

## 9. Pilot Projects

As part of the present Study, the study team and its counterpart carried out two pilot projects jointly in an effort to enhance awareness and capacity of the stakeholders in planning. Given limited time and resources available, the pilot projects had to be small and simple enough to be implemented and effective within a couple of months.

The objectives of implementing pilot projects as part of the Study are as the followings.

- To demonstrate effectiveness of participatory approach in planning.
- To provide hands-on activities for local capacity building in planning and implementation.
- To provide opportunities for different stakeholders, such as Provincial Government, APSARA, the local residents, and other concerned groups of people to collaborate and work together for their common interests.
- To incorporate lessons and findings through the experiences in pilot projects into the Master Plan.

### 9.1 Pilot Project: A More Beautiful Siem Reap

#### 9.1.1 Design Outlines

##### (1) Background of the Pilot Project

In the Progress Report 1 meeting held in January 2005, many of the participants strongly proposed a pilot project to enhance people's awareness of environmental protection. The Study Team, therefore, decided to formulate a pilot project to enhance people's awareness of the environment focusing on the issue of waste, which is the topic of most concern for the citizens.

##### (2) Goal

The goal was to make Siem Reap town more beautiful with the cooperation of the people. The title of the pilot project was *Enhancing People's Awareness for "A More Beautiful Seem Reap"*.

##### (3) Strategies

The following 3 strategies to achieve the goal were adopted.

- a) Starting from small target (schools) first and then gradually widen the target areas.
- b) Targeting various age groups by different approaches.
- c) Utilization of existing social capital.

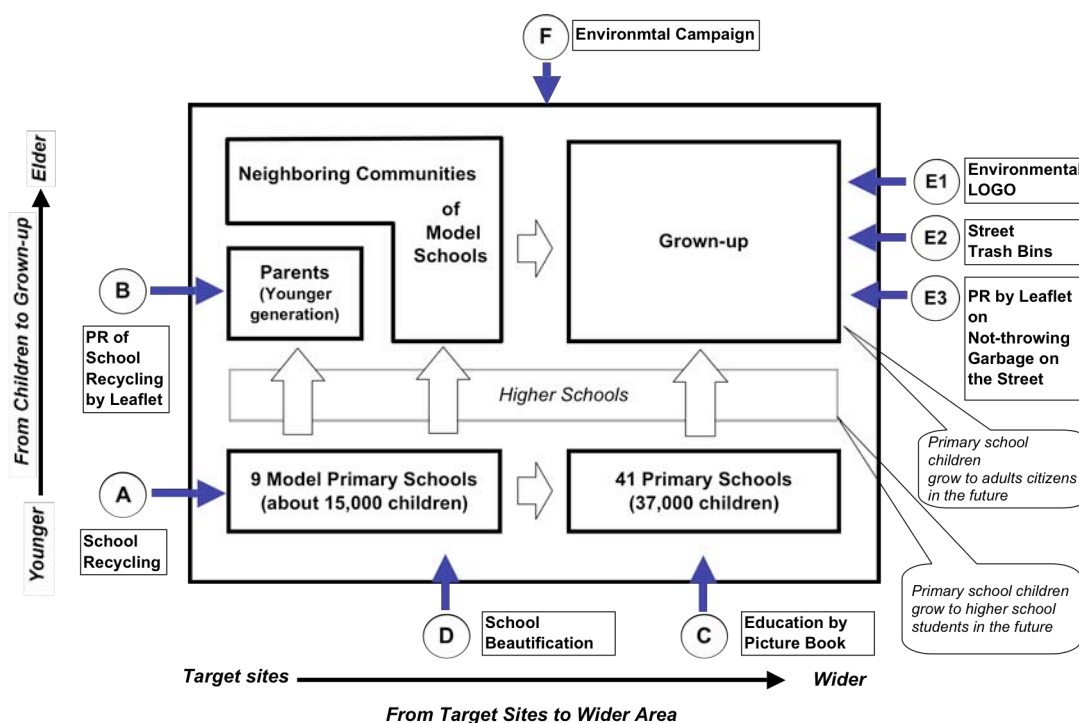
##### (4) Policies for Implementation

The Study Team adopted the following approaches to achieve the objectives:

- a) The project must be manageable by the counterparts by themselves.
- b) The pilot project shall employ only locally available resources so that they can be expanded.
- c) The Study team shall provide only technical assistance and financial assistance for the investment.

### 9.1.2 Description of Formulated Project

The pilot project consisted of two sub-projects : one targeting primary school children and their parents and the other targeting general adults. The overall approach is shown in the following figure and table.



#### Project Components & Target

Figure II.9.1 Conceptual Image of the Pilot Project

Table II.9.1 List of Activities in Pilot Project

Target groups	Code	Name of activity	Description
Students and parents	A	School Recycling	Students are requested to bring recyclable garbage from their homes such as empty aluminum cans, PET bottles, etc. And separate and keep them in the storehouses. Once they accumulate, they are sold to a middleman and the school buys school equipment with the income. This project aims to cultivate children's ecological mentality to save. This will be implemented at nine primary schools.
	B	Education to Parents	Raising the environmental awareness of parents is necessary to support the implementation of Project A, because parents are indirect participants. Leaflets will be printed and distributed to parents at nine primary schools.
	C	Education to School Children	3,220 copies of small picture books on garbage are printed and distributed to all 41 primary schools in Siem Reap District. 100 large picture books for teaching will be produced.
	D	Beautification of Schools	The study team provides funds to 9 primary schools for beautifying in/around the schools by creating flower beds, planting, etc. to cultivate the importance of beautification in people's minds.
General adult people	E-1	Environmental logo stickers	An environmental logo is created. 10,000 stickers with the environmental logo are distributed.
	E-2	Street trash bins	100 trash bins showing the environmental logo and the advertisement of the sponsor are placed along main streets.
	E-3	PR by leaflets	Leaflets for environmental education will be distributed.
	F	Clean Up Campaign	A campaign to raise people's awareness of the environment will be executed by many volunteers wearing a T-shirt that says "A More Beautiful Siem Reap".

### 9.1.3 Lessons and Recommendations

#### (1) Project for “Enhancing School Children’s Environmental Awareness”

##### Results

It is too early to determine the result of the project because most of activities started only a few months ago. The project is generally going well and has already showed very good achievement at some of the schools. Considering the fact that most stakeholders strongly support the project and that activities are going well without any problems, it is expected that the project will proceed with success. The main reasons for the success are as follows:

- There is a large demand for environmental preservation
- The project is not only very fitting to the present demand but also each activity is easily carried out due to its simplicity.

The grounds for the result of high sustainability of the project are 1) its fitness to the large demand, 2) easy execution, 3) an assured income without any financial risks, etc. In addition, the involvement of the parents has made the project more sustainable.

##### Recommendation

Because it has been judged that the all target schools have sufficient capacities to carry on the project by themselves, the assistance to them should be terminated.

There have been several inquiries on the project to the target schools from other primary schools and in addition, all headmasters of the target schools support expanding the project to other schools. The expansion of the project to other primary schools and junior high schools should, therefore, be examined.

Although the project objective is to improve people’s environmental consciousness not income generation, the income generated from the project actually increases the project’s sustainability. However, people sometimes opt to aim at income generation while forgetting the primary objective and stop pupils from sorting the recovered material, which is an important process for the pupils to learn the importance of recycling. Therefore, the effectiveness of the environmental education should always be kept in mind in order to maximize the project’s effectiveness.

##### Lessons

Involving the pupils’ parents is useful for the project and the distribution of leaflets has been effective for this purpose. The leaflets made should, therefore, be fully utilized.

It is essential to let the pupils sort recyclable wastes because the project’s objective is for pupils to learn the importance of recovering materials from waste to contribute to environmental preservation. It is particularly important to let the pupils keep the store house tidy.

The provision of primary collection points near the classrooms where pupils can deposit recyclable materials anytime made it easy for them to bring recyclable waste from their homes.

In the school recycling project, it is said that to collect enough recyclable materials to make the project a success requires a minimum of about 1000 pupils, while one school

having slightly less than 500 pupils just managed to do the school recycling. This proves that it is possible for schools having about 500 pupils to carry out the school recycling project.

It was found at some schools that some of the waste collected piled up in the store houses because they had no market value. This might discourage pupils from carrying on the school recycling. Therefore, the items to be collected should be carefully decided before implementation.

## **(2) Project for “Enhancing Adults’ Environmental Awareness”**

### **Results**

It was too early to determine the result of the project because it started only a few months ago. However, considering the fact that the campaign has been executed twice and there have been no serious obstructions encountered, it is highly likely that the provincial government will execute the campaign by themselves. This is because the project will meet the demand.

### **Recommendation**

The raising of adults’ environmental awareness is very important, as they are the majority and the main actors in economic activities. However, this is very difficult to do because there is no official occasion to educate them, they have different interests, and they are more independent than pupils. The education of adults should be steadily executed with patience by trial and error.

The clean up campaign should focus on motivating people and publicity rather than on practical effects such as cleaning up the town.

It appears that many of the beautiful environmental logo stickers placed on the trash bins have been stolen because they are loved by many people. Therefore, the sale of goods showing the environmental logo such as T-shirts should be considered.

The project targeted beautification this time. However, to achieve environmental preservation, the education should cover not only the solid waste sector but also water supply, wastewater, electricity, etc. The beautification project should be understood as the first step for further expansion of the education project.

### **Lessons**

The Study team provided the provincial government with public trash bins while MICC collects waste from them, and both benefit from the publicity of putting their names on the trash bins. The public trash bins are very effective for publicity because they are installed along busy roads for pedestrians. Therefore, it is possible to get companies’ assistance for public trash bins in return for allowing them to utilize the bins for publicity. The administration should promote PPP (Public and Private Partnership) for environmental preservation by working as an intermediary to link the public and private sectors.

The clean up campaign is an effective tool for enhancing people’s awareness. Therefore, rather than implementing a complicated campaign requiring various preparations, the campaign should be as simple as possible and involve various people in order to unite many people and make the campaign sustainable.



Store house built at Hun Sen Primary School



Explaining the program to parents



Recyclables are kept in the store house after being precisely sorted



Many people gathered in front of the Grand Hotel.



The Study team handed over 100 trash bins to the Provincial government



The governor helps gathering scattered trash on the street.



The primary deputy governor leads the campaign



Environmental Logo for Siem Reap



PR by Leaflets

## 9.2 Pilot Project: Angkor Product Fair 2005

### 9.2.1 Design Outline

#### (1) Background of the Pilot Project

The city center of Siem Reap receives many international tourists, which makes it one of the highest potential outlets for local products of Siem Reap Province and the whole Cambodia at large. The Angkor Product Fair was the first attempt of its kind to exhibit selected local products of Siem Reap that may have potentials of international marketability. A lot of sellers, buyers and business people from Siem Reap, Phnom Penh and overseas showed their high interests to participate in the fair.

#### (2) Goal

The goal of exhibition was to promote local and community industries by creating opportunities for networking information, incentives and motivation for design and technical upgrading, and opportunities for public relations and sales promotion. The final target in the near future would be the development of local products and new local brand.

### 9.1.2 Description of Formulated Project

The overall description of the Fair, expected "buyers-sellers" matching, and a summary profile of exhibitors are shown in the following tables.

**Table II.9.2 Description of Formulated Project of "Angkor Fair 2005"**

Item	Description
Participants (Exhibitors)	Exhibitors are /producers/ designers of attractive specialty local products. The local products consist of handicrafts, souvenir, agricultural products based on local native culture, tradition, nature and resources. Around 60 exhibitors are expected. See Table
Venue:	Angkor Century Resort & Spa, Siem Reap City (Indoor and outdoor exhibiting zone including 60 booth)
Dates	December 9 <sup>th</sup> to 11 <sup>th</sup> 2005 (9:00am to 9:00pm everyday) 9 <sup>th</sup> ---business day, Angkor Quality Products Fair 10-11 <sup>th</sup> ---open to the public
Admission Fee and Booth Fee:	Free
Organizer:	Siem Reap Provincial Government Chaired by the Governor, CEO=Vice Governor, Operation Director = Task force team leader (Co-organizer) APSARA, JICA (Supporter) Ministry of Commerce, Ministry of Tourism, Ministry of Industry mine and Energy, Ministry of Culture and Fine Arts, Ministry of Agriculture, Siem Reap Chamber of Commerce, Phnom Penh Chamber of Commerce, Cambodia Hotel Association, Cambodia Association of Travel Agents
Task Force Team (Administrative and Operation Office)	Task Force team consists of Provincial Government and Counterpart Team. CEOs of the team were assigned to the 2 Vice Governors and Operation Director was selected as the team leader. The team was in charge of selection of Angkor Products and the whole operation of the Fair. JICA study team support the Team as advisor and sponsor. Local assistants are hired as supporting and operational body of the Task Force Team.
Evaluation Group:	The study team plans to hold "Angkor quality Products Contest" during the Fair period. Outstanding products will be selected for awarding prize. Evaluation group consisted of the study team, task force team, specialists on handicrafts and agricultural products was organized for commendation. The evaluation team reviewed the originality and special features of the displaying products. The evaluation criteria included material, design, production process and quality of the products. The evaluation group offers Angkor Quality Product Prize for selected excellent products.

