.	Establi-shment	Others		Total		Long-term Loan	Short-term Loan			
2000	0	0			0	0	0	0	0	0	0
2001	0	0			0	0	0	0	0	0	0
2002	0	0			0	0	6	0	6	-6	-6
2003	10	41			51	-59	11	1	217	-71	-77
2004	10	41			51	-59	11	4	220	-74	-151
2005	10	41			51	-33	11	7	234	-51	-201
2006	10	41			51	-23	11	10	227	-44	-245
2007	10	41			51	2	10	12	239	-20	-265
2008	10	0			10	43	9	10	195	24	-241
2009	10	0			10	43	9	8	193	26	-215
2010	10	0			10	43	8	5	189	30	-184
2011	10	0			10	43	8	2	186	33	-151
2012	10	0			10	43	7	0	183	36	-115
2013	10	0			10	43	7	0	183	36	-79
2014	10	0			10	43	6	0	182	37	-42
2015	10	0			10	43	5	0	181	38	-3
2016	10	0			10	43	5	0	181	38	35
2017	10	0			10	43	4	0	180	39	74
2018	10	0			10	43	4	0	180	39	113
2019	10	0			10	43	3	0	179	40	154
2020	10	0			10	43	3	0	179	40	194
2021	10	0			10	43	2	0	178	41	235
2022	10	0			10	43	1	0	177	42	277
2023	10	0			10	43	1	0	177	42	319
2024	10	0			10	43	0	0	176	43	363
2025	113	0			113	-59	0	0	278	-59	303
	338	204	0	0	542	504	142	59	4,516	303	

Source: JICA Study Team

Table 7.54 Training Lodge : cash flow

(US$ 1,000)

	(A) Cash-In						Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational				(B-1) Financial					
	Eqyity	Loan	Total	Room Rev.		Total		Invest-ment	Loan Principal Repay.	Loan Interest Pay.	Repay Short Loan	Pay Short L Int.	Total
2000	71	0	71	0		0	71	71	0	0	0	0	71
2001	87	0	87	0		0	87	87	0	0	0	0	87
2002	5	379	384	0		0	384	384	0	6	0	0	390
2003			0	146		146	146		0	11	6	1	18
2004			0	146		146	146		0	11	26	4	41
2005			0	183		183	183		19	11	48	7	85
2006			0	183		183	183		19	11	67	10	107
2007			0	219		219	219		19	10	79	12	120
2008			0	219		219	219		19	9	66	10	104
2009			0	219		219	219		19	9	51	8	87
2010			0	219		219	219		19	8	34	5	66
2011			0	219		219	219		19	8	12	2	41
2012			0	219		219	219		19	7	0	0	26
2013			0	219		219	219		19	7	0	0	26
2014			0	219		219	219		19	6	0	0	25
2015			0	219		219	219		19	5	0	0	24
2016			0	219		219	219		19	5	0	0	24
2017			0	219		219	219		19	4	0	0	23
2018			0	219		219	219		19	4	0	0	23
2019			0	219		219	219		19	3	0	0	22
2020			0	219		219	219		19	3	0	0	22
2021			0	219		219	219		19	2	0	0	21
2022			0	219		219	219		19	1	0	0	20
2023			0	219		219	219		19	1	0	0	20
2024			0	219		219	219		18	0	0	0	18
2025			0	219		219	219		0	0	0	0	0
	163	379	542	4,819	0	4,819	5,361	542	379	142	389	59	1,511

Source: JICA Study Team

Training Lodge : cash flow (continued)

(US$ (1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Admini. Costs	Oprting. Cost	Teach Cost	Total					
2000	0	0			0	71	0	0	0	0
2001	0	0			0	87	0	0	0	0
2002	0	0			0	390	-6	6	0	0
2003	7	63	44	40	154	172	-26	26	0	0
2004	7	63	44	40	154	194	-48	48	0	0
2005	7	63	55	40	165	250	-67	67	0	0
2006	7	53	55	40	155	262	-79	79	0	0
2007	7	53	66	40	166	285	-66	66	0	0
2008	7	53	66	40	166	270	-51	51	0	0
2009	7	53	66	40	166	253	-34	34	0	0
2010	7	53	66	40	166	231	-12	12	0	0
2011	7	53	66	40	166	207	12	0	12	12
2012	7	53	66	40	166	192	27	0	27	40
2013	7	53	66	40	166	192	27	0	27	67
2014	7	53	66	40	166	191	28	0	28	96
2015	7	53	66	40	166	190	29	0	29	125
2016	7	53	66	40	166	190	29	0	29	155
2017	7	53	66	40	166	189	30	0	30	185
2018	7	53	66	40	166	189	30	0	30	215
2019	7	53	66	40	166	188	31	0	31	247
2020	7	53	66	40	166	188	31	0	31	278
2021	7	53	66	40	166	187	32	0	32	311
2022	7	53	66	40	166	186	33	0	33	344
2023	7	53	66	40	166	186	33	0	33	378
2024	7	53	66	40	166	184	35	0	35	413
2025	7	53	66	40	166	166	53	0	53	466
	155	1,251	1,446	920	3,772	5,284		389	466	

Source: JICA Study Team

Table 7.55 Training Lodges : FIRR

FIRR =	5.0%

(US$ 1,000)

	Costs						Total Revenue	Net Cash Flow for FIRR
	Total Investment Costs	Maint Repair	Admini. Cost	Operating Cost	Teaching Cost	Total		
2000	71	0	0	0	0	71	0	-71
2001	87	0	0	0	0	87	0	-87
2002	384	0	0	0	0	384	0	-384
2003		7	63	44	40	154	146	-8
2004		7	63	44	40	154	146	-8
2005		7	63	55	40	165	183	18
2006		7	53	55	40	155	183	28
2007		7	53	66	40	166	219	53
2008		7	53	66	40	166	219	53
2009		7	53	66	40	166	219	53
2010		7	53	66	40	166	219	53
2011		7	53	66	40	166	219	53
2012		7	53	66	40	166	219	53
2013		7	53	66	40	166	219	53
2014		7	53	66	40	166	219	53
2015		7	53	66	40	166	219	53
2016		7	53	66	40	166	219	53
2017		7	53	66	40	166	219	53
2018		7	53	66	40	166	219	53
2019		7	53	66	40	166	219	53
2020		7	53	66	40	166	219	53
2021		7	53	66	40	166	219	53
2022		7	53	66	40	166	219	53
2023		7	53	66	40	166	219	53
2024		7	53	66	40	166	219	53
2025		7	53	66	40	166	219	53
	542	155	1,251			4,315	4,819	

Source: JICA Study Team

Table 7.56 Whole NTRDA : profit and loss

(US$ 1,000)

	(A) Revenues						(B) Expenditures						Gross Profit
	Hermosa Beach Resort	Trujillo Park	Amazon Training Lodge	(Sub-total)	Subsidy (Adm.C. Plan. Div.)	Total	(B-1) Operational						
							Hermosa Beach Resort	Trujillo Park	Training Lodge	(Sub-total)	(Adm.C. Plan. Div.)	Total	
2000	0	0	0	0	322	322	0	0	0	0	322	322	0
2001	0	0	0	0	322	322	0	0	0	0	322	322	0
2002	0	0	0	0	322	322	0	0	0	0	322	322	0
2003	0	0	146	146	322	468	0	0	154	154	322	476	-8
2004	0	0	146	146	322	468	0	0	154	154	322	476	-8
2005	1,360	180	183	1,723	322	2,045	120	129	165	414	322	736	1,308
2006	1,590	268	183	2,041	322	2,363	315	129	155	599	322	921	1,442
2007	1,590	358	219	2,167	322	2,489	315	129	166	610	322	932	1,557
2008	1,590	358	219	2,167	322	2,489	315	119	166	600	322	922	1,567
2009	2,610	358	219	3,187	322	3,509	315	119	166	600	322	922	2,587
2010	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2011	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2012	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2013	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2014	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2015	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2016	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2017	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2018	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2019	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2020	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2021	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2022	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2023	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2024	540	358	219	1,117	322	1,439	265	119	166	550	322	872	567
2025	540	0	219	759	322	1,081	265	0	166	431	322	753	328
	17,380	6,892	4,819	29,091	8,372	37,463	5,619	2,420	3,772	11,811	8,372	20,183	17,280

Note: In Calculation Case of "Hermosa Beach Resort Estate" Sub-project : (Unit Land Sale Price : US$ 34, Land Sale Plan and Loan Repayment Period : 2005 – 2009)

Source: JICA Study Team

Whole NTRDA: profit and loss (continued)

(US$ 1,000)

	(B) Expenditures					Oprting Profit	(B) Expenditures		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Hermosa Beach Resort	Trujillo Park	Traing. Lodge		Total		Long Loan Total	Short Loan Total			
2000	0	0	0		0	0	0	0	322	0	0
2001	0	0	0		0	0	0	0	322	0	0
2002	0	0	0		0	0	6	0	328	-6	-6
2003	0	0	51		51	-59	34	1	562	-94	-100
2004	0	0	51		51	-59	125	7	659	-191	-291
2005	0	154	51		205	1,104	201	28	1,170	875	584
2006	414	154	51		619	823	190	57	1,787	576	1,161
2007	414	154	51		619	938	152	68	1,771	718	1,879
2008	414	154	10		578	989	114	58	1,672	817	2,696
2009	414	154	10		578	2,009	75	40	1,615	1,894	4,591
2010	414	81	10		505	62	54	0	1,431	8	4,599
2011	181	81	10		273	294	51	0	1,196	243	4,842
2012	181	81	10		273	294	47	0	1,192	247	5,090
2013	181	81	10		273	294	44	0	1,189	250	5,340
2014	181	81	10		273	294	39	0	1,184	255	5,595
2015	181	81	10		273	294	35	0	1,180	259	5,855
2016	181	81	10		273	294	32	0	1,177	262	6,117
2017	181	81	10		273	294	28	0	1,173	266	6,384
2018	181	81	10		273	294	25	0	1,170	269	6,653
2019	181	81	10		273	294	21	0	1,166	273	6,927
2020	181	81	10		273	294	17	0	1,162	277	7,204
2021	181	81	10		273	294	13	0	1,158	281	7,485
2022	181	81	10		273	294	9	0	1,154	285	7,771
2023	181	81	10		273	294	6	0	1,151	288	8,059
2024	181	81	10		273	294	2	0	1,147	292	8,352
2025	2,540	1,051	113		3,705	-3,376	0	0	4,457	-3,376	4,976
	7,149	3,033	542	0	10,725	6,555	1,320	259	32,487	4,976	

Note: In Calculation Case of “Hermosa Beach Resort Estate” Sub-project : (Unit Land Sale Price : US$ 34, Land Sale Plan and Loan Repayment Period : 2005 – 2009)

Source: JICA Study Team

Table 7.57 Whole NTRDA : cash flow

(US$ 1,000)

	(A) Cash-In						Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational				(B-1) Financial (Total)					
	Eqyity Total	Loan Total	Total	Rev. P.M. Div.	Subsidy Plan. Div.	Total		Invest-ment	Loan Principal Repay.	Loan Interest Pay.	Repay Short Loan	Pay Short L. Int.	Total
2000	295	0	295	0	322	322	617	295	0	0	0	0	295
2001	952	0	952	0	322	322	1,274	952	0	0	0	0	952
2002	994	379	1,374	0	322	322	1,696	1,374	0	6	0	0	1,380
2003	1,289	1,515	2,804	146	322	468	3,272	2,804	0	34	6	1	2,845
2004	0	4,523	4,523	146	322	468	4,991	4,523	0	125	49	7	4,704
2005	0	1,818	1,818	1,723	322	2,045	3,862	1,818	1,271	201	188	28	3,506
2006	0	0	0	2,041	322	2,363	2,363	0	1,271	190	380	57	1,898
2007			0	2,167	322	2,489	2,489	0	1,271	152	456	68	1,947
2008			0	2,167	322	2,489	2,489	0	1,271	114	390	58	1,833
2009			0	3,187	322	3,509	3,509	0	1,273	75	266	40	1,654
2010			0	1,117	322	1,439	1,439		125	54	0	0	179
2011			0	1,117	322	1,439	1,439		125	51	0	0	176
2012			0	1,117	322	1,439	1,439		125	47	0	0	172
2013			0	1,117	322	1,439	1,439		125	44	0	0	169
2014			0	1,117	322	1,439	1,439		125	39	0	0	164
2015			0	1,117	322	1,439	1,439		125	35	0	0	160
2016			0	1,117	322	1,439	1,439		125	32	0	0	157
2017			0	1,117	322	1,439	1,439		125	28	0	0	153
2018			0	1,117	322	1,439	1,439		125	25	0	0	150
2019			0	1,117	322	1,439	1,439		125	21	0	0	146
2020			0	1,117	322	1,439	1,439		125	17	0	0	142
2021			0	1,117	322	1,439	1,439		125	13	0	0	138
2022			0	1,117	322	1,439	1,439		125	9	0	0	134
2023			0	1,117	322	1,439	1,439		125	6	0	0	131
2024			0	1,117	322	1,439	1,439		128	2	0	0	130
2025			0	759	322	1,081	1,081		0	0	0	0	0
	3,530	8,235	11,765	29,091	8,372	37,463	49,227	11,765	8,235	1,320	1,734	259	23,312

Note: In Calculation Case of "Hermosa Beach Resort Estate" Sub-project : (Unit Land Sale Price : US$ 34, Land Sale Plan and Loan Repayment Period : 2005 – 2009)

Source: JICA Study Team

Whole NTRDA : cash flow (continued)

(US$ 1,000)

	(B) Cash-Out						Total	Cash-In Minus Cash-Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational										
	Hermosa Beach Resort	Trujillo Park	Training Lodge	(Sub-total)	(Adm.C. Plan. Div.	Total					
2000	0	0	0	0	322	322	617	0	0	0	0
2001	0	0	0	0	322	322	1,274	0	0	0	0
2002	0	0	0	0	322	322	1,702	-6	6	0	0
2003	0	0	154	154	322	476	3,320	-49	49	0	0
2004	0	0	154	154	322	476	5,179	-188	188	0	0
2005	120	129	165	414	322	736	4,242	-380	380	0	0
2006	315	129	155	599	322	921	2,819	-456	456	0	0
2007	315	129	166	610	322	932	2,879	-390	390	0	0
2008	315	119	166	600	322	922	2,755	-266	266	0	0
2009	315	119	166	600	322	922	2,576	933	0	933	933
2010	265	119	166	550	322	872	1,051	388	0	388	1,321
2011	265	119	166	550	322	872	1,048	391	0	391	1,712
2012	265	119	166	550	322	872	1,044	395	0	395	2,107
2013	265	119	166	550	322	872	1,041	398	0	398	2,505
2014	265	119	166	550	322	872	1,036	403	0	403	2,908
2015	265	119	166	550	322	872	1,032	407	0	407	3,315
2016	265	119	166	550	322	872	1,029	410	0	410	3,725
2017	265	119	166	550	322	872	1,025	414	0	414	4,139
2018	265	119	166	550	322	872	1,022	417	0	417	4,556
2019	265	119	166	550	322	872	1,018	421	0	421	4,977
2020	265	119	166	550	322	872	1,014	425	0	425	5,402
2021	265	119	166	550	322	872	1,010	429	0	429	5,831
2022	265	119	166	550	322	872	1,006	433	0	433	6,264
2023	265	119	166	550	322	872	1,003	436	0	436	6,700
2024	265	119	166	550	322	872	1,002	437	0	437	7,138
2025	265	0	166	431	322	753	753	328	0	328	7,466
	5,619	2,420	3,772	11,811	8,372	20,183	43,495		1,734	7,466	

Note: In Calculation Case of “Hermosa Beach Resort Estate” Sub-project : (Unit Land Sale Price : US$ 34, Land Sale Plan and Loan Repayment Period : 2005 – 2009)

Source: JICA Study Team

Table 7.58 Whole NTRDA : FIRR

FIRR = 4.7%

(US$ 1,000)