**Table II.9.3 The Category of Target Buyers for the Fair Exhibitors (by Sellers Type)**

Types of Sellers		(1) Designers initiative Type		(2) Producers initiative Type		(2) Social work-oriented Type
Characteristics of sellers	Owenshop	Foreign owners in the majority		Local owners in the majority		Village initiative
	Workshop type	In-house and village workshop		In-house workshop		In-house and village workshop
	Major products	Silk products, Stone & wood carving, and Lacquer ware		Stone & wood carving, pottery, silver ware, paintings, and cotton products		Basketry, silk products, and leather carving
	Quality of Products	High	Middle	High	Middle	Middle-low
Potential for marketing: by business type	Higher class hotels & shops	A	B	A	B	
	Middle class hotels & shops		A	B	A	A
	Major traders & exporters	A	A	A	B	
	Restaurants	B	B	B	B	B
	Souvenir shops (major)		B	B	A	A
	Souvenir shops (minor)				B	B
Promising Target		Higher class hotels, shops, and exporters	Middle class, hotels, shops and exporters	Higher class hotels, shops, and exporters	Middle class, hotels, shops and souvenir shops	Middle class, hotels, shops and souvenir shops

Notes: A: Primary target buyer; B: Target buyer

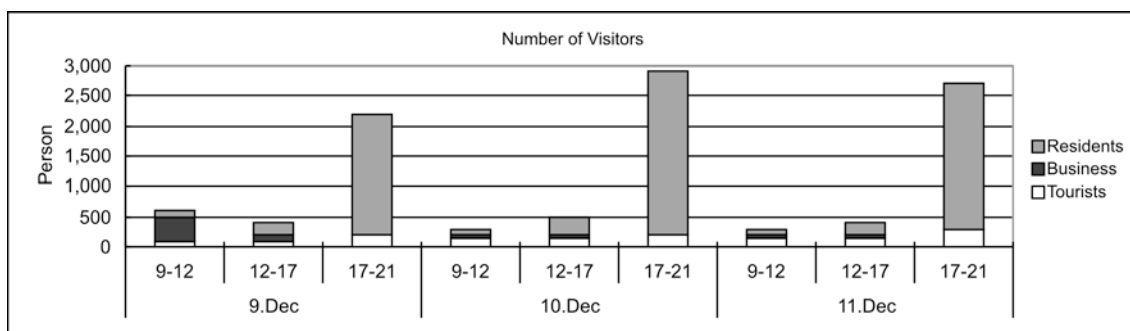
**Table II.9.4 Summary of Exhibitors in "Angkor Products Fair 2005"**

Group of Producers	Product Type	Number of Exhibitors
Designers and Producers Group	Silk Product	10
	Various Handicraft and Souvenir	10
	Stone, Wood Carving and Painting	10
Social Work and Village Producers Group	Silk Products	5
	Leather Carving	2
	Basketry	2
	Artificial Flower	2
	Cotton & Others	2
Agricultural Producers Group	Food Processing	3
	Vegetable	4
	Animal Raising	2
	Fruit	1
	Rice	1
Total		54

## 9.2.2 Result of Pilot Project

### (1) Number of Visitors to the Fair

During the 3-day period of the Fair, there were around 10,000 visitors of which 15% were tourists, 7% were business related visitors, and 79% were local residents.



**Figure II.9.2 Number of Visitors to the Fair**

## (2) Evaluation Interview for Exhibitors and Visitors Based

During the fair evaluation interviews were carried by a sample survey. It is clear that all groups of participants found the Fair useful and positively evaluated its potentials in the future. The major results of the survey and comments are summarized as follows.

### Interview result A (for Exhibitors, 26 samples)

#### **Recognized the Merit of Joining this Fair (yes100%, no0%)**

Detailed items	Yes	No
1) Marketing promotion	100%	0%
2) Get buyers' information and needs	88%	12%
3) Meet with buyers	88%	12%
Hotel, restaurant,	88%	12%
Shop	65%	35%
Trader	58%	42%
4) Meet with tourists	100%	0%
5) Meet with local residents	100%	0%
6) Get quality improvement needs	85%	15%
7) Feel sense of rivalry	96%	4%
8) Need cooperation among local producers	73%	27%
9) Need cooperation with local government	50%	50%
10) Join the next fair	100%	0%

### Interview sheet B (for Buyers (hotel, restaurant, shop, trader)(11samples)

#### **Impression of the Fair (good100%, no0%)**

#### **Recognized the Merit of Joining the Fair (yes100%, no0%)**

Detailed items	Yes	No
1) Find out new products	91%	9%
2) Meet with new producers	82%	18%
3) Find out quality products	100%	0%
4) Recognize Angkor products (local products)	91%	9%
5) Get Products and Producers information	91%	9%
6) Enjoying Exhibition, Events, Foods	Exhibition most 91%	Event most 9%
7) Join the next fair	100%	0%

### Interview result C (for Tourists, 10 samples)



**Impression of the Fair (good100%, no0%)****Recognized the Merit of Joining the Fair (yes100%, no0%)**

(Detailed items)	Yes	No
1) Find out new products	90%	10%
2) Meet with new producers	90%	10%
3) Find out quality products	90%	10%
4) Recognize Angkor products (local products)	80%	20%
5) Get Products and Producers information	70%	30%
6) Enjoining Exhibition, Events, Foods	Exhibition most 100%	Event most 0%
7) Join the next fair	100%	0%

**Interview result D (for Residents)(23samples)****Impression of the Fair (good100%, no0%)****Recognized the Merit of Joining the Fair (yes100%, no0%)**

(Detailed items)	Yes	No
1) Find out new products	100%	0%
2) Meet with new producers	78%	12%
3) Find out quality products	100%	0%
4) Recognize Angkor products (local products)	96%	4%
5) Get Products and Producers information	96%	4%
6) Enjoining Exhibition, Events, Foods	Exhibition most 96%	Event most 4%
7) Join the next fair	100%	0%

**9.2.3 Lessons and Recommendations****(1) Angkor Products Fair Became A Sustainable Model**

- The pilot project "Angkor Products fair 2005" was successfully demonstrated a model of promotional measures for local products.
- The fair task force team (APPC) was formulated with capable local leaders and with good teamwork. APPC applied local cooperation network of private sector and NGOs to organize and prepare the fair.
- APPC has been supported not only by various provincial departments but also ministries of central government, such as commerce, industry, culture and fine arts, agriculture and tourism.
- Almost all of exhibitors and visitors evaluated the fair quite positive and showed the expectation for the next fair. They are ready to do it again.
- APPC gained several supporters/sponsors of the next fair, such as Siem Reap Chamber of Commerce, ILO, NGOs and big private companies.

**(2) Necessity of APPC as the Permanent Guiding Core Organization**

- The provincial government does not have a comprehensive coordinating or core guiding organization for promoting local products. In considering the present situation, the task force team for the fair (APPC) can play the main role in the future.
- APPC carried the directory and inventory survey and accumulated information on producers. Also, they accumulated information on potential buyers of local products and sales promotion. Such information could be further used for promotion activities.
- APPC extended cooperation network with ministries, departments, chamber of

commerce, NGOs, international organization and major private companies through the fair organizing work. This network should be maintained.

- APPC has not only accumulated information but also studied and recognized the scope of improvement and development on local products. Such information could be further used for promotion activities.
- Through the fair organizing and management activities, APPC demonstrated a model of core organization for the local product promotion.

### (3) Emerging New Mid-Range Market for Local Residents

- Through the fair, it was found that new local residents market was emerging. The number of local resident visitors reached 8000 that was twice as much as the expected estimation. They also purchased a large amount of goods in the fair that were not expensive but not the cheapest.
- In addition to growing tourism related market, emerging local resident market will be more important for local producers as a new market in the future. It is indispensable to develop mid-range quality products targeting this market (See Figure II.5.9)
- Angkor Products Fair will be an effective means to promote/ diversify local products and connect to both tourism and local residents markets.

### (4) Demonstration Effect and Technology Transfer through the Fair

- 56 exhibitors in wide range of products and more than 10000 visitors were joined the fair. Almost all of these people evaluated the fair affirmatively. This fact proved the fair has a good demonstration effect as a local products promotional measure.
- However, only 50% of interviewed exhibitors reacted affirmatively to the cooperation needs with the local government. This shows infiltration of the provincial government's promotional policy and measures are not enough.
- The fair task force team, APPC, with a capable leader proved the technology transfer from the JICA study team was effective.
- APPC reviewed the fair and already found out how to improve the fair. They have basic idea for planning the next fair.



Outdoor Exhibition



Indoor Exhibition



Commendation ceremony

## **10. Impact Assessment of Tourism on Local Economy**

In this section, the impacts of the tourism sector to the local economy in Siem Reap are examined. The focus of analysis is put on structure of tourists' real expenditure within Siem Reap Province<sup>1</sup>. Important points are how these expenditures are generating additional local consumption, added value (income), and employment.

In short, it is concluded that strengthening "up-market orientation" is one of the keys to pursue economic growth, and at the same time, keep the number of tourists at the manageable level for the sake of good urban environment and sound management of cultural heritage. This "up-market orientation" is adopted as one of the conceptual elements in building up whole master plan. The following section describes the analytical bases of why "up-market orientation" is good for Siem Reap.

### **10.1 Present Economic Impacts of Tourists' Expenditure**

#### **10.1.1 Retained Tourists' Expenditure within Siem Reap Province**

In 2004, total of international visitors to Siem Reap reached 560 thousand. It is estimated that total international tourists' expenditure (or consumption) was 97 million US\$ of which 66.5 million US\$ was retained within Siem Reap Province. This amount consists of 37.2 million US\$ of locally paid cost and 29.3 million US\$ of value-added (comparable to GRDP) retained within the local tourism sector. Directly generated local employment amounts to 29 thousand. On the other hand, 31.7 million US\$ is going out of Siem Reap in forms of paid cost (15 million US\$) and remittance of profit (16.7 million US\$) to head offices, investors, and the like residing somewhere else.

There is a common argument among many people that growing tourism and urban demand for consumable goods in Siem Reap is not fully linked with the local economy. This argument is true in a sense that many of the consumable goods are imported ones.

It is, however, not true to assume that all the expenditures of tourists are going abroad. As already noted, it is estimated that more than two thirds of total tourists' expenditure stays within Siem Reap Province. There are two key elements that links tourists' expenditure to the local economy - generation of the local employment and the increasingly active local commercial sector.

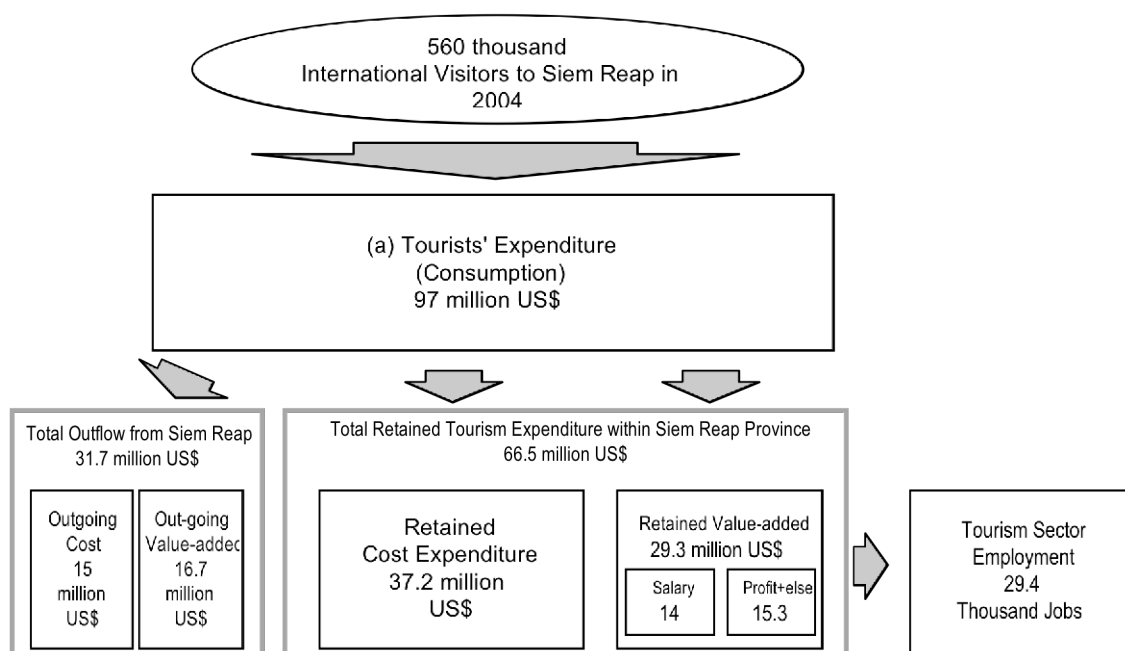
The tourism sector<sup>2</sup>, and the service sector at large, is known to be quite labor intensive. This characteristic of the tourism sector is also found to be true in Siem Reap. In total, 14 million US\$, or more than 14% of total tourists' expenditure, was paid as salaries for

---

<sup>1</sup> Here, tourists' expenditure include accommodation, local transportation, souvenir, food, and other things they directly paid to business premises located in Siem Reap. Air fares, Departure Fee at the airport, and Admission Fee to Angkor Temples are not included. These expenditures are considered to have no significant forward links to the local economy, and thus excluded from structural modeling.