	Costs					Revenues			Net Cash Flow for FIRR
	Project Management Div.			Plan. Div. Adm.C.	(Total)	P.M. Div.	Subsidy Plan. Div.	(Total)	
	Invest. Cost	O/M Costs	(Sub-total)						
2000	295	0	295	322	617	0	322	322	-295
2001	952	0	952	322	1,274	0	322	322	-952
2002	1,374	0	1,374	322	1,696	0	322	322	-1,374
2003	2,804	154	2,957	322	3,279	146	322	468	-2,811
2004	4,523	154	4,677	322	4,999	146	322	468	-4,531
2005	1,818	414	2,232	322	2,554	1,723	322	2,045	-509
2006	0	599	599	322	921	2,041	322	2,363	1,442
2007	0	610	610	322	932	2,167	322	2,489	1,557
2008	0	600	600	322	922	2,167	322	2,489	1,567
2009	0	600	600	322	922	3,187	322	3,509	2,587
2010		550	550	322	872	1,117	322	1,439	567
2011		550	550	322	872	1,117	322	1,439	567
2012		550	550	322	872	1,117	322	1,439	567
2013		550	550	322	872	1,117	322	1,439	567
2014		550	550	322	872	1,117	322	1,439	567
2015		550	550	322	872	1,117	322	1,439	567
2016		550	550	322	872	1,117	322	1,439	567
2017		550	550	322	872	1,117	322	1,439	567
2018		550	550	322	872	1,117	322	1,439	567
2019		550	550	322	872	1,117	322	1,439	567
2020		550	550	322	872	1,117	322	1,439	567
2021		550	550	322	872	1,117	322	1,439	567
2022		550	550	322	872	1,117	322	1,439	567
2023		550	550	322	872	1,117	322	1,439	567
2024		550	550	322	872	1,117	322	1,439	567
2025		431	431	322	753	759	322	1,081	328
	11,765	11,811	23,576	8,372	31,948	29,091	8,372	37,463	

Note: In Calculation Case of "Hermosa Beach Resort Estate" Sub-project : (Unit Land Sale Price : US$ 34, Land Sale Plan and Loan Repayment Period : 2005 – 2009)

Source: JICA Study Team

Table 7.59 Aggregation of INC Sub-projects : profit and loss (alternative case 2)

(US$ 1,000)

	(A) Revenues				(B) Expenditures					Gross Profit
	Entrance Fee Rev.	Niscell. (Svnr. Sales) Rev.		Total	(B-1) Operational					
					Maint. Repair	Misc. Costs	Oprting Cost	Svnr. Cost	Total	
2000	0	0		0	0	0	0	0	0	0
2001	0	0		0	0	0	0	0	0	0
2002	0	0		0	0	0	0	0	0	0
2003	0	0		0	0	0	0	0	0	0
2004	0	0		0	0	0	0	0	0	0
2005	1,360	474		1,834	288	80	680	237	1,285	549
2006	1,512	525		2,037	288	0	756	263	1,307	730
2007	1,662	576		2,238	288	0	831	288	1,407	831
2008	1,815	628		2,443	288	0	908	314	1,510	933
2009	1,963	678		2,641	288	0	982	339	1,609	1,032
2010	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2011	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2012	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2013	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2014	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2015	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2016	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2017	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2018	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2019	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2020	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2021	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2022	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2023	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2024	2,117	730		2,847	288	0	1,059	365	1,712	1,135
2025	2,117	730		2,847	288	0	1,059	365	1,712	1,135
	42,184	14,561		56,745	6,054	80	21,092	7,281	34,507	22,238

Source: JICA Study Team

Aggregation of INC Sub-projects : profit and loss (alternative case 2) (continued)

(US$ 1,000)

	(B) Expenditures					Oprting Profit	(B) Expenditures		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Infra.	Establi-shment	Others		Total		Long-t. Loan	Short-t. Loan			
2000	0	0			0	0	0	0	0	0	0
2001	0	0			0	0	17	0	17	-17	-17
2002	0	0			0	0	91	3	94	-94	-111
2003	0	0			0	0	174	17	191	-191	-302
2004	0	0			0	0	225	45	270	-270	-572
2005	0	0			0	549	269	86	1,640	194	-378
2006	437	0			437	293	279	132	2,155	-118	-496
2007	437	0			437	394	264	160	2,268	-30	-526
2008	437	0			437	496	250	175	2,372	71	-455
2009	437	0			437	595	235	174	2,455	186	-268
2010	437	0			437	698	220	156	2,525	322	54
2011	437	0			437	698	204	118	2,471	376	430
2012	437	0			437	698	190	71	2,410	437	868
2013	437	0			437	698	174	16	2,339	508	1,376
2014	437	0			437	698	159	0	2,308	539	1,916
2015	437	0			437	698	144	0	2,293	554	2,470
2016	437	0			437	698	129	0	2,278	569	3,039
2017	437	0			437	698	113	0	2,262	585	3,625
2018	437	0			437	698	99	0	2,248	599	4,224
2019	437	0			437	698	84	0	2,233	614	4,839
2020	437	0			437	698	69	0	2,218	629	5,468
2021	437	0			437	698	54	0	2,203	644	6,112
2022	437	0			437	698	38	0	2,187	660	6,773
2023	437	0			437	698	22	0	2,171	676	7,449
2024	437	0			437	698	7	0	2,156	691	8,140
2025	6,115	0			6,115	-4,980	0	0	7,827	-4,980	3,160
	14,415	0	0	0	14,415	7,823	3,510	1,153	53,585	3,160	

Source: JICA Study Team

Table 7.60 Aggregation of INC Sub-projects : cash flow (alternative case 2)

(US$ 1,000)

	(A) Cash-In							Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational					(B-1) Financial					
	Eqyity	Loan	Total	Entr. Rev.	Miscell. Svnr. Rev.	Total			Invest-ment	Loan Prncpl. Repay.	Loan Int. Pay.	Repay Short Loan	Pay Short L. Int.	Total
2000	119	0	119	0	0	0		119	119	0	0	0	0	119
2001	1,643	1,127	2,770	0	0	0		2,770	2,770	0	17	0	0	2,787
2002	2,562	3,822	6,384	0	0	0		6,384	6,384	0	91	17	3	6,495
2003	1	1,719	1,720	0	0	0		1,720	1,720	0	174	111	17	2,022
2004	0	1,711	1,711	0	0	0		1,711	1,711	0	225	302	45	2,283
2005	0	1,711	1,711	1,360	474	1,834		3,545	1,711	504	269	572	86	3,142
2006	0	0	0	1,512	525	2,037		2,037	0	504	279	882	132	1,797
2007	0	0	0	1,662	576	2,238		2,238	0	504	264	1,067	160	1,995
2008	0	0	0	1,815	628	2,443		2,443	0	504	250	1,164	175	2,093
2009			0	1,963	678	2,641		2,641		504	235	1,160	174	2,073
2010			0	2,117	730	2,847		2,847		504	220	1,041	156	1,921
2011			0	2,117	730	2,847		2,847		504	204	786	118	1,612
2012			0	2,117	730	2,847		2,847		504	190	477	71	1,242
2013			0	2,117	730	2,847		2,847		504	174	106	16	800
2014			0	2,117	730	2,847		2,847		504	159	0	0	663
2015			0	2,117	730	2,847		2,847		504	144	0	0	648
2016			0	2,117	730	2,847		2,847		504	129	0	0	633
2017			0	2,117	730	2,847		2,847		504	113	0	0	617
2018			0	2,117	730	2,847		2,847		504	99	0	0	603
2019			0	2,117	730	2,847		2,847		504	84	0	0	588
2020			0	2,117	730	2,847		2,847		504	69	0	0	573
2021			0	2,117	730	2,847		2,847		504	54	0	0	558
2022			0	2,117	730	2,847		2,847		504	38	0	0	542
2023			0	2,117	730	2,847		2,847		504	22	0	0	526
2024			0	2,117	730	2,847		2,847		514	7	0	0	521
2025			0	2,117	730	2,847		2,847		0	0	0	0	0
	4,325	10,090	14,415	42,184	14,561	56,745		71,160	14,415	10,090	3,510	7,686	1,153	36,854

Source: JICA Study Team

Aggregation of INC Sub-projects : cash flow (alternative case 2) (continued)

(US$ 1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Misc. Costs	Oprting Cost	Svnr. Cost	Total					
2000	0	0			0	119	0	0	0	0
2001	0	0			0	2,787	-17	17	0	0
2002	0	0			0	6,495	-111	111	0	0
2003	0	0	0	0	0	2,022	-302	302	0	0
2004	0	0	0	0	0	2,283	-572	572	0	0
2005	288	80	680	237	1,285	4,427	-882	882	0	0
2006	288	0	756	263	1,307	3,104	-1,067	1,067	0	0
2007	288	0	831	288	1,407	3,402	-1,164	1,164	0	0
2008	288	0	908	314	1,510	3,603	-1,160	1,160	0	0
2009	288	0	982	339	1,609	3,682	-1,041	1,041	0	0
2010	288	0	1,059	365	1,712	3,633	-786	786	0	0
2011	288	0	1,059	365	1,712	3,324	-477	477	0	0
2012	288	0	1,059	365	1,712	2,953	-106	106	0	0
2013	288	0	1,059	365	1,712	2,512	335	0	335	335
2014	288	0	1,059	365	1,712	2,375	472	0	472	807
2015	288	0	1,059	365	1,712	2,360	487	0	487	1,294
2016	288	0	1,059	365	1,712	2,345	502	0	502	1,796
2017	288	0	1,059	365	1,712	2,329	518	0	518	2,315
2018	288	0	1,059	365	1,712	2,315	532	0	532	2,847
2019	288	0	1,059	365	1,712	2,300	547	0	547	3,394
2020	288	0	1,059	365	1,712	2,285	562	0	562	3,956
2021	288	0	1,059	365	1,712	2,270	577	0	577	4,533
2022	288	0	1,059	365	1,712	2,254	593	0	593	5,127
2023	288	0	1,059	365	1,712	2,238	609	0	609	5,736
2024	288	0	1,059	365	1,712	2,233	614	0	614	6,350
2025	288	0	1,059	365	1,712	1,712	1,135	0	1,135	7,485
	6,054	80	21,092	7,281	34,507	71,361		7,686	7,485	

Source: JICA Study Team

Table 7.61 Aggregation of INC Sub-projects : FIRR (alternative case 2)

FIRR = 3.5%

(US$ 1,000)

	Costs						Revenues			Net Cash Flow for FIRR
	Total Invest. Costs	Maint Repair	Misc. Cost	Oprting Cost	Svnr. Cost	Total	Rev.		Total	
2000	119	0	0	0	0	119	0		0	-119
2001	2,770	0	0	0	0	2,770	0		0	-2,770
2002	6,384	0	0	0	0	6,384	0		0	-6,384
2003	1,720	0	0	0	0	1,720	0		0	-1,720
2004	1,711	0	0	0	0	1,711	0		0	-1,711
2005	1,711	288	80	680	237	2,996	1,834		1,834	-1,162
2006	0	288	0	756	263	1,307	2,037		2,037	730
2007		288	0	831	288	1,407	2,238		2,238	831
2008		288	0	908	314	1,510	2,443		2,443	933
2009		288	0	982	339	1,609	2,641		2,641	1,032
2010		288	0	1,059	365	1,712	2,847		2,847	1,135
2011		288	0	1,059	365	1,712	2,847		2,847	1,135
2012		288	0	1,059	365	1,712	2,847		2,847	1,135
2013		288	0	1,059	365	1,712	2,847		2,847	1,135
2014		288	0	1,059	365	1,712	2,847		2,847	1,135
2015		288	0	1,059	365	1,712	2,847		2,847	1,135
2016		288	0	1,059	365	1,712	2,847		2,847	1,135
2017		288	0	1,059	365	1,712	2,847		2,847	1,135
2018		288	0	1,059	365	1,712	2,847		2,847	1,135
2019		288	0	1,059	365	1,712	2,847		2,847	1,135
2020		288	0	1,059	365	1,712	2,847		2,847	1,135
2021		288	0	1,059	365	1,712	2,847		2,847	1,135
2022		288	0	1,059	365	1,712	2,847		2,847	1,135
2023		288	0	1,059	365	1,712	2,847		2,847	1,135
2024		288	0	1,059	365	1,712	2,847		2,847	1,135
2025		288	0	1,059	365	1,712	2,847		2,847	1,135
	14,415	6,054	80			48,922			56,745	

Source: JICA Study Team

Table 7.62 Aggregation of INRENA Sub-projects : profit and loss

(US$ 1,000)

	(A) Revenues				(B) Expenditures					Gross
	Entrance Fee Rev.	Niscell. (Svnr. Sales) Rev.		Total	(B-1) Operational					Profit
					Maint. Repair	Misc. Costs	Oprting. Cost	Svnr Cost	Total	
2000	0	0		0	0	0	0	0	0	0
2001	0	0		0	0	0	0	0	0	0
2002	0	0		0	0	0	0	0	0	0
2003	351	122		473	29	20	176	61	286	187
2004	381	134		515	29	0	191	67	287	228
2005	801	253		1,054	91	20	401	127	638	416
2006	850	271		1,121	91	0	425	136	652	469
2007	897	289		1,186	91	0	449	145	684	502
2008	946	307		1,253	91	0	473	154	718	535
2009	993	324		1,317	91	0	497	162	750	567
2010	1,042	342		1,384	91	0	521	171	783	601
2011	1,042	342		1,384	91	0	521	171	783	601
2012	1,042	342		1,384	91	0	521	171	783	601
2013	1,042	342		1,384	91	0	521	171	783	601
2014	1,042	342		1,384	91	0	521	171	783	601
2015	1,042	342		1,384	91	0	521	171	783	601
2016	1,042	342		1,384	91	0	521	171	783	601
2017	1,042	342		1,384	91	0	521	171	783	601
2018	1,042	342		1,384	91	0	521	171	783	601
2019	1,042	342		1,384	91	0	521	171	783	601
2020	1,042	342		1,384	91	0	521	171	783	601
2021	1,042	342		1,384	91	0	521	171	783	601
2022	1,042	342		1,384	91	0	521	171	783	601
2023	1,042	342		1,384	91	0	521	171	783	601
2024	1,042	342		1,384	91	0	521	171	783	601
2025	1,042	342		1,384	91	0	521	171	783	601
	21,891	7,172	0	29,063	1,976	40	10,946	3,586	16,548	12,515

Source: JICA Study Team

Aggregation of INRENA Sub-projects : profit and loss (continued)

(US$ 1,000)

	(B) Expenditures (B-2) Depreciation					Oprting. Profit	(B) Expenditures (B-3) Interest		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	Infra.	Establi-shment	Others		Total		Long-t Loan	Short-t Loan			
2000	0	0	0		0	0	0	0	0	0	0
2001	0	0	0		0	0	0	0	0	0	0
2002	0	0	0		0	0	44	0	44	-44	-44
2003	44	0	0		44	143	91	7	428	45	1
2004	44	0	0		44	184	93	0	424	91	91
2005	44	0	0		44	371	92	0	775	279	371
2006	138	0	0		138	331	89	0	879	242	612
2007	138	0	0		138	363	84	0	907	279	892
2008	138	0	0		138	397	79	0	935	318	1,209
2009	138	0	0		138	429	74	0	962	355	1,564
2010	138	0	0		138	462	69	0	991	393	1,958
2011	138	0	0		138	462	65	0	987	397	2,355
2012	138	0	0		138	462	60	0	982	402	2,757
2013	138	0	0		138	462	56	0	978	406	3,164
2014	138	0	0		138	462	50	0	972	412	3,576
2015	138	0	0		138	462	46	0	968	416	3,992
2016	138	0	0		138	462	41	0	963	421	4,414
2017	138	0	0		138	462	37	0	959	425	4,839
2018	138	0	0		138	462	31	0	953	431	5,270
2019	138	0	0		138	462	27	0	949	435	5,706
2020	138	0	0		138	462	22	0	944	440	6,146
2021	138	0	0		138	462	18	0	940	444	6,590
2022	138	0	0		138	462	12	0	934	450	7,040
2023	138	0	0		138	462	8	0	930	454	7,495
2024	138	0	0		138	462	3	0	925	459	7,954
2025	1,804	0	0		1,804	-1,203	0	0	2,587	-1,203	6,751
	4,566	0	0	0	4,566	7,949	1,191	7	22,312	6,751	

Source: JICA Study Team

Table 7.63 Aggregation of INRENA Sub-projects : cash flow

(US$ 1,000)