<sup>2</sup> Here, the tourism sector is defined as an aggregate of the following 5 sub-sectors; restaurants, hotels and guesthouses, local transportation service, souvenir resellers, and other local travel service provider.

local employees of the tourism sector in Siem Reap. In addition, given a lower cost of labor, employment effects are very large in terms of number of jobs created.



Source: JST estimates.

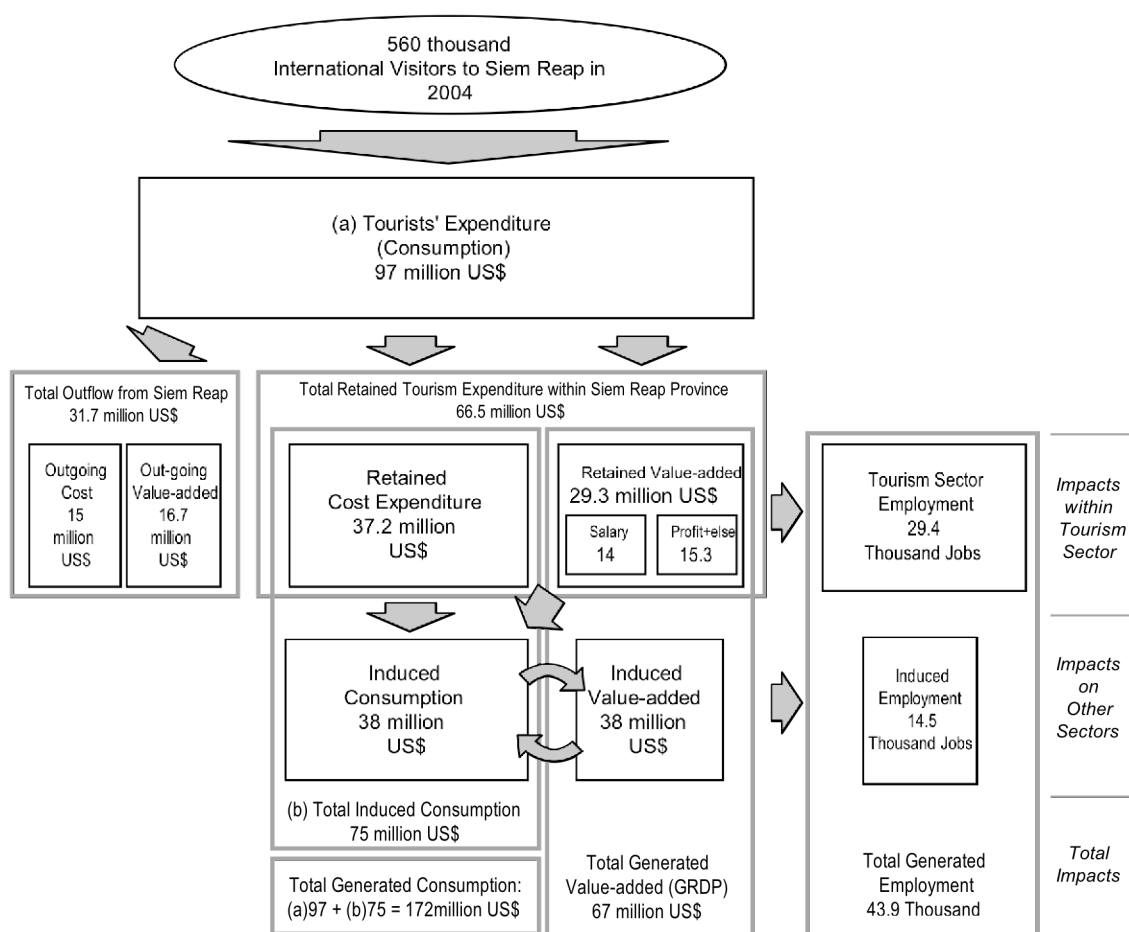
**Figure II.10.1 Structure of Retained Tourists' Expenditure within Siem Reap Province in 2004**

Imported goods are also generating sizable local employment. It is found that consumers in the tourism sector, such as a hotel or a restaurant, mostly buy foreign products through resellers located in Siem Reap. In the case of hotels, the share of imported goods that were purchased from the local resellers in Siem Reap was 60% and from the other part of Cambodia was 18%. Given this sizable purchasing power of the tourism sector, the local commercial sector pays salaries around 20% out of their total revenues of sales. As far as the generation of local employment of the service sector is concerned, the origin of supply does not matter much.

Growth of commercial sector is also good for the local producers of raw materials. Broader and more diverse channels of selling things will give the local producers better chance to find a slice of market for their products. The demanding tourist oriented market may induce some producers with higher potentials to become more quality conscious.

### 10.1.2 Induced Economic Effects

On top of the direct effects of retained tourists' expenditure, there are induced economic effects triggered by the direct effects. It is estimated that the 66.5 million US\$ initial spending retained in the local tourism sector have induced to generate additional 38 million US\$ of consumption, 38 million US\$ of value-added (GRDP equivalent), and 14.5 thousand of local employment within Siem Reap Province in all the other sectors of economy. The overall structure of economic effects of the tourism sector is as shown in the following conceptual figure.



Source: JST estimates.

**Figure II.10.2 Structure of Induced Economic Impacts by Retained Tourists' Expenditure within Siem Reap Province in 2004**

All in all, total generated economic effects on are estimated as summarized in the following table. It clearly shows that the tourism sector is the most important one in the Siem Reap economy. Tourism generated value-added retained in Siem Reap accounts for around one fourth of total GRDP of the Province. Almost 10% of total employment was created.

**Table II.10.1 Present Economic Effects of Tourism Sector in Siem Reap 2004**

	(Million \$)	(Million \$)	(000 persons)	Share in Province	
	Consumption	GRDP	Employment	GRDP	Employment
Siem Reap Province	-	285	456	100.0%	100.0%
Tourism Generated Impacts in SRP (a+b+c)	172	67	44	23.5%	9.6%
International Tourists in SRP (a)	97	-	-	-	-
Tourism Sector	52	46	-	16.2%	-
of which retained in SRP (b)	37	29	29	10.3%	6.4%
Induced Effects in SRP (c)	38	38	15	13.4%	3.2%

Source: JST estimates.

## 10.2 Future Prospects

### 10.2.1 Targeting More on "Up-Market"

The future prospects of economic impacts of the tourism sector depend upon many factors ranging from quality of tourism services to social stability. In any case, however, the sum of tourists' expenditure is a starting point of any induced economic effects to follow. The amount of expenditure is determined by three parameters: number of tourists, length of stay, and expenditure per person per day. As part of the planning framework, the number of international tourists in the future is set to be increased from 560 thousand in 2004 to 2 million in 2020. This is based upon the assumed scenario that is in favor of sustainability of growth of "Quality Tourism" rather than escalation of "Mass Tourism".

**Table II.10.2 Average Length of Stay and per Person Spending of International Tourists by Different Price Range of Hotels (US\$, 2004)**

Hotel Price Range	Share in total tourists	Average Length of Stay (a)	Average Cost for Hotel per Person per Night	Total Spent per person per day other than Hotel	Total Spent per person per day (b)	Total Spent per person per trip (a)x(b)
Individual Tourist	49%	3.5	24	29	53	187
5 star: \$200+	2%	3.0	160	122	282	848
4 star: 100-199	4%	3.4	75	44	119	403
3 star: 50-99	5%	3.3	36	34	70	233
2 star: 20-49	12%	3.6	16	28	44	159
1 star or less: LT20	25%	3.6	3	16	19	70
Group Tourist	51%	2.1	39	38	77	163
5 star: \$200+	5%	2.5	100	55	155	389
4 star: 100-199	10%	2.1	61	37	98	210
3 star: 50-99	20%	2.0	31	44	75	150
2 star: 20-49	13%	2.0	17	28	45	90
1 star or less: LT20	3%	2.2	7	20	27	60
Total	100%	2.8	32	34	65	183

Source: JICA Study Team (JST) estimates. Tourism Sector Survey in Siem Reap Town-Angkor, 2005, JST. See details for section 3.2 of this chapter.

Note: Total number may not always be consistent due to rounding.

Given this increase margin of 1.46 million of international tourists, the matter is boiled down to have tourists who "stay longer" and "spend more per day" in order to have the maximum sum of expenditure. There is a kind of tourists best fit to these characteristics. They are "non-group tourists" who stay in 4-star or higher class of hotels. As shown in Table II.10.2, they stay at least 1 night longer than average group tourists, and spend at least twice as much (around 100 US\$ or more) per day as those stay in 2-star or lower hotels do. These "up-market" tourists must be the prime target group for the future.

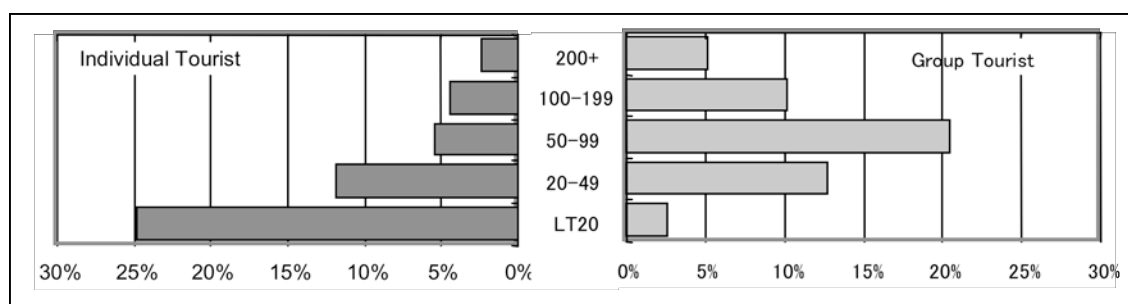
The "up-market" tourists impressively spend more money during their stay. Likewise, a total economic impact of their expenditure is much larger than those of the "mid-low-market" tourists. Table II.10.3 shows test calculation of economic impacts of 1000 persons each of two different groups of tourists. Case 1 represents impacts of 1000 group tourists at 3-star level that are most typical at present. Case 2 represents the ones of 1000 non-group tourists at 4-star level that are the prime target for the future. Non-group tourists at 4-star level will spend 2.6 times, and create income and employment 2.7 times as much as group tourists at 3-star range will do.

**Table II.10.3 Comparison of Test Calculation of Economic Impacts of 1000 Persons of International Tourists by Different Category**

	Impacts of 1000 International Tourists		
	(000 \$) Consumption	(000 \$) GRDP	(persons) Employment
<b>Case 1: Group Tourist of 3-Star Level</b>			
Total Impacts in SRP (a+b+c)	268	103	67
1000 Tourists in SRP (a)	150	-	-
Tourism Sector	86	64	-
of which retained in SRP (b)	59	43	46
Induced Effects in SRP (c)	60	60	22
<b>Case 2: Non-Group Tourist of 4-Star Level</b>			
Total Impacts in SRP (a+b+c)	701	275	179
1000 Tourists in SRP (a)	403	-	-
Tourism Sector	203	200	-
of which retained in SRP (b)	146	125	132
Induced Effects in SRP (c)	153	151	47
<b>Comparison: Case 1 vs Case 2</b>			
	Ratio = Case 2 ÷ Case 1		
Total Impacts in SRP (a+b+c)	2.6	2.7	2.7
1000 Tourists in SRP (a)	2.7	-	-
Tourism Sector	2.4	3.1	-
of which retained in SRP (b)	2.5	2.9	2.9
Induced Effects in SRP (c)	2.6	2.5	2.2

### 10.2.2 Present Market Structure

At present, on the other hand, the large majority of tourists in Siem Reap are those of "Mid - Low Market". Half of non-group tourists are the ones staying at hotels of "1 star or below (\$20 or less)" range. They spend less than \$20 per person per night. Group tourists are very much concentrated in "3 star (\$50-99)" range. The prime target group of "non-group-4 star and up" tourists accounts for only 6% of total international tourists. At present, Siem Reap appears to be not attracting "up-market" non-group tourists.



Source: JST estimates.

**Figure II.10.3 Share of Tourists by Hotel Price Range in 2004**

There are many things to do in order to redefine its market position as "up-market". Quality of service in all aspects has much room to improve. Higher preference for group tours implies lack of appropriate public services, infrastructure, and environment in favor of non-group tourists. In short, the town itself is neither attractive nor comfortable enough for non-group tourists to move around by themselves. This is one of the key issues for tourism development and urban development at large in Siem Reap.

See respective chapters for detailed plans to realize "up-grade market" oriented tourism.

### **10.2.3 Economic Impacts of Shifting towards Up-Market**

Given that "up-grade market" tourists is the prime target group for the future, three different cases of expected economic impacts in 2020 are test calculated for comparison. Sets of assumptions are as summarized in Table II.10.4.

#### **(1) Base Case Assumptions: "Mass Tourism"**

The first one is "Base Case" representing a present trend of a path to "Mass Tourism". Impacts are calculated as simple quantitative expansion of the existing structure of market as shown in Figure II.10.3. The numbers of international tourists and "visitor-stays" are assumed to increase to 3.34 million persons and 11.69 million nights respectively in 2020. This level is in accordance with the tourism trend projection of "without policy intervention" case.