	(A) Cash-In							Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational					(B-1) Financial					
	Eqyity	Loan	Total	Entr. Rev.	Svnr. Rev.	Total			Invest-ment	Loan Prncpl. Repay.	Loan Int. Pay.	Repay Short Loan	Pay Short L. Int.	Total
2000	43	0	43	0	0	0		43	43	0	0	0	0	43
2001	256	0	256	0	0	0		256	256	0	0	0	0	256
2002	1,070	2,981	4,051	0	0	0		4,051	4,051	0	44	0	0	4,095
2003	0	72	72	351	122	473		545	72	0	91	44	7	214
2004	0	72	72	381	134	515		587	72	0	93	0	0	165
2005	0	72	72	801	253	1,054		1,126	72	159	92	0	0	323
2006			0	850	271	1,121		1,121		159	89	0	0	248
2007			0	897	289	1,186		1,186		159	84	0	0	243
2008			0	946	307	1,253		1,253		159	79	0	0	238
2009			0	993	324	1,317		1,317		159	74	0	0	233
2010			0	1,042	342	1,384		1,384		159	69	0	0	228
2011			0	1,042	342	1,384		1,384		159	65	0	0	224
2012			0	1,042	342	1,384		1,384		159	60	0	0	219
2013			0	1,042	342	1,384		1,384		159	56	0	0	215
2014			0	1,042	342	1,384		1,384		159	50	0	0	209
2015			0	1,042	342	1,384		1,384		159	46	0	0	205
2016			0	1,042	342	1,384		1,384		159	41	0	0	200
2017			0	1,042	342	1,384		1,384		159	37	0	0	196
2018			0	1,042	342	1,384		1,384		159	31	0	0	190
2019			0	1,042	342	1,384		1,384		159	27	0	0	186
2020			0	1,042	342	1,384		1,384		159	22	0	0	181
2021			0	1,042	342	1,384		1,384		159	18	0	0	177
2022			0	1,042	342	1,384		1,384		159	12	0	0	171
2023			0	1,042	342	1,384		1,384		159	8	0	0	167
2024			0	1,042	342	1,384		1,384		176	3	0	0	179
2025			0	1,042	342	1,384		1,384		0	0	0	0	0
	1,369	3,197	4,566	21,891	7,172	29,063		33,629	4,566	3,197	1,191	44	7	9,005

Source: JICA Study Team

Aggregation of INRENA Sub-projects : cash flow (continued)

(US$ 1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Misc. Costs	Oprting. Cost	Svnr. Cost	Total					
2000	0	0			0	43	0	0	0	0
2001	0	0			0	256	0	0	0	0
2002	0	0			0	4,095	-44	44	0	0
2003	29	20	176	61	286	500	45	0	45	45
2004	29	0	191	67	287	452	135	0	135	180
2005	91	20	401	127	638	961	165	0	165	345
2006	91	0	425	136	652	900	221	0	221	566
2007	91	0	449	145	684	927	259	0	259	825
2008	91	0	473	154	718	956	297	0	297	1,122
2009	91	0	497	162	750	983	334	0	334	1,456
2010	91	0	521	171	783	1,011	373	0	373	1,829
2011	91	0	521	171	783	1,007	377	0	377	2,206
2012	91	0	521	171	783	1,002	382	0	382	2,587
2013	91	0	521	171	783	998	386	0	386	2,973
2014	91	0	521	171	783	992	392	0	392	3,365
2015	91	0	521	171	783	988	396	0	396	3,760
2016	91	0	521	171	783	983	401	0	401	4,161
2017	91	0	521	171	783	979	405	0	405	4,566
2018	91	0	521	171	783	973	411	0	411	4,976
2019	91	0	521	171	783	969	415	0	415	5,391
2020	91	0	521	171	783	964	420	0	420	5,811
2021	91	0	521	171	783	960	424	0	424	6,234
2022	91	0	521	171	783	954	430	0	430	6,664
2023	91	0	521	171	783	950	434	0	434	7,098
2024	91	0	521	171	783	962	422	0	422	7,519
2025	91	0	521	171	783	783	601	0	601	8,120
	1,976	40	10,946	3,586	16,548	25,553		44	8,120	

Source: JICA Study Team

Table 7.64 Aggregation of INRENA Sub-projects : FIRR

FIRR = 9.3%

(US$ 1,000)

	Costs						Revenues			Net Cash
	Total Invest. Costs	Maint Repair	Misc. Cost	Operating Cost	Svnr. Cost	Total	Rev.		Total	Flow for FIRR
2000	43	0	0	0	0	43	0		0	-43
2001	256	0	0	0	0	256	0		0	-256
2002	4,051	0	0	0	0	4,051	0		0	-4,051
2003	72	29	20	176	61	358	473		473	115
2004	72	29	0	191	67	359	515		515	156
2005	72	91	20	401	127	710	1,054		1,054	344
2006		91	0	425	136	652	1,121		1,121	469
2007		91	0	449	145	684	1,186		1,186	502
2008		91	0	473	154	718	1,253		1,253	535
2009		91	0	497	162	750	1,317		1,317	567
2010		91	0	521	171	783	1,384		1,384	601
2011		91	0	521	171	783	1,384		1,384	601
2012		91	0	521	171	783	1,384		1,384	601
2013		91	0	521	171	783	1,384		1,384	601
2014		91	0	521	171	783	1,384		1,384	601
2015		91	0	521	171	783	1,384		1,384	601
2016		91	0	521	171	783	1,384		1,384	601
2017		91	0	521	171	783	1,384		1,384	601
2018		91	0	521	171	783	1,384		1,384	601
2019		91	0	521	171	783	1,384		1,384	601
2020		91	0	521	171	783	1,384		1,384	601
2021		91	0	521	171	783	1,384		1,384	601
2022		91	0	521	171	783	1,384		1,384	601
2023		91	0	521	171	783	1,384		1,384	601
2024		91	0	521	171	783	1,384		1,384	601
2025		91	0	521	171	783	1,384		1,384	601
	4,566	1,976	40			21,114			29,063	

Source: JICA Study Team

Table 7.65 Quistococha Sub-project (CTAR Loreto) : profit and loss

(US$ 1,000)

	(A) Revenues				(B) Expenditures					
	Entrance Fee Rev.	Miscell. (Svnr. Sales) Rev.		Total	(B-1) Operating					Gross Profit
					Maint. Repair	Misc. Costs	Oprting. Cost	Svnr Cost	Total	
2000	0	0		0	0	0	0	0	0	0
2001	0	0		0	0	0	0	0	0	0
2002	0	0		0	0	0	0	0	0	0
2003	148	49		197	34	20	74	25	153	44
2004	160	53		213	34	0	80	27	141	72
2005	173	58		231	34	0	87	29	150	81
2006	185	63		248	34	0	93	32	158	90
2007	197	67		264	34	0	99	34	166	98
2008	210	72		282	34	0	105	36	175	107
2009	222	76		298	34	0	111	38	183	115
2010	235	81		316	34	0	118	41	192	124
2011	235	81		316	34	0	118	41	192	124
2012	235	81		316	34	0	118	41	192	124
2013	235	81		316	34	0	118	41	192	124
2014	235	81		316	34	0	118	41	192	124
2015	235	81		316	34	0	118	41	192	124
2016	235	81		316	34	0	118	41	192	124
2017	235	81		316	34	0	118	41	192	124
2018	235	81		316	34	0	118	41	192	124
2019	235	81		316	34	0	118	41	192	124
2020	235	81		316	34	0	118	41	192	124
2021	235	81		316	34	0	118	41	192	124
2022	235	81		316	34	0	118	41	192	124
2023	235	81		316	34	0	118	41	192	124
2024	235	81		316	34	0	118	41	192	124
2025	235	81		316	34	0	118	41	192	124
	5,055	1,734		6,789	790	20	2,528	867	4,204	2,585

Source: JICA Study Team

Quistococha Sub-project (CTAR Loreto) : profit and loss (continued)

(US$ 1,000)

	(B) Expenditures					Oprting Profit	(B) Expenditures		Expen-diture Total	Profit Before Tax	Accum. Profit Before Tax
	(B-2) Depreciation						(B-3) Interest				
	Infra.	Establi-shment	Others		Total		Long-t Loan	Short-t Loan			
2000	0	0			0	0	0	0	0	0	0
2001	0	0			0	0	0	0	0	0	0
2002	0	0			0	0	18	0	18	-18	-18
2003	52	0			52	-8	36	3	244	-47	-65
2004	52	0			52	20	36	2	231	-18	-83
2005	52	0			52	29	35	0	237	-6	-89
2006	52	0			52	38	33	0	243	5	-84
2007	52	0			52	46	32	0	250	14	-70
2008	52	0			52	55	30	0	257	25	-46
2009	52	0			52	63	28	0	263	35	-11
2010	52	0			52	72	26	0	270	46	35
2011	52	0			52	72	24	0	268	48	82
2012	52	0			52	72	23	0	267	49	131
2013	52	0			52	72	21	0	265	51	181
2014	52	0			52	72	19	0	263	53	234
2015	52	0			52	72	17	0	261	55	289
2016	52	0			52	72	15	0	259	57	345
2017	52	0			52	72	14	0	258	58	403
2018	52	0			52	72	12	0	256	60	463
2019	52	0			52	72	10	0	254	62	524
2020	52	0			52	72	8	0	252	64	588
2021	52	0			52	72	6	0	250	66	653
2022	52	0			52	72	5	0	249	67	720
2023	52	0			52	72	3	0	247	69	789
2024	52	0			52	72	1	0	245	71	859
2025	572	0			572	-449	0	0	765	-449	411
	1,717	0	0	0	1,717	868	452	5	6,378	411	

Source: JICA Study Team

Table 7.66 Quistococha Sub-project (CTAR Loreto) : cash flow

(US$ 1,000)

	(A) Cash-In							Total	(B) Cash-Out					
	(A-1) Financial			(A-2) Operational					(B-1) Financial					
	Eqyity	Loan	Total	Entr. Rev.	Svnr. Rev.	Total			Invest-ment	Loan Prncpl. Repay.	Loan Int. Pay.	Repay Short Loan	Pay Short L. Int.	Total
2000	16	0	16	0	0	0		16	16	0	0	0	0	16
2001	96	0	96	0	0	0		96	96	0	0	0	0	96
2002	403	1,202	1,605	0	0	0		1,605	1,605	0	18	0	0	1,623
2003	0	0	0	148	49	197		197	0	0	36	18	3	57
2004	0	0	0	160	53	213		213	0	0	36	13	2	51
2005	0	0	0	173	58	231		231	0	60	35	0	0	95
2006			0	185	63	248		248		60	33	0	0	93
2007			0	197	67	264		264		60	32	0	0	92
2008			0	210	72	282		282		60	30	0	0	90
2009			0	222	76	298		298		60	28	0	0	88
2010			0	235	81	316		316		60	26	0	0	86
2011			0	235	81	316		316		60	24	0	0	84
2012			0	235	81	316		316		60	23	0	0	83
2013			0	235	81	316		316		60	21	0	0	81
2014			0	235	81	316		316		60	19	0	0	79
2015			0	235	81	316		316		60	17	0	0	77
2016			0	235	81	316		316		60	15	0	0	75
2017			0	235	81	316		316		60	14	0	0	74
2018			0	235	81	316		316		60	12	0	0	72
2019			0	235	81	316		316		60	10	0	0	70
2020			0	235	81	316		316		60	8	0	0	68
2021			0	235	81	316		316		60	6	0	0	66
2022			0	235	81	316		316		60	5	0	0	65
2023			0	235	81	316		316		60	3	0	0	63
2024			0	235	81	316		316		62	1	0	0	63
2025			0	235	81	316		316		0	0	0	0	0
	515	1,202	1,717	5,055	1,734	6,789		8,506	1,717	1,202	452	31	5	3,407

Source: JICA Study Team

Quistococha Sub-project (CTAR Loreto) : cash flow (continued)

(US$ 1,000)

	(B) Cash-Out					Total	Cash-In Minus Cash-In Out	Short-term Loan (Int. R.= 15.0%)	Net Cash Flow	Accum. Net Cash Flow
	(B-2) Operational									
	Maint. Repair	Misc. Costs	Oprting. Cost	Svnr. Cost	Total					
2000	0	0			0	16	0	0	0	0
2001	0	0			0	96	0	0	0	0
2002	0	0			0	1,623	-18	18	0	0
2003	34	20	74	25	153	210	-13	13	0	0
2004	34	0	80	27	141	192	21	0	21	21
2005	34	0	87	29	150	245	-14	0	-14	7
2006	34	0	93	32	158	251	-3	0	-3	4
2007	34	0	99	34	166	258	6	0	6	10
2008	34	0	105	36	175	265	17	0	17	26
2009	34	0	111	38	183	271	27	0	27	53
2010	34	0	118	41	192	278	38	0	38	91
2011	34	0	118	41	192	276	40	0	40	130
2012	34	0	118	41	192	275	41	0	41	171
2013	34	0	118	41	192	273	43	0	43	214
2014	34	0	118	41	192	271	45	0	45	258
2015	34	0	118	41	192	269	47	0	47	305
2016	34	0	118	41	192	267	49	0	49	354
2017	34	0	118	41	192	266	50	0	50	403
2018	34	0	118	41	192	264	52	0	52	455
2019	34	0	118	41	192	262	54	0	54	509
2020	34	0	118	41	192	260	56	0	56	564
2021	34	0	118	41	192	258	58	0	58	622
2022	34	0	118	41	192	257	59	0	59	681
2023	34	0	118	41	192	255	61	0	61	741
2024	34	0	118	41	192	255	61	0	61	802
2025	34	0	118	41	192	192	124	0	124	926
	790	20	2,528	867	4,204	7,611		31	926	

Source: JICA Study Team

Table 7.67 Quistococha Sub-project (CTAR Loreto) : FIRR

FIRR = 3.4%

(US$ 1,000)

	Costs						Revenues			Net Cash Flow for FIRR
	Total Invest. Costs	Maint Repair	Misc. Cost	Oprting Cost	Svnr. Cost	Total	Rev.		Total	
2000	16	0	0	0	0	16	0		0	-16
2001	96	0	0	0	0	96	0		0	-96
2002	1,605	0	0	0	0	1,605	0		0	-1,605
2003	0	34	20	74	25	153	197		197	44
2004	0	34	0	80	27	141	213		213	72
2005	0	34	0	87	29	150	231		231	81
2006		34	0	93	32	158	248		248	90
2007		34	0	99	34	166	264		264	98
2008		34	0	105	36	175	282		282	107
2009		34	0	111	38	183	298		298	115
2010		34	0	118	41	192	316		316	124
2011		34	0	118	41	192	316		316	124
2012		34	0	118	41	192	316		316	124
2013		34	0	118	41	192	316		316	124
2014		34	0	118	41	192	316		316	124
2015		34	0	118	41	192	316		316	124
2016		34	0	118	41	192	316		316	124
2017		34	0	118	41	192	316		316	124
2018		34	0	118	41	192	316		316	124
2019		34	0	118	41	192	316		316	124
2020		34	0	118	41	192	316		316	124
2021		34	0	118	41	192	316		316	124
2022		34	0	118	41	192	316		316	124
2023		34	0	118	41	192	316		316	124
2024		34	0	118	41	192	316		316	124
2025		34	0	118	41	192	316		316	124
	1,717	790	20			5,921			6,789	

Source: JICA

7.2. Environmental Impact Assessment

7.2.1. Objectives

The Environmental Impact Assessment (EIA) has been carried out for the priority projects that are expected to cause positive/negative impacts on the surrounding area concerning social and natural environment, and public pollution in accordance with the official EIA guidelines provided by Peruvian governmental organizations related to the priority projects as well as those set by JICA and Japan Bank of International Cooperation (JBIC).

The main objectives of EIA are:

- To identify anticipated environmental impacts in implementing the priority projects based on environmental baseline data and field reconnaissance,
- To make judgements what the critical issues for the priority projects could be,
- To propose mitigation measures and alternatives for anticipated negative environmental impacts, and
- To propose comprehensive environmental management and monitoring plans.

7.2.2. Results of EIA for Priority Projects

Results of EIA by priority project are presented in the form of the basic environmental impact matrix from Table 7.69 to Table 7.83. Environmental impacts by environmental item are evaluated into the following five categories: Positive impact, No impact, Minor impact, Moderate impact and Serious impact.

According to EIA, the priority projects will give no serious impact surrounding the project areas. Environmental considerations are, however, needed sincerely for moderate and minor negative impacts. Princiap negative impacts for the priority projects are summarized in Table 7.68.

Project proponents, contractors and Peruvian governmental organizations related to the priority projects are to implement the priority projects in consideration of those environmental impacts. Environmental management plan including mitigation measures and monitoring in implementing the priority projects are described in detail in the Volume 4 of this report.

The obscure points are to be investigated by the subcontracted local consulting firm in the supplemental surveys on social and natural environment, and public pollution in implementing the priority projects.