#### **(2) Alternative Cases: A Ceiling on the Number without or with Market Shift**

There are two alternative cases for comparison. In both cases, the total number of international tourists, the total number of "visitor-stays", and the average length of stay are set to the same levels of 2.01 million persons, 7.02 million nights, and 3.5 nights respectively. These levels are set as part of the Tourism Framework (with Policy Intervention case) in the respective chapter. It means that the sum of physical amount of international visitors is set to be equal between two alternative cases.

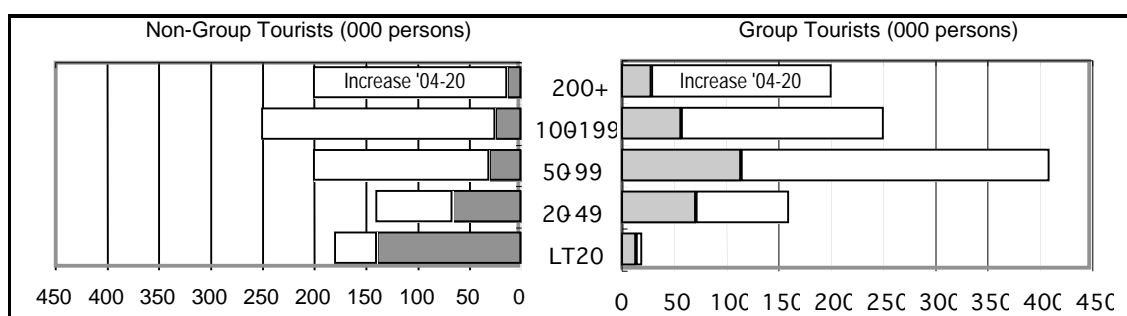
"Alternative Case 1: Unchanged Composition of Tourists" represents a case of limiting the sum of visitors without changing the present "Mid-low" characteristics of tourism. Thus, it is calculated as an expansion of the existing market assuming the number of international tourists and total "visitor-stays" will increase only up to the level of the Tourism Framework.

"Alternative Case 2: Up-Market Composition" represents a case of "Up-market" transformation of Siem Reap. It is assumed that the shares of "Up-Market" tourists will increase and the main group of tourists will be shifted to upward as shown in the following Figure II.10.4<sup>3</sup>. The future shares of different groups are set in accordance with the Tourism Framework.

---

<sup>3</sup> The pattern of length of stay by different price groups are determined with the weighted value based on the extension of the present pattern shown in Table II.10.2.





**Figure II.10.4 Assumed Distribution of Tourists by Hotel Price Range for "Alternative Case 2: Up-Market Composition" in 2020**

**Table II.10.4 Summary of Different Sets of Assumptions for Test Calculation**

Tourism Indicators	2004 Estimate	Assumptions of 2020 Test Calculation		
		Base Case	Alternative Cases	
		Mass Tourism Trend	Alt 1: Unchanged Composition	Alt 2: High-Market
Total Foreign Tourist (000)	561	3,340	2,007	2,007
Non group	275	1,637	983	973
Group	286	1,703	1,024	1,033
Total Stay of Tourists (000)	1,571	9,352	7,025	7,025
Total Tourists' Spending (million US\$)	96	575	433	702
Average Spent per person per day (\$)	61	61	62	100
Non group	53	53	53	113
Group	77	77	77	91
Average Length of Stay (nights)	2.8	2.8	3.5	3.5
Non group	3.5	3.5	4.1	4.0
Group	2.1	2.1	2.9	3.0

Categories of Tourists by Hotel Price Range	2004 Estimate		Assumptions of 2020 Test Calculation					
			Base Case		Alternative Cases			
			Mass Tourism Trend		Alt 1: Unchanged Composition		Alt 2: High-Market	
	Share	Length of Stay	Share	Length of Stay	Share	Length of Stay	Share	Length of Stay
All Tourists	100%	2.8	100%	2.8	100%	3.5	100%	3.5
Non Group Tourists	49%	3.5	49%	3.5	49%	4.1	49%	4.0
200+	2%	3.0	2%	3.0	2%	3.5	10%	3.6
100-199	4%	3.4	4%	3.4	4%	3.9	13%	4.0
50-99	5%	3.3	5%	3.3	5%	3.8	10%	4.0
20-49	12%	3.6	12%	3.6	12%	4.2	7%	4.3
LT20	25%	3.6	25%	3.6	25%	4.2	9%	4.3
Group Tourists	51%	2.1	51%	2.1	51%	2.9	51%	3.0
200+	5%	2.5	5%	2.5	5%	2.9	10%	3.0
100-199	10%	2.1	10%	2.1	10%	2.9	13%	3.0
50-99	20%	2.0	20%	2.0	20%	2.9	20%	3.0
20-49	13%	2.0	13%	2.0	13%	3.1	8%	3.2
LT20	3%	2.2	3%	2.2	3%	3.2	1%	3.4

Source: JST estimates

### (3) Results and Comparison

The results and comparison of test calculation among three cases are as summarized in Table II.10.5.

"Alternative Case 1: Unchanged Composition of Tourists" has 25% less economic impacts and 38% less employment generation than "Base Case" does on the local economy of Siem Reap. This case shows that putting a ceiling on the sum of tourists without other interventions to change tourism market shall result in a large loss of economic opportunities for the sake of easing physical pressure on the temple and town.

"Alternative Case 2: Up-market Composition" presents a different horizon for the future. It assumes the same level of 2 million tourists as Alternative 1 that is 1.34 million less than "Base Case (Mass Tourism)". Nevertheless, it has around 1.2 times as much economic impacts and the same level of employment generation as "Base Case" does. Shifting to "Up-Market" is a key to realize sustainability without compromising growth.

**Table II.10.5 Results of Test Calculation of Economic Impacts of Different Compositions of International Tourists in 2020**

Base Case	Impacts of 3.34 million International Tourists in 2020		
	(million \$) Consumption	(million \$) GRDP	(000 persons) Employment
<b>Trend Expansion (Mass Tourism)</b>			
Total Impacts in SRP (a+b+c)	1023	401	82
Tourists' Expenditure in SRP (a)	575	-	-
Tourism Sector	310	265	-
of which retained in SRP (b)	221	175	55
Induced Effects in SRP (c)	227	226	27
Alternative Cases	Impacts of 2 million International Tourists in 2020		
	(million \$) Consumption	(million \$) GRDP	(000 persons) Employment
<b>Alt Case 1: Unchanged Composition of Tourists</b>			
Total Impacts in SRP (a+b+c)	771	308	51
Tourists' Expenditure in SRP (a)	433	-	-
Tourism Sector	234	200	-
of which retained in SRP (b)	167	134	34
Induced Effects in SRP (c)	171	174	17
<b>Alt Case 2: High-market Composition</b>			
Total Impacts in SRP (a+b+c)	1243	487	82
Tourists' Expenditure in SRP (a)	702	-	-
Tourism Sector	369	344	-
of which retained in SRP (b)	266	214	57
Induced Effects in SRP (c)	275	273	25
<b>Comparison: Base vs Alt Case 1</b>			
	Ratio = Alt Case 1 : Base		
Total Impacts in SRP (a+b+c)	0.75	0.77	0.62
Tourists' Expenditure in SRP (a)	0.75	-	-
Tourism Sector	0.76	0.75	-
of which retained in SRP (b)	0.75	0.77	0.62
Induced Effects in SRP (c)	0.75	0.77	0.62
<b>Comparison: Base vs Alt Case 2</b>			
	Ratio = Alt Case 2 : Base		
Total Impacts in SRP (a+b+c)	1.21	1.21	1.00
Tourists' Expenditure in SRP (a)	1.22	-	-
Tourism Sector	1.19	1.30	-
of which retained in SRP (b)	1.20	1.22	1.03
Induced Effects in SRP (c)	1.21	1.21	0.94

Source: JST estimates and test calculation.

## 11. Planning Framework

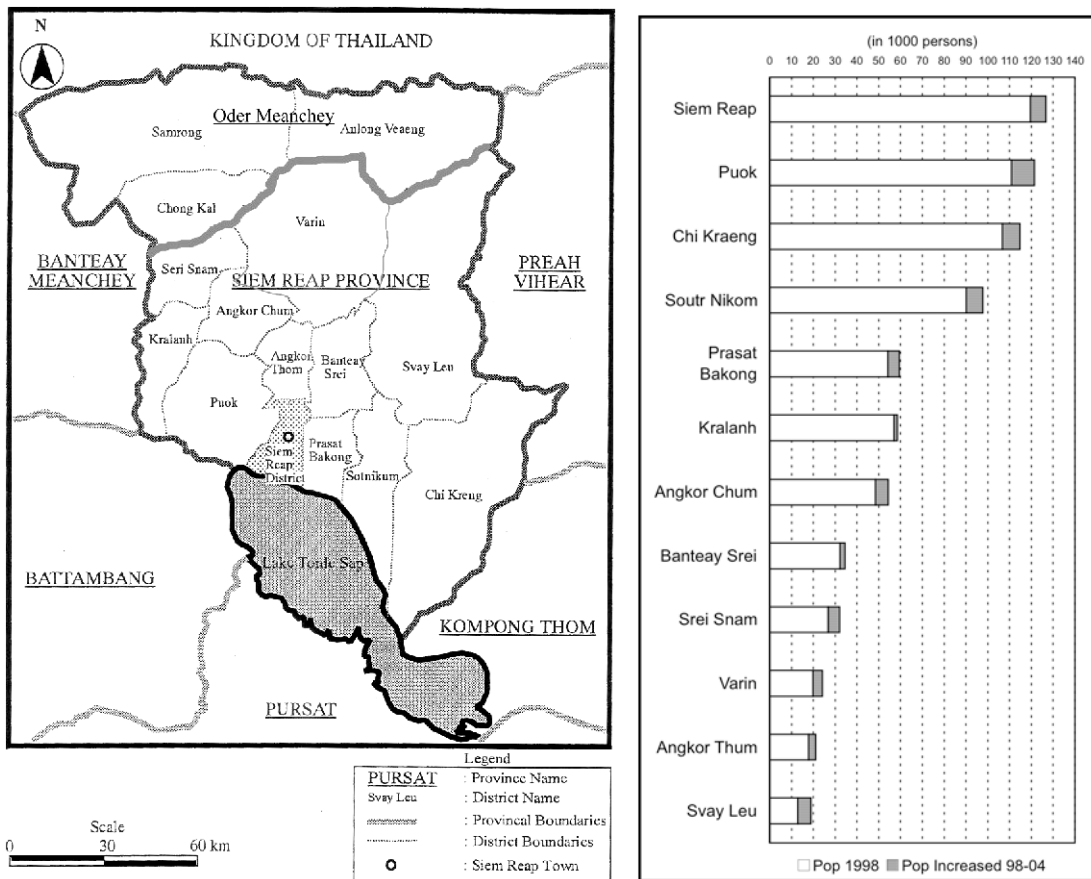
Based on the situation, prospects and issues, this section describes a planning framework to realize the strategic visions. This planning framework is an instrument to facilitate inter-sectional coordination at the provincial/district level. It consists of socioeconomic framework, spatial framework and tourism framework.

### 11.1 Socioeconomic Framework

#### 11.1.1 Population

##### (1) Provincial Characteristics

Siem Reap Province holds twelve districts. The distribution of population among them is shown on the Figure II.11.1.



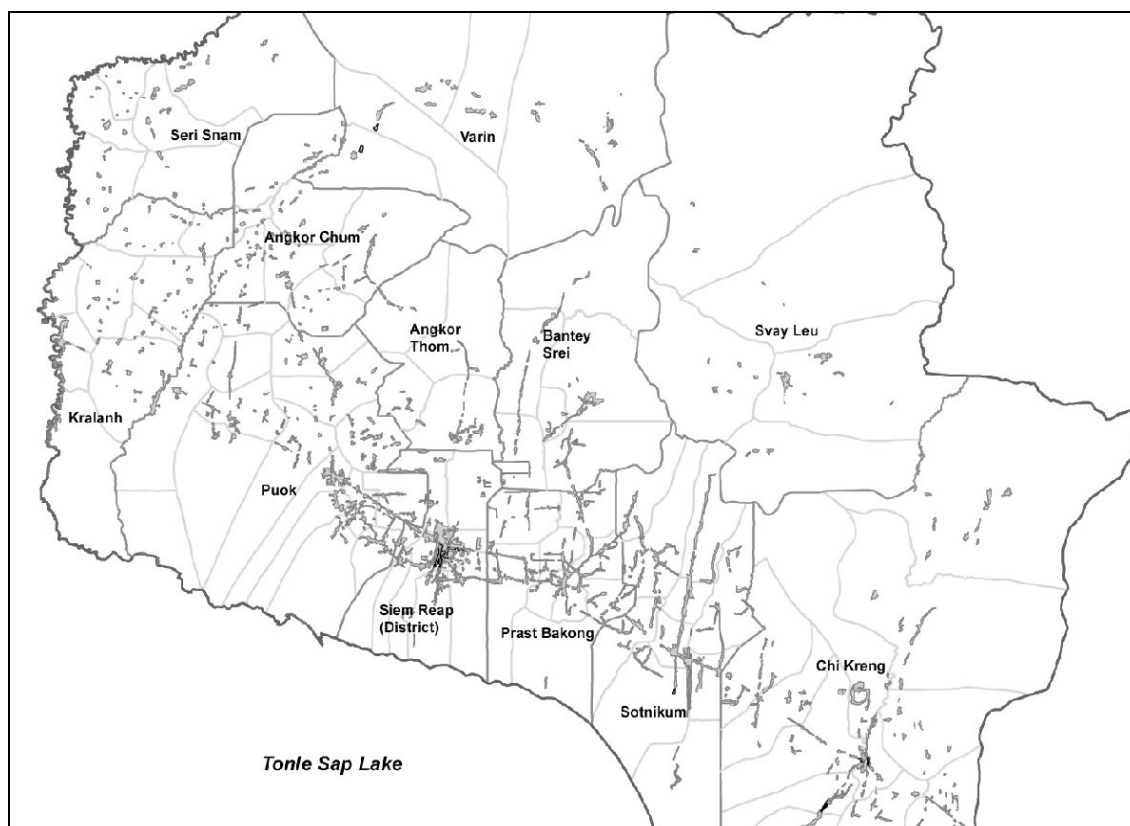
Source: Provincial Hall based on registered population in the Commune Offices and Police Stations. Thus, the numbers of population are smaller than the Census base data that includes non-registered population.

**Figure II.11.1 Twelve Districts and Population Distribution in Siem Reap Province**

**Table II.11.1 Land Area and Population Density by District (2004)**

Name of Districts	(km <sup>2</sup> ) Land Area	(000) Population 2004	(Persons/km <sup>2</sup> ) Population Density
Siem Reap	292.8	126.6	432.5
Prasat Bakong	341.9	59.5	173.9
Soutr Nikom	671.2	97.8	145.7
Angkor Chum	412.2	54.3	131.7
Puok	935.5	121.4	129.7
Kralanh	488.7	58.6	119.8
Angkor Thum	307.5	21.0	68.3
Banteay Srei	517.1	34.5	66.7
Srei Snam	479.8	32.0	66.7
Chi Kraeng	2033.9	114.7	56.4
Varin	1569.8	24.1	15.4
Svay Leu	2248.5	18.9	8.4
Total	10298.9	763.3	74.1

Source: ibid



Source: APSARA GIS data. Preliminary output

**Figure II.11.2 Location of Built-up Areas and Villages in Siem Reap Province**

Siem Reap District that holds the town center area has the largest sum of population being 127 thousand persons and the highest density of 432.5 persons/km<sup>2</sup> in 2004 (see Table II.11.1). Puok, the district in the west of Siem Reap District, has the second largest population having around 121 thousand persons. It is clearly observed that a large portion of the population is concentrated in the districts along the National Road 6, such as Prasat Bakong, Soutr Nikom, Puok and Kralanh. Angkor Chum District,

where rice yield is the highest in the province, is the only district that is not adjacent to NR6 and has a relatively high population density of 131.7 persons/ km<sup>2</sup>.

Accordingly, major built-up areas and village centers are concentrated along the NR6. In the northern districts and the southern swamp areas adjacent to the Tonle Sap lake has very low population density and thus very limited non-farm activities (see Figure II.11.2).

## (2) Structure of Increasing Population

Recently population increase in Siem Reap Province has been absorbed mainly in the districts along the NR6 as shown in the Table II.11.2. Siem Reap District accommodated the largest sum of the population increase. Puok and Prasat Bakong that are adjacent to Siem Reap District also accommodated a large population increase and formed new urban built-up areas.

In cases of Svay Leu, Varin, and Banteay Srey, causes of the large population increase are not very clear. There are, however, some reasons including the followings:

- Soil fertility in these hillside districts is better than in the southern districts and thus attracts more farming population;
- Birth rates are higher in these remote areas, where family planning is not prevailing;
- A propensity for out-migration is low partly due to low educational attainment and thus less chance to get confirm jobs in urban areas.

**Table II.11.2 Population by District in Siem Reap Province in 2001 and 2004**

Name of Districts	(000) Population 2001	(000) Population 2004	(000 Persons)			% Share in increase
			Increase 2001-04	Increase in Permanent Population	Increase in Temporary Population	
Siem Reap	117.5	126.6	9.1	3.3	5.8	21.1%
Puok	115.8	121.4	5.6	5.6	0.0	12.9%
Svay Leu	14.4	18.9	4.5	2.7	1.9	10.4%
Prasat Bakong	55.4	59.5	4.1	4.0	0.1	9.5%
Varin	20.3	24.1	3.8	3.6	0.2	8.9%
Banteay Srei	30.7	34.5	3.8	3.8	0.0	8.8%
Chi Kraeng	111.8	114.7	2.9	3.3	-0.4	6.7%
Angkor Thum	18.7	21.0	2.3	2.4	0.0	5.4%
Soutr Nikom	95.5	97.8	2.3	2.1	0.2	5.2%
Angkor Chum	52.1	54.3	2.2	2.2	0.0	5.1%
Srei Snam	30.5	32.0	1.4	1.4	0.0	3.3%
Kralanh	57.5	58.6	1.1	1.1	0.0	2.4%
Total	720.1	763.3	43.2	35.6	7.6	100.0%

Source: Provincial Hall data.

Structure of the population increase during 2001-2004 is as shown in the Table II.11.2. The most notable tendency is that in Siem Reap District a large proportion of increased population is registered as "temporary population". This is partly due to the fact that there are many workers for construction of hotels and shopping malls. In Svay Leu, causes for a large proportion of temporary population are not clear.

### (3) Population Projection

A set of data from "First Revision, Population Projections for Cambodia 2001-2021 (revision of the original Report 6 of the Census 1998)" are adopted as the baseline level of population in our framework for the following reasons. Future population is determined by a natural growth rate, the age structure, and the size of population net-inflow into Siem Reap Province. All of these factors are incorporated in the revised projections.

In addition, these are the only comprehensive population projections with a detailed provincial break down that are needed to highlight spatial characteristics of the district. Regarding the district level breakdown, the structure of population data from the Census 1998 and Provincial Hall data for the period from 2000 to 2004 were examined.

Results are summarized in Table II.11.3 and II.11.4.

Major working assumptions to set baseline level of population projections are summarized under the following points:

- Total population of Siem Reap Province is adjusted to fit to the level of "Revised Census Projection" that is 9% larger than registered based population data published by the Provincial Hall. According to the technical notes of the Revised Projection, this discrepancy is largely due to an undercount in registration of "0-4 years old population".
- An assumption is made that population in Zone1&2 (protected zones managed by APSARA) will not increase since 2004. Districts of Siem Reap, Angkor Thom, Banteay Srey, Prasat Bakong, and Puok hold population living inside Zone1&2 that amounts to 108,000 in total in 2004.
- Siem Reap District is assumed to have more population share in the province in the future. This share is assumed to increase from 16.6% in 2004 to 17.1% in 2020.
- Relative proportion of population distribution is aimed not to change among the other districts since 2004.

As shown in Table II.11.3, Siem Reap Province as a whole is assumed to have a population growth rate higher than the national average. This implies the province has a net in-migrating population over the planning period. Within the province, two different trends are assumed. One is that the Siem Reap District will receive in-migrating population continuously. Relatively rapid urbanization in the center of the province will expand gradually to suburban areas. On the other hand, the areas within Zones 1 and 2 will have a net out-migrating population, which are most likely to be absorbed in the other part of the province (see Figure II.11.3).

**Table II.11.3 Baseline Population Projection by District**

	Land Area (km <sup>2</sup> )	2000 (in 000)	2010 (in 000)	2020 (in 000)	Distribution	Growth Rate 2000-2010	Growth Rate 2010-2020
Siem Reap Province Total	10,299	768	971	1,229	100.0%	2.4%	2.4%
Pop in Zone1&2 total	-	98	108	108	8.8%	1.0%	0.0%
Pop w/o Z1&2	-	670	863	1,121	91.2%	2.6%	2.7%
Siem Reap (District)	293	126	162	211	17.1%	2.5%	2.7%
Other Districts	10,006	642	809	1,019	82.9%	2.3%	2.3%
Angkor Chum	412	55	70	91	7.4%	2.5%	2.6%
Angkor Thum	308	20	26	31	2.5%	2.6%	1.8%
Banteay Srei	517	33	41	47	3.8%	2.2%	1.3%
Chi Kraeng	2,034	120	148	191	15.6%	2.1%	2.6%
Kralanh	489	63	76	98	7.9%	1.9%	2.6%
Prasat Bakong	342	59	73	87	7.1%	2.2%	1.8%
Puok	936	123	151	186	15.1%	2.1%	2.1%
Soutr Nikom	671	101	127	163	13.3%	2.2%	2.6%
Srei Snam	480	32	41	53	4.3%	2.5%	2.6%
Svay Leu	2,249	15	24	32	2.6%	5.3%	2.6%
Varin	1,570	21	31	40	3.3%	3.9%	2.6%
<i>For reference</i>							
Cambodia	178,035	12,574	15,269	18,724	-	2.0%	2.1%
Phnom Penh	290	1,114	1,529	1,983	-	3.2%	2.6%
Cambodia w/o Phnom Penh	177,745	11,459	13,739	16,741	-	1.8%	2.0%
Sihanoukville	868	176	247	335	-	3.5%	3.1%
Battambang	11,702	916	1,101	1,358	-	1.9%	2.1%

Source: "First Revision, Population Projections for Cambodia 1998-2020, June 2004", and structure analysis by the JST based on Provincial Hall data.

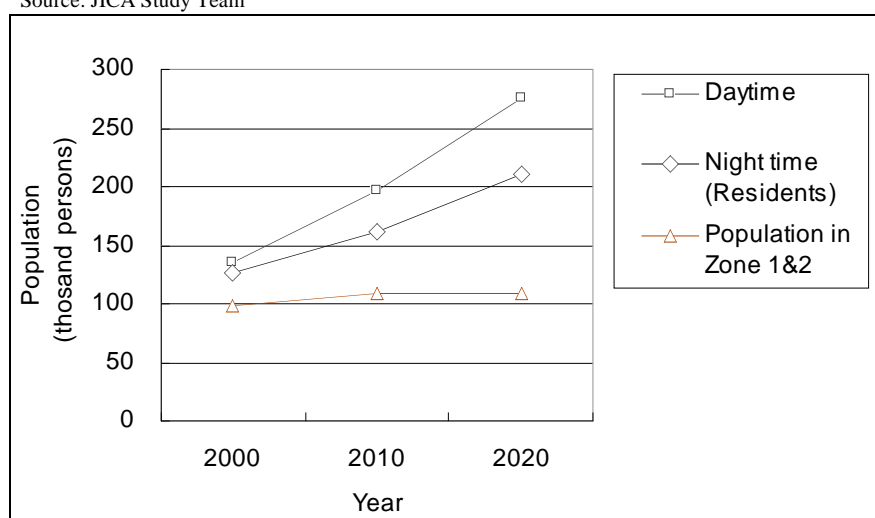
Based on this population projection, this study has set the population in the Siem Reap District as follows. The number also includes unregistered population.

**Table II.11.4 Population of Siem Reap District**

Year	2000	2004	2012	2020
	Actual	Projected		
Population of Siem Reap District	126.6	139.6	170.7	210.6

Unit: Thousand persons.

Source: JICA Study Team

**Figure II.11.3 Population Growth in Siem Reap District**

## 11.1.2 Employment

Future levels of employment in Siem Reap District and the other districts have been estimated by assuming the area's share in the whole province. It is estimated that there will be 8 to 8.5 thousands of net additional labor force every year. Total increase of employment will be 180 thousand during the period between 2000 and 2020 in the province.

Sector mix of projected employment is shown in Figure II.11.4. For the primary sector, the present structures of distribution patterns of employment among the districts are assumed to be the same in 2020.

For the secondary and tertiary sectors, on the other hand, it is assumed to accommodate the increased labor force. In particular, tertiary sector is to create 96 thousands or about a half of total increased employment. Siem Reap District is the core of the tourism industry that will take 100 thousand persons or almost 60 % of tertiary sector employment in the province in 2020.

The level of the non-agricultural sector employment is estimated on the basis of "Work place" rather than "resident place". Thus, the gap between "work place" and "resident place" in population levels are understood as the difference between "day-time" and "night-time" population. As shown in Table II.11.5, it is estimated that around 65 thousand people will be commuters from the surrounding districts to Siem Reap District in 2020.