Table 7.68 Principal negative impacts for the priority projects

Priority Project	Highly considered negative impact(s)
1) Construction of the New Trujillo Bypass Road	- Population distribution and resettlement in the planning stage - Public pollution in the construction stage
2) Development of Chan Chan Archaeological Park	- Population distribution and resettlement in the planning stage
3) Tourism Improvement of Huacas del Sol y la Luna	- Water pollution in the construction stage - Soil contamination in the construction stage
4) Development of Parque del Baluarte	- Traffic and public facilities in the construction stage
5) Tourism Improvement of El Brujo Archaeological Site	- Noise and vibration in the construction stage
6) Beautification of Historic Center of Pacasmayo	- Traffic and public facilities in the construction stage
7) Development of the Sipan Archaeological Park	- Public pollution in the construction stage
8) Tourism Improvement of Batan Grande Reserve Zone	- Flora and fauna in the construction and operation stages
9) Development of the Hermosa Beach Resort Estate	- Coastal zone in the construction and operation stages
10) Mangrove Tourism Improvement in Puerto Pizarro	- Coastal zone in the construction and operation stages
11) Improvement of the Tumbes Airport	- Topography in the construction stage
12) Community Development of La Encantada Ceramic Village	- No highly considered negative impact
13) Development of Allpahuayo - Mishana Museum	- Flora and fauna in the construction and operation stages
14) Tourism Improvement of the Quistococha Tourist Complex	- Flora and fauna in the construction and operation stages
15) Tourism Improvement of the San Juan Handicraft Market	- No highly considered negative impact

Source: JICA Study Team

7.2.3. Results by sub-projects

(1) Construction of the New Trujillo Bypass Road

No serious impact is anticipated in implementing this project. Local people will receive socioeconomic benefit. Cultural asset of Chan Chan archeological site will get better condition of its conservation. Environmental impacts of the project are shown in Table 7.69 and proposed mitigation measures for moderate impacts are the followings:

a. Population distribution and resettlement in the planning stage:

- To elaborate a plan of population distribution and resettlement,
- To hold public hearings for local population affected by the project, and
- To establish a negotiation manner about property expropriation.

b. Public pollution in the construction stage:

- To increase surveillance including monitoring by official organizations,
- To establish or improve enforcement regulations, and
- To provide treatment facilities such as litter containers at appropriate places.

Table 7.69 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	B	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	B	-
Social Environment			
- Population distribution & resettlement	C	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	B	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	-
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	B	-
- Soil contamination	-	B	-
- Noise & vibration	-	C	B

Notes: A=Positive Impact, B=Minor Impact, C=Moderate Impact, D=Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(2) Development of Chan Chan Archaeological Park

Through the implementation of this priority project no major negative impact is foreseen. Local people who work in informal sector will receive temporary job opportunities. The cultural asset will be conserved under better condition. Anticipated environmental impacts of the project are presented in Table 7.70. Proposed mitigation measures for moderate impacts are the followings:

a. Population distribution and resettlement in the planning stage:

- To investigate anticipated risk situation in implementing the project,
- To elaborate a plan of population distribution and resettlement,
- To hold public hearings for local population affected by the project, and
- To establish a negotiation manner about property expropriation.

Table 7.70 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	-	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	-	-

Notes: A=Positive Impact, B=Minor Impact, C=Moderate Impact, D=Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(3) Tourism Improvement of Huacas del Sol y la Luna

This priority project will give no serious impact in/around project area. Environmental considerations are, however, needed sufficiently for moderate impacts and minor impacts. Income generations will be expected. Anticipated environmental impacts of the project are presented in Table 7.71. Proposed mitigation measures for moderate impacts are as follows:

a. Soil contamination in the construction stage:

- To use the existing facilities such as quarries and garbage sites,
- To establish appropriate location for camp, machine patios, and asphalt and crushing plants,
- To carry out awareness campaigns of environmental management for project proponents, contractors and workers, and
- To establish or improve enforcement regulations for public pollution.

Table 7.71 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	C	-	-
- Economic activities	B	A	A
- Traffic &public facilities	-	B	-
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	-	A
- Natural and cultural assets	-	B	A
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	-	-

Notes: A=Positive Impact, B=Minor Impact, C=Moderate Impact, D=Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(4) Development of Parque del Baluarte

Local people will receive socioeconomic benefit such as increment of job opportunities from the priority project without serious environmental impact. Table 7.72 shows anticipated environmental impacts on the project area. Proposed mitigation measures for moderate impact is as follows:

a. Traffic and public facilities in the construction stage:

- To coordinate the qualification of alternating roads with the local authorities,
- To utilize the Sabogal, Hernández and Union street as alternating roads in case of Sinchi Roca avenue would be closed,
- To wet the roads where the vehicles and building machines transit daily because air pollution will occur if there is no treatment, and
- To wet and cover the building materials with canvas before being transported.

Table 7.72 Basic environmeltal impact matrix

Environmental Impacts	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	B	-
Social Environment			
- Pop. distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	B	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	-
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	C	-
- Soil contamination	-	C	-
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(5) Tourism Improvement of El Brujo Archaeological Site

No major negative impact is foreseen in implementing this priority project. Local people will receive benefit of income generations. Cultural assets of the archaeological site will enhance and improve its cultural value. Anticipated environmental impacts in implementing the project are presented in Table 7.73. Proposed mitigation measures are to be carried out for sustainable development against the following negative impact.

a. Noise and vibration in the construction stage:

- To increase surveillance by official organization,
- To establish or improve enforcement regulations related to public pollution,
- To conduct environmental education for project proponents, constructors and workers,
- To be under good condition of equipment and machinery, and
- To use noise suppressors

Table 7.73 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	B	-
Social Environment			
- Population distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	B	B	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	-	B
- Soil contamination	-	-	B
- Noise & vibration	-	C	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(6) Beautification of Historic Center of Pacasmayo

Local people will receive socioeconomic benefit not only for tourism sector but also local communities. Historic and cultural assets will be conserved and improved its values. This priority project will give no major negative impact surrounding the project area. Moderate and minor impacts are, however, to be managed sufficiently with appropriate manners. Table 7.74 shows anticipated environmental impacts on project area. Proposed mitigation measures for moderate impacts are the followings:

a. Traffic and public facilities in the construction stage:

- To coordinate a transportation manner with the municipality in consideration of a time zone of heavy traffic surrounding the project area, especially the F.A. Herrera street because this road is the only way that connects the city center with the old Railroad Station and the sea wall, and Andrés Razuri industrial complex zone, and
- To coordinate among the municipality, companies in the industrial complex zone and project contractor.

Table 7.74 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	B	-
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	?	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	C	-
- Split of communities	-	-	-
- Water rights and fishing rights	?	-	-
- Sanitary condition	-	-	-
- Landscape	-	-	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(7) Development of the Sipan Archaeological Park/ Ciurcuit Road Improveme: Fereñafe - Huaca Rajada - Cayalti

This priority project will contribute to the conservation and improvement of cultural asset as well as socioeconomic benefit not only for tourism sector but also local communities. No serious impact is foreseen in implementing this project. Anticipated environmental impact are presented in Table 7.75. Proposed mitigation measures for negative impacts, especially public pollution, are as follows:

a. Public pollution in the construction stage:

- To increase surveillance through official organization related to public pollution and local government,
- To establish or improve enforcement regulations,
- To provide treatment facilities such as litter containers at appropriate sites, and
- To conduct environmental education for project proponents, contractor and workers.

Table 7.75 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	-	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	B	-
- Sanitary condition	-	-	-
- Landscape	-	-	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	B	B
- Soil contamination	-	B	B
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(8) Tourism Improvement of Batan Grande Reserve Zone

This priority project will give no major negative impact in/around project area. Since the project area is in the National Reserve of Batan Grande, environmental management are, however, needed sincerely for moderate impacts and minor impacts. Basic environmental impact matrix is presented in Table 7.76. Proposed mitigation measures for moderate impacts are the followings:

a. Flora and fauna in the construction and operation stages:

- To coordinate the construction works among INRENA, official organization related to the project, municipalities, project proponents and contractor,
- To establish or improve enforcement regulations such as hunting, fishing and deforestation, and
- To make a plan not to avoid the temporary dispersion of fauna and conservation of wild flora and fauna.

Table 7.76 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	B	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	C	B
Social Environment			
- Population distribution & resettlement	B	-	B
- Economic activities	-	A	A
- Traffic &public facilities	-	-	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(9) Development of the Hermosa Beach Resort Estate

Without serious environmental impact, local people will receive socioeconomic benefit not only for tourism sector but also local communities as well as improvement of traffic and public facilities, and landscape. Environmental management are, however, required for negative impacts, especially coastal ecology in construction and operation stages. Table 7.77 shows anticipated environmental impact on project area. Proposed mitigation measures for moderate impacts are as follows:

a. Coastal zone in the construction and operation stages:

- To increase surveillance including monitoring by official organizations,
- To establish or improve enforcement regulations, especially marine pollution,
- To implement environmental education program toward project proponent, contractor, participants in tourism sector and local people, and
- To make treatment plants for public pollution.