**Table II.11.5 Preliminary Calculation of Employment Structure in Siem Reap Province and District (Table is revised from original Table I.3.5)**

### (1) Siem Reap Province

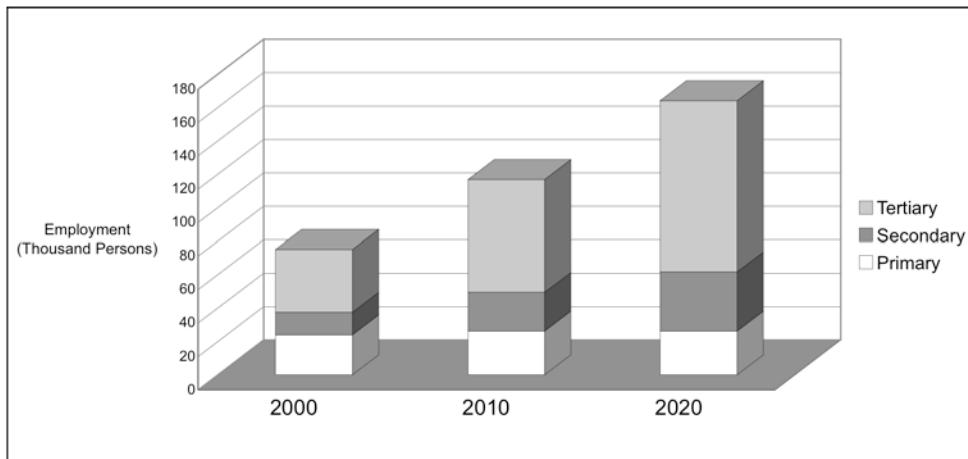
Employment by Industry	(000 persons)			Industry Share %			Annual Change	
	2000	2010	2020	2000	2010	2020	2000/2010	2010/2020
<b>100 Primary Total</b>	<b>324.8</b>	<b>356.0</b>	<b>356.0</b>	<b>77.2%</b>	<b>68.4%</b>	<b>59.1%</b>	<b>0.9%</b>	<b>0.0%</b>
<b>200 Secondary Total</b>	<b>27.3</b>	<b>46.7</b>	<b>71.2</b>	<b>6.5%</b>	<b>9.0%</b>	<b>11.8%</b>	<b>5.5%</b>	<b>4.3%</b>
<b>300 Tertiary Total</b>	<b>68.9</b>	<b>117.6</b>	<b>175.2</b>	<b>16.4%</b>	<b>22.6%</b>	<b>29.1%</b>	<b>5.5%</b>	<b>4.1%</b>
301 Wholesale and retail trade; repair of goods	40.3	69.0	105.2	9.6%	13.3%	17.5%	5.5%	4.3%
302 Hotels and restaurants	2.4	9.2	16.2	0.6%	1.8%	2.7%	14.2%	5.8%
303 Transport, storage and communications	4.6	7.8	11.9	1.1%	1.5%	2.0%	5.5%	4.3%
304 Financial intermediation	0.1	0.1	0.2	0.0%	0.0%	0.0%	5.5%	4.3%
305 Public administration and defence	10.1	12.0	12.0	2.4%	2.3%	2.0%	1.7%	0.0%
306 Real estate, renting and business activities	0.6	1.0	1.6	0.1%	0.2%	0.3%	5.5%	4.3%
307 Other Services	10.8	18.5	28.2	2.6%	3.6%	4.7%	5.5%	4.3%
<b>Total Employed at Working Place</b>	<b>420.9</b>	<b>520.3</b>	<b>602.4</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>2.1%</b>	<b>1.5%</b>
Total Population	767.8	970.7	1229.4	Employment/Pop			2.4%	2.4%
Total Employed Labor Force at Residence	420.9	520.3	602.4	55%	54%	49%	2.1%	1.5%
Net Commuting Population to SR District	-	-	-	-	-	-	-	-

### (2) Siem Reap District

Employment by Industry	(000 persons)			Industry Share %			Annual Change	
	2000	2010	2020	2000	2010	2020	2000/2010	2010/2020
<b>100 Primary Total</b>	<b>24.1</b>	<b>26.3</b>	<b>26.3</b>	<b>32.0%</b>	<b>22.5%</b>	<b>16.0%</b>	<b>0.9%</b>	<b>0.0%</b>
<b>200 Secondary Total</b>	<b>13.5</b>	<b>23.2</b>	<b>35.4</b>	<b>18.0%</b>	<b>19.9%</b>	<b>21.5%</b>	<b>5.5%</b>	<b>4.3%</b>
<b>300 Tertiary Total</b>	<b>37.6</b>	<b>67.3</b>	<b>102.5</b>	<b>49.9%</b>	<b>57.6%</b>	<b>62.4%</b>	<b>6.0%</b>	<b>4.3%</b>
301 Wholesale and retail trade; repair of goods	23.4	40.0	61.0	31.1%	34.3%	37.2%	5.5%	4.3%
302 Hotels and restaurants	2.2	8.7	15.2	3.0%	7.4%	9.3%	14.5%	5.8%
303 Transport, storage and communications	3.2	5.5	8.3	4.2%	4.7%	5.1%	5.5%	4.3%
304 Financial intermediation	0.1	0.1	0.2	0.1%	0.1%	0.1%	5.5%	4.3%
305 Public administration and defence	3.5	4.1	4.1	4.6%	3.5%	2.5%	1.7%	0.0%
306 Real estate, renting and business activities	0.5	0.8	1.2	0.6%	0.7%	0.7%	5.5%	4.3%
307 Other Services	4.8	8.2	12.5	6.4%	7.0%	7.6%	5.5%	4.3%
<b>Total Employed at Working Place</b>	<b>75.2</b>	<b>116.8</b>	<b>164.2</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>4.5%</b>	<b>3.5%</b>
Total Population	126.0	161.9	210.6	Employment/Pop			2.5%	2.7%
Total Employed Labor Force at Residence	66.8	82.6	99.0	53%	51%	47%	2.1%	1.8%
Net Commuting Population to SR District	8.4	34.2	65.2	-	-	-	15.1%	6.7%

Source: First trial calculation by JST





**Figure II.11.4 Employment Growth in Siem Reap District**

## 11.2 Spatial Framework

### 11.2.1 Regional Setting

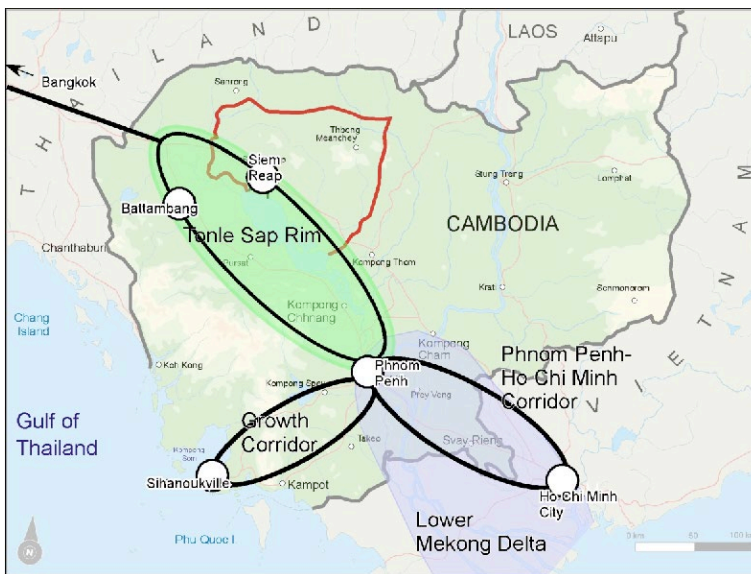
Siem Reap/ Angkor Town was the capital city of Angkorian Dynasty, once dominated a large area of lower Indochina, between the mid-8<sup>th</sup> century and 1431. At the time, it was said, “All roads lead to Angkor.” Since the fall of the Dynasty, Cambodian territory has been surrounded by Thailand and Vietnam. These two powers had strong influence on politics and economies on the area for a long period of time.

At present, the long history of hostile rivalry among the countries in the region has been totally changed. Memberships of World Trade Organization and ASEAN Free Trade Agreement will lower the economic barrier among Indochina countries. Bangkok – Phnom Penh – Ho Chi Minh Corridor<sup>1</sup> will enhance the presence of Cambodia in international economy. The development of a so-called Southern Economic Corridor (SEC) would change the position of Angkor heritage from a simple spot attraction to a tourism network hub with various infrastructure and services. Such change will develop not only Siem Reap/ Angkor Town but also the whole Siem Reap Province through a wide range of economic influence.

Figure II.11.5 illustrates the spatial structure of Cambodia. Siem Reap is located in the northwestern part of the lowland area that stretching on the gentle slope from Mt. Kulen to the Tonle Sap Lake.

In Cambodia, the lowland area lower than 30m above sea level that amounts 40% of total national land, holds approximately 90% of population. Many historical capitals are located at the fringe of the lowland area. The lowland area consists of two major regions. One is the Mekong Delta Region and the other is the Tonle Sap Rim Region.

<sup>1</sup> Also called as Southern Economic Corridor (SEC). The principal route of the corridor is connecting from Bangkok, Battambang, Phnom Penh, and Ho Chi Minh City. Although the Route 6 is not on the route, it is considered as an important alternate for Route 5.



Source: JICA Study Team.

**Figure II.11.5 Two Major Regions and Transportation Network in Cambodia**

Siem Reap/ Angkor Town is among the few ancient cities in Asia that is on the UNESCO List of World Heritage. The historical aspect depicts a different structure in Cambodia. Angkor, Kampong Thum and Preah Vihear are said to form the historical triangle of Khmer Kingdom, with Angkor as the prime center of the Khmer Kingdom for a long time.

### 11.2.2 Population Distribution

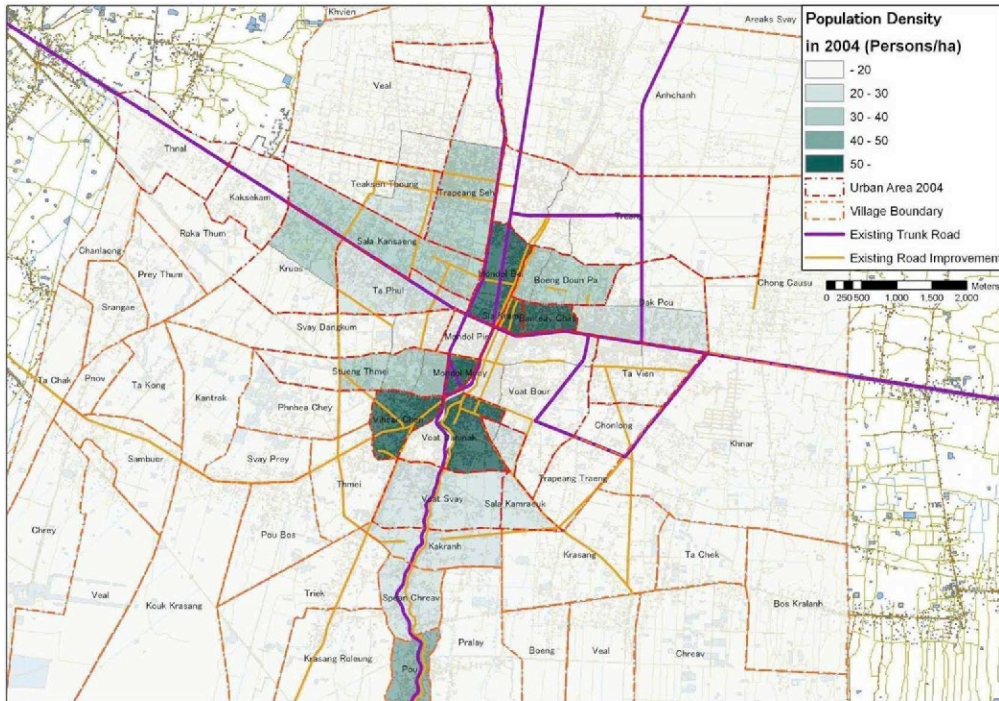
Provided the projected population in the years of 2012 and 2020, this plan envisages a pattern of population distribution in a way to materialize the concept of “Compact City.” A basic idea for the population distribution framework is to expand Siem Reap’s urban area with reasonable population density. In addition, the urban area is encouraged to expand southeastwards. New residential areas are to be designed at a population density of 40-60 persons per hectare<sup>2</sup>.

In addition, the following factors are included:

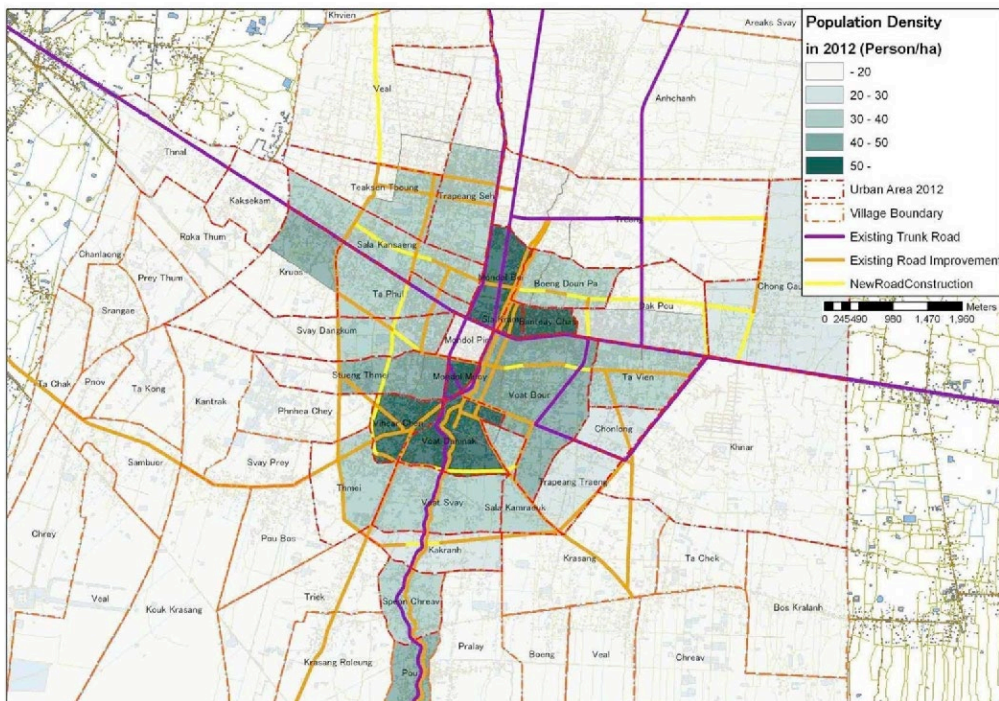
- The population density in the urban area of Siem Reap is set to be about 50 persons/ha throughout the existing and new urban areas.
- In 2012, the area within the planned semicircular road is to be urbanized, while in 2020 some spillover is to take place in the area east of the ring road.
- In some of the existing high-density residential areas northeast of the city, the future population density has been set to be lower than at present on the assumption that the urban renewal would be in progress.
- Overall, the population distribution has been adjusted so as to minimize discrepancy from a guideline under consideration by APSARA.

<sup>2</sup> Please refer to the detail for Part II Chapter 1.

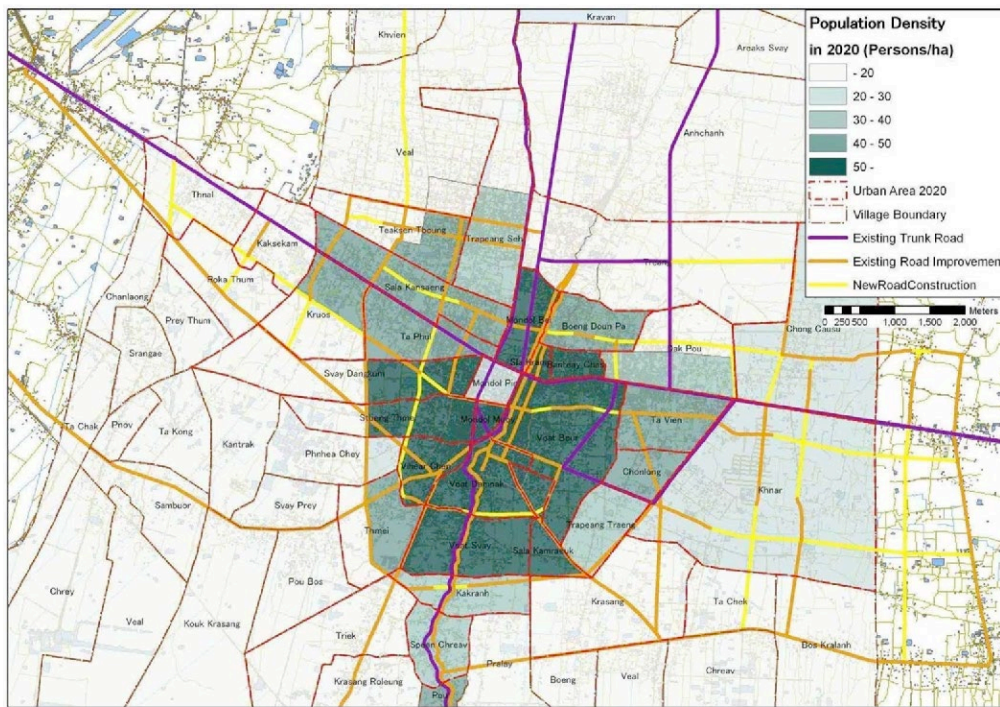
The population distribution for the years 2004, 2012 and 2020 for the Siem Reap District is shown in Table II.11.6 and is illustrated in Figures II.11.6, II.11.7, and II.11.8, respectively. This population distribution is used as a common basis physical layout of infrastructures such as electricity, water supply and drainage.



Source: JICA Study Team  
**Figure II.11.6 Current Population Density (2004)**



Source: JICA Study Team  
**Figure II.11.7 Population Density (2012)**



Source: JICA Study Team

**Figure II.11.8 Population Density (2020)**

**Table II.11.6 Population Framework for Siem Reap District (1/2)**

Commune	Village Name	Area (ha)	Population (person)			Density (person/ha)		
			2004	2012	2020	2004	2012	2020
Sla Kram	Sla Kram	13.6	1,870	1,520	1,421	137.2	111.5	104.2
	Boeng Doun Pa	90.6	2,801	2,991	3,631	30.9	33.0	40.1
	Chong Kausu	427.5	8,196	9,714	11,805	19.2	22.7	27.6
	Dak Pou (urban)	119.4	2,611	3,115	3,814	21.9	26.1	31.9
	Dak Pou (rural)	57.4	198	214	232	3.4	3.7	4.0
	Banteay Chas	29.7	5,573	5,071	4,481	187.7	170.8	150.9
	Treang	489.2	3,122	3,122	3,122	6.4	6.4	6.4
	Mondol Bei	73.0	4,912	5,010	5,110	67.3	68.6	70.0
	<b>Total</b>	1300.5	29,283	30,757	33,616	22.5	23.7	25.8
	<b>Total Urban</b>	326.4	17,767	17,707	18,457	54.4	54.2	56.5
Svay Dangcum	Phnhea Chey (urban)	26.8	143	203	753	5.3	7.6	28.1
	Phnhea Chey (rural)	110.4	569	616	667	5.2	5.6	6.0
	Kantrak	160.7	1,373	1,450	1,520	8.5	9.0	9.5
	Kouk Krasang	2442.1	789	907	1,200	0.3	0.4	0.5
	Svay Prey	90.0	871	880	890	9.7	9.8	9.9
	Pou Bos	156.2	771	887	1,153	4.9	5.7	7.4
	Thmei (urban)	75.1	598	2,044	3,466	8.0	27.2	46.2
	Thmei (rural)	60.8	157	170	184	2.6	2.8	3.0
	Svay Dangcum (urban)	86.0	1,347	2,850	4,307	15.7	33.1	50.1
	Svay Dangcum (rural)	137.2	335	363	393	2.4	2.6	2.9
	Sala Kansaeng	164.2	5,751	6,400	7,811	35.0	39.0	47.6
	Kruos (urban)	63.7	2,455	2,760	3,060	38.5	43.3	48.0
	Kruos (rural)	90.7	661	715	775	7.3	7.9	8.5
	Vihear Chen	65.9	4,884	5,560	7,228	74.1	84.4	109.7
	Stueng Thmei (urban)	86.1	3,191	3,858	5,081	37.1	44.8	59.0
	Stueng Thmei (rural)	46.7	85	92	100	1.8	2.0	2.1
	Mondol Muoy	18.1	2,871	2,681	2,500	158.8	148.3	138.3
	Mondol Pir	35.8	336	500	750	9.4	14.0	21.0
	Ta Phul	114.6	2,895	3,471	4,911	25.3	30.3	42.9
	<b>Total</b>	4031.0	30,082	36,407	46,749	7.5	9.3	11.8
<b>Total Urban</b>	736.3	24,471	30,327	39,867	33.2	41.2	54.1	
Kouk Chak	Trapeang Seh (urban)	128.9	4,576	4,536	4,494	35.5	35.2	34.9
	Trapeang Seh (rural)	112.7	475	515	557	4.2	4.6	4.9
	Veal (urban)	33.7	497	497	497	14.7	14.7	14.7
	Veal (rural)	831.4	1,900	1,900	1,900	2.3	2.3	2.3
	Teaksen Tbound (urban)	63.1	1,571	1,921	2,671	24.9	30.4	42.3
	Teaksen Tbound (rural)	79.3	571	618	670	7.2	7.8	8.4
	Kouk Chan	445.5	1,056	1,056	1,056	2.4	2.4	2.4
	Khvien	142.3	1,287	1,287	1,287	9.0	9.0	9.0
	Kouk Beng	696.7	1,117	1,117	1,117	1.6	1.6	1.6
	Kouk Tnaot	698.2	2,327	2,327	2,327	3.3	3.3	3.3
	Nokor Krau	579.6	2,738	2,738	2,738	4.7	4.7	4.7
	<b>Total</b>	3811.3	18,115	18,512	19,314	4.8	4.9	5.1
	<b>Total Urban</b>	225.7	6,644	6,954	7,662	29.4	30.8	33.9
	Sala Kamraeuk	Voat Bour	253.0	4,918	10,847	15,891	19.4	42.9
Voat Svay - West		67.1	1,861	2,558	3,582	27.7	38.1	53.4
Voat Svay - East		81.7	2,267	3,117	4,363	27.7	38.2	53.4
Voat Damnak - West		37.0	2,195	2,220	2,230	59.3	60.0	60.3
Voat Damnak - East		75.2	1,378	3,637	4,535	18.3	48.4	60.3
Sala Kamraeuk		61.2	1,319	2,160	3,141	21.5	35.3	51.3
Chonlong		58.0	803	1,700	2,338	13.8	29.3	40.3
Ta Vien		117.5	1,895	3,700	5,041	16.1	31.5	42.9
Trapeang Traeng		90.0	593	2,160	3,024	6.6	24.0	33.6
<b>Total</b>		840.6	17,229	32,099	44,145	20.5	37.1	51.5
<b>Total Urban</b>	840.6	17,229	32,099	44,145	20.5	38.2	52.5	

Source: JICA Study Team.

Notes: Shadowed figures indicate the future urban area, No area data are available for Chong Knies Commune

**Table II.11.6 Population Framework for Siem Reap District (2/2)**

Commune	Village Name	Area (ha)	Population (person)			Density (person/ha)		
			2004	2012	2020	2004	2012	2020
<b>Nokor Thum</b>	Rohal	1878.4	1,346	1,346	1,346	0.7	0.7	0.7
	Srah Srang Cheung	788.5	928	928	928	1.2	1.2	1.2
	Srah Srang T boung	731.4	556	556	556	0.8	0.8	0.8
	Kravan	691.7	892	892	892	1.3	1.3	1.3
	Areaks Svay	233.8	493	493	493	2.1	2.1	2.1
	Anhchanh	1164.5	861	861	861	0.7	0.7	0.7
	<b>Total</b>	5488.2	5,076	5,076	5,076	0.9	0.9	0.9
<b>Chreav</b>	Chreav	1015.1	860	929	1,003	0.8	0.9	1.0
	Kh nar	666.1	2,686	7,320	13,550	4.0	11.0	20.3
	Bos Kralanh	277.7	1,263	1,364	1,910	4.5	4.9	6.9
	Ta Chek	113.4	631	681	736	5.6	6.0	6.5
	Veal	4063.6	1,298	1,402	1,514	0.3	0.3	0.4
	Krasang	285.0	1,065	1,385	3,250	3.7	4.9	11.4
	Boeng	159.3	568	613	663	3.6	3.8	4.2
	<b>Total</b>	6580.2	8,371	13,694	22,626	1.3	2.1	3.4
<b>Chong Khnies</b>	Phum Muoy	0	999	1,079	1,187	N.A.	N.A.	N.A.
	Phum Pir	0	619	669	735	N.A.	N.A.	N.A.
	Phum Bei	0	723	781	859	N.A.	N.A.	N.A.
	Phum Buon	0	754	814	896	N.A.	N.A.	N.A.
	Phum Pram	0	517	558	614	N.A.	N.A.	N.A.
	Phum Prammuoy	0	731	789	868	N.A.	N.A.	N.A.
	Phum Prampir	0	2,053	2,217	2,439	N.A.	N.A.	N.A.
		<b>Total</b>	0	6,396	6,907	7,598	N.A.	N.A.
<b>Sambuor</b>	Pnov	46.8	682	716	920	14.6	15.3	19.7
	Sambuor	146.9	765	803	1,059	5.2	5.5	7.2
	Veal	422.1	579	608	800	1.4	1.4	1.9
	Chrey	1950.3	633	665	875	0.3	0.3	0.4
	Ta Kong	131.0	605	635	856	4.6	4.8	6.5
	<b>Total</b>	2697.0	3,264	3,427	4,510	1.2	1.3	1.7
<b>Siem Reab</b>	Pou	64.5	2,739	3,013	3,200	42.4	46.7	49.6
	Phnum Kraom	3810.7	2,581	2,839	3,123	0.7	0.7	0.8
	Pralay	471.2	760	836	920	1.6	1.8	2.0
	Kakranh	93.2	2,409	2,650	2,915	25.8	28.4	31.3
	Krasang Roleung	500.2	776	854	939	1.6	1.7	1.9
	Spean Chreav	85.1	2,367	2,604	2,864	27.8	30.6	33.7
	aranh	211.4	3,301	3,631	3,994	15.6	17.2	18.9
	Triek	278.9	1,195	1,315	1,446	4.3	4.7	5.2
		<b>Total</b>	5515.3	16,128	17,742	19,401	2.9	3.2
<b>Srangae</b>	Kaksekam	110.7	1,179	1,179	1,179	10.6	10.6	10.6
	Thnal	150.3	1,293	1,422	1,872	8.6	9.5	12.5
	Roka Thum	141.7	516	675	1,274	3.6	4.8	9.0
	Prey Thum	96.5	624	686	903	6.5	7.1	9.4
	Srangae	89.0	840	860	880	9.4	9.7	9.9
	Chanlaong	84.6	712	740	840	8.4	8.7	9.9
	Ta Chak	3065.4	458	504	663	0.1	0.2	0.2
		<b>Total</b>	3738.3	5,622	6,066	7,611	1.5	1.6
	<b>Total Urban</b>	261.1	2,472	2,601	3,051	9.5	10.0	11.7
	<b>Grand Total</b>	34,003	139,566	170,687	210,646	4.1	5.0	6.2
	<b>Grand Total Urban</b>	2,390.2	68,583	89,688	113,182	28.7	37.5	47.4

Source: JICA Study Team.