Table 7.77 Basic environmental impact matrix

Environmental Impacts	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	B	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	C	B
Social Environment			
- Pop. distribution & resettlement	B	-	B
- Economic activities	-	A	A
- Traffic &public facilities	-	-	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(10) Mangrove Tourism Improvement in Puerto Pizarro

Local people will receive socioeconomic benefit not only for tourism sector but also local communities. Traffic and public facilities will be improved by the project. This priority project will give no major negative impact surrounding the project area. No serious impact is foreseen in implementing the project, moderate and minor impacts are, however, to be managed sufficiently with appropriate manners because the project area is near the National Sanctuary of Tumbes Mangrove. Table 7.78 shows anticipated environmental impacts on the project area. Proposed mitigation measures for moderate impacts are the followings:

a. Coastal zone in the construction and operation stages:

- To make appropriate system of water environment such as treatment of drainage and contaminated waters,
- To establish or improve enforcement regulations for water pollution, and
- To implement appropriate surveillance including monitoring.

Table 7.78 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	C	B
- Flora & fauna	-	B	-
Social Environment			
- Population distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	B	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	-
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	-	B
- Soil contamination	-	-	B
- Noise & vibration	-	-	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(11) Improvement of the Tumbes Airport

No major negative impact is foreseen in implementing this priority project because the project site is limited to a specific small part of the current airport. Local people as well as tourists will receive socioeconomic benefit. Anticipated environmental impacts in implementing the project are presented in Table 7.79. Proposed mitigation measures for negative impact are the followings:

a. Topography in the construction stage:

- To establish or improve enforcement regulations for land use,
- To implement appropriate surveillance including monitoring by official organization, and
- To implement environmental education program toward project proponent, and contractor

Table 7.79 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	C	B
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	?	-	-
- Sanitary condition	-	B	-
- Landscape	-	-	A
- Natural and cultural assets	-	-	-
Public Pollution			
- Air pollution	-	B	-
- Water pollution	-	-	B
- Soil contamination	-	-	B
- Noise & vibration	-	B	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(12) Community Development of La Encantada Ceramic Village

Local people will receive socioeconomic benefit not only for tourism sector, craft men in particular, but also local communities. Traffic and basic social infrastructure as well as landscape will be improved by the project. This priority project will give no serious and moderate negative impact in/around project area. Table 7.80 shows anticipated environmental impacts on project area.

Table 7.80 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	B	-
Social Environment			
- Population distribution & resettlement	B	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	-
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	-	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(13) Development of Allpahuayo – Mishana Museum

This priority project will contribute to the conservation and improvement of natural asset as well as socioeconomic benefit not only for tourism sector but also local communities. This priority project will give no major negative impact in/around project site. Environmental management is, however, needed sincerely for negative impacts because the project area is near the National Reserve of Allpahuayo - Mishana. Table 7.81 shows anticipated environmental impacts on project area. Proposed mitigation measures for moderate impacts are the followings:

a. Flora and fauna in the construction and operation stages:

- To make a plan to avoid the temporary dispersion of wild fauna and conservation of wild flora and fauna,
- To establish or improve enforcement regulations for natural conservation, and
- To reinforce surveillance including monitoring by official organization and NGOs related to natural environment.

Table 7.81 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	B	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	C	B
Social Environment			
- Population distribution & resettlement	?	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	-	-
- Split of communities	-	-	-
- Water rights and fishing rights	?	-	-
- Sanitary condition	-	-	-
- Landscape	-	-	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	B	B
- Soil contamination	-	B	B
- Noise & vibration	-	-	-

Notes: A = Positive Impact, B = Minor Impact, C = Moderate Impact, D = Serious Impact, - =No Impact, ? =Not Clear

Source: JICA Study Team

(14) Tourism Improvement of the Quistococha Tourist Complex

This priority project will give no serious impact surrounding the project site. Environmental considerations are, however, required sufficiently for negative impacts. Expected major positive impacts are socioeconomic benefit, revaluation of natural asset and improvement of public facilities. Basic environmental impact matrix is presented in Table 7.82. Proposed mitigation measures for moderate impacts are the followings:

a. Flora and fauna in the construction and operation stages:

- To make a plan to avoid the temporary dispersion of wild fauna and conservation of wild flora and fauna,
- To establish or improve enforcement regulations for natural conservation, and
- To reinforce surveillance including monitoring by official organization and NGOs related to natural environment, and
- To control the water quality of the Quistococha lagoon.

Table 7.82 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	C	-
Social Environment			
- Population distribution & resettlement	?	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	B	-	-
- Sanitary condition	-	-	B
- Landscape	-	B	-
- Natural and cultural assets	-	B	A
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	B	B
- Soil contamination	-	-	-
- Noise & vibration	-	-	-

Notes: A=Positive Impact, B=Minor Impact, C=Moderate Impact, D=Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

(15) Tourism Improvement of the San Juan Handicraft Market

No major negative impact is foreseen in implementing this priority project because the project site is limited to a small part of the current facilities. Local people will receive socioeconomic benefit not only for tourism sector, especially craft men and souvenir shop, but also local communities near the market. Cultural asset will be reevaluated with prosperity of the handicraft market. Traffic and basic social infrastructure as well as landscape will be improved by the project. Table 7.83 shows anticipated environmental impacts on project area.

Table 7.83 Basic environmental impact matrix

Environmental Impacts of the Project	Pre-Construction Stage	Construction Stage	Operation Stage
Natural Environment			
- Topography	-	-	-
- Soil erosion	-	-	-
- Ground water	-	-	-
- Hydrological situation	-	-	-
- Coastal zone	-	-	-
- Flora & fauna	-	-	-
Social Environment			
- Population distribution & resettlement	-	-	-
- Economic activities	-	A	A
- Traffic &public facilities	-	B	A
- Split of communities	-	-	-
- Water rights and fishing rights	-	-	-
- Sanitary condition	-	-	-
- Landscape	-	B	A
- Natural and cultural assets	-	-	A
Public Pollution			
- Air pollution	-	-	-
- Water pollution	-	-	-
- Soil contamination	-	-	-
- Noise & vibration	-	-	-

Notes: A=Positive Impact, B=Minor Impact, C=Moderate Impact, D=Serious Impact,
- =No Impact, ? =Not Clear

Source: JICA Study Team

8. Conclusion and Recommendations

- Three priority projects, namely, the Trujillo - Chiclayo Tourism Corridor Development Plan, the Tumbes - Piura Tourism Corridor Development Plan, and Amazon River Tourism Corridor Development Plan, are economically and financially feasible and environmentally sound. Therefore they should be implemented by relevant organizations by the year 2005.
- JICA Study Team recommends MITINCI to establish the Northern Tourism Development Authority or a similar governmental or semi-governmental organization, which is capable of planning and implementing tourism projects, to ensure self-sustainable tourism development, and to have the initiative in tourism development among the Peruvian Governmental Agencies. Establishment of the said organization makes a prerequisite to implement the Beach Resort Estate Development in Hermosa Beach.
- Local participation is indispensable for the conservation of cultural and natural heritage, and for tourism products to obtain authenticity. Therefore ample considerations should be made for local community members to participate in implementing the priority projects.
- There are a number of locally conceived projects that are worth considerations for future development strategy. MITINCI should support the planning of these community-based projects by providing consultation and technical advisory.
- Sub-project Implementation Committee should be established at subproject sites as necessary to work as a mechanism for coordination among stakeholders and to promote local community participation.
- MITINCI and PromPeru should jointly conduct periodical visitor surveys to supplement existing tourism statistics. More specifically, the survey should be designed to clarify the percentage of purposes of visit including business, VFR (visit friends and relatives), and holiday.
- MITINCI, PromPeru, INC, and INRENA should introduce a system that allows volunteers to participate in archaeological excavation, restoration works, and research works. The system would contribute to the conservation of Peru's cultural and natural heritage as well as to the increase of competitiveness of the Peruvian tourism sector.
- Peru is a country endowed with a great variety of natural characteristics. Tourism promotion should not only focus on the established Andes image but also make efforts at creating distinct and favorable tourism images of the Pacific Coast and the Amazon.

- The “sierra” area of the Northern Tourism Region, which is excluded from the Study Area, has great tourism potential, and its development is expected to multiply the development effects of the Study Area. It is highly recommendable to prepare a regional tourism master plan of the Sierra area when its security conditions improve.
- Taking into account the importance of implementing the priority projects, it is recommendable to conduct a basic designing study of a part of the priority projects, which may be financed as grant by JICA.