Notes: Shaded figures indicate the future urban area, No area data are available for Chong Knies Commune

### 11.2.3 Land Use

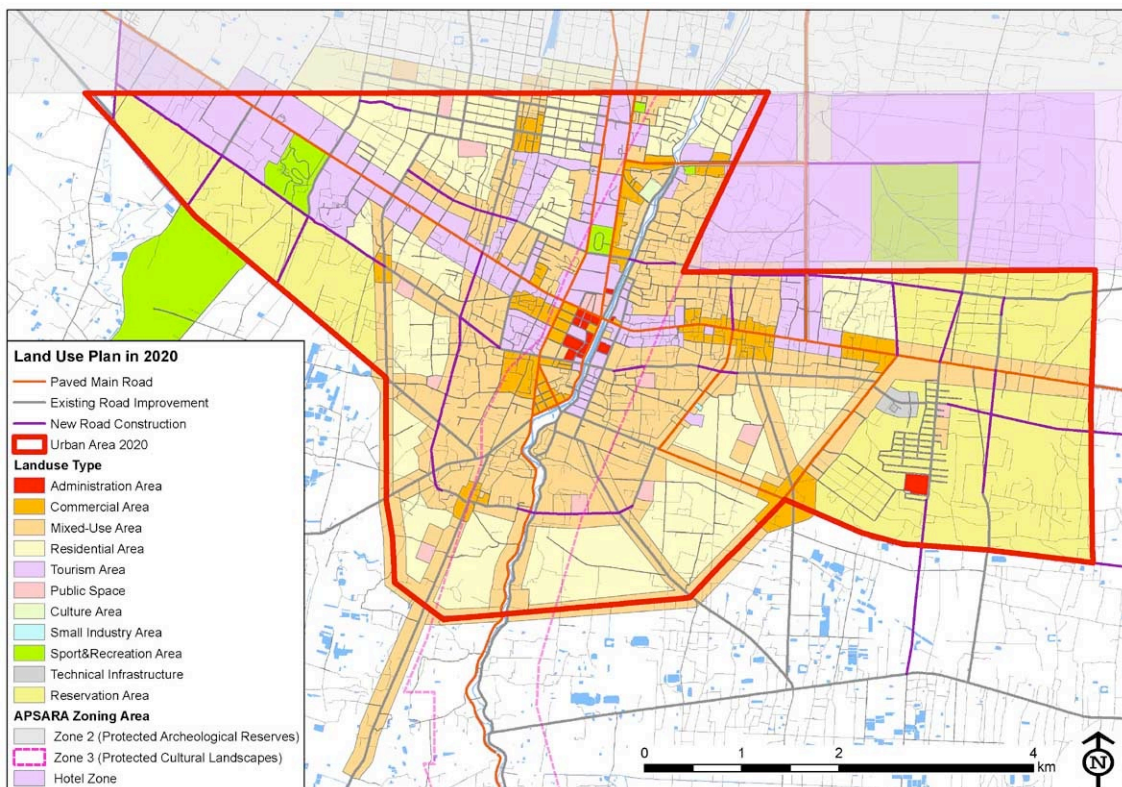
Setting a land use framework is more difficult task than other frameworks, because most of the current urban areas are mixed use. The land use plan in SRAT Study shall have the target year of 2020.

In order to control the urban expansion and development to match the land use plan, the control of new buildings will be devised based on the coverage ratio, floor to area ratio and/ or height of the buildings. The control will be applied to new buildings within the “urbanization area” set for 2020.

For the purpose of achieving a compact city in Siem Reap, the areas inside of the proposed ring road, south of the NR6, shall be considered as a priority area for urbanization, and the infrastructure development shall be promoted with priority within this area, while the areas outside of this priority area shall be considered for private sector urban development that is permitted with a sizable area and well planned urban environmental condition.

Although Cambodia has no official urban land use classification, this Study adopts a land use classification system in cooperation with Asia Urbs Project and Siem Reap District (See Part 3 Chapter 1 for detail).

Consequently, a draft land use plan shown in Figure II.11.9 has been derived from the basic idea for the population distribution framework as well as from present patterns of land use. The land use plan is prepared to be as a guideline. It will not be strongly regulative until an appropriate control measure for land use is established in the country.



Source: JICA Study Team.

**Figure II.11.9 Draft Land Use Plan**

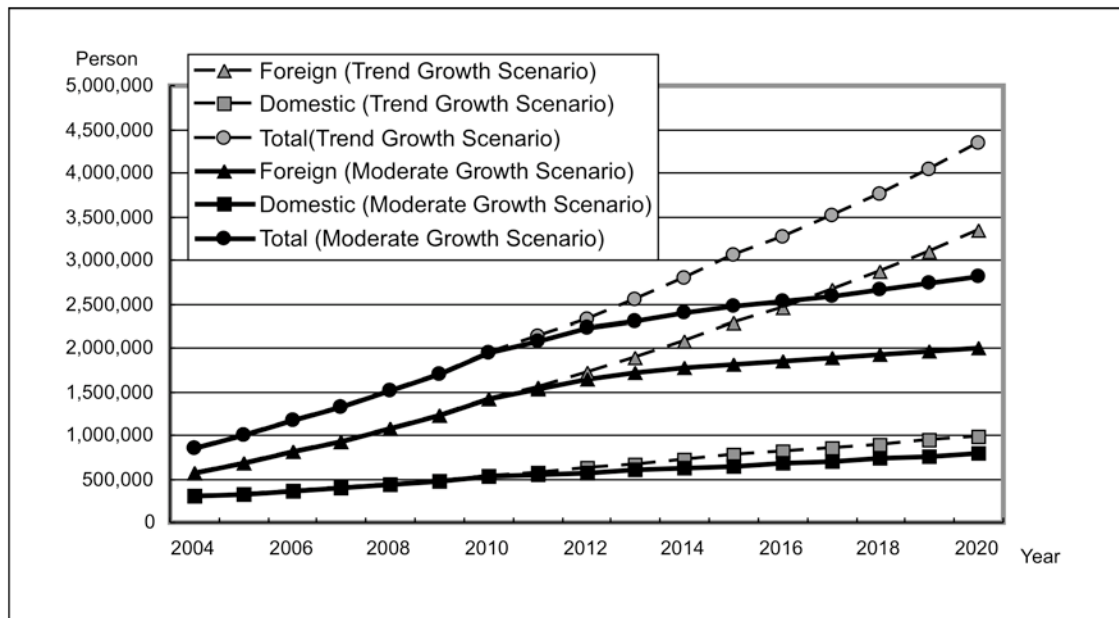
## 11.3 Tourism Framework

### 11.3.1 Number of Tourist Arrivals

For the tourist demand projection for 2012 (Mid-term) and 2020 (Long-term), two scenarios (cases) are assumed as follows:

- **Trend Projection: Growth Trend Case (without Master Plan):** This case is to continue attracting foreign and domestic tourists and tourism private investment (hotel) to Siem Reap, while it gives negative impacts to Angkor Wat Complex and requires increasing demands of infrastructure to support tourism industry.
- **Projection with Policy Intervention: Angkor Wat Conservation Case (with Master Plan):** This case is to control unplanned development of hotel and minimize impacts to Angkor Wat Complex for sustainable tourism development. Also, the number of foreign tourist in 2020 does not exceed a carrying capacity of the existing Siem Reap Airport.

The projected tourist population from 2005 to 2020 for a trend projection and the projection with policy intervention is shown in Figure II.11.10. The projection with policy intervention has been adopted as a basis of the scenario of the present master plan.



Source: The JICA Study Team

**Figure II.11.10 Projected Tourist Population in Siem Reap: 2006 to 2020  
(Trend Growth Scenario and Moderate Growth Scenario)**

The projected numbers of tourists during the period from 2005 to 2010 show the same growth trend under both the trend projection and the projection with policy intervention. After 2010, the number of foreign tourists continues to increase at growth rates of 8-10% and reaches 3,342,868 in 2020 under the trend projection. On the other hand, it increases at a lower growth rates of 4-2% and reaches 2,007,022 in 2020 under the projection with policy intervention. The total number of tourists in 2020 for the trend projection and the projection with policy intervention are 4,330,707 and 2,801,896, respectively.

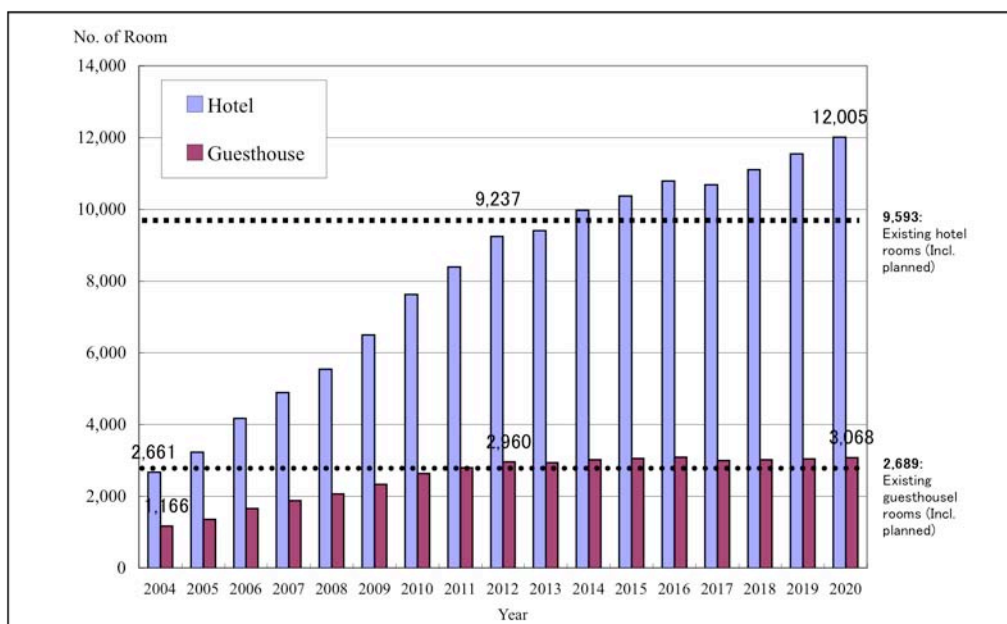


### 11.3.2 Number and Location of Accommodations

#### (1) Number of Accommodations

Based on the number of tourist arrivals, necessary number of accommodations is also projected in accordance with the master plan scenario. The number of required rooms under the scenario is set in a way to accommodate all the tourists in the peak season.

The required number of rooms of hotels and guesthouses under the projection with policy intervention is shown in Figure II.11.11. In 2007, the number of existing rooms (including planned as of 2007) is already far beyond the present level of demand. With policy intervention, those existing rooms can meet the demand until 2011. Additional hotel rooms will be necessary only after 2014. By 2020, Siem Reap will need 12,055 hotel rooms under the projection with policy intervention.



Source: JICA Study Team

**Figure II.11.11 Requirements of Hotels and Guesthouses under Projection with Policy Intervention: 2005-2020**

#### (2) Location of Accommodations

Existing hotels and guesthouses are more concentrated on the urbanized areas in Siem Reap than the other area. Major concentrations are observed in the city center area between Old Market in the south and *Le Meridien* on the north, and the area along National Route No. 6. The future distribution of hotels and guesthouses will follow the same pattern on the whole, with the exception of the Tourism and Cultural Zone.

The Tourism and Cultural Zone, also called as Hotel Zone, occupies mostly a part of Trean Village in Sla Kram Commune, northeast of Siem Reap city area. The zone commands an area of 1,007 ha, in which APSARA has not acquired all lands. The Zone will be characterized by a low density, large-scale resort type hotels, for which planning is in progress with the condition that the maximum room per hectare is 40 rooms. Some hotel investors have been preparing their new hotels. In addition, some

museums and tourist gateway projects are in progress. The Zone will serve as a site for future location of up-market resort hotels. The Hotel Zone is assumed to accommodate 2,000 rooms in year 2020.

The following table shows a summary of the spatial distribution of hotel rooms in 2004, 2012 and 2020.

**Table II.11.7 Number and Place of Hotels and Guest Houses in Siem Reap District**

Commune	Village Name	Area (ha)	No. Hotel Rooms			No. Guest House Rooms		
			2004	2012	2020	2004	2012	2020
Sla Kram	Sla Kram	13.6	100	100	100	123	123	123
	Boeng Doun Pa	90.6	0	0	0	0	150	150
	Chong Kausu	427.5	0	0	0	0	0	0
	Dak Pou	176.8	0	0	0	29	29	29
	Banteay Chas	29.7	143	400	500	50	150	150
	Treang *	489.2	223	1,700	2,511	8	140	150
	Mondol Bei	73.0	878	1,150	1,200	31	31	31
	<b>Total</b>	1300.5	1,344	3,350	4,311	241	623	633
Svay Dangkum	Phnhea Chey	137.2	0	0	0	0	0	0
	Kantrak	160.7	0	0	0	0	0	0
	Kouk Krasang	2442.1	0	0	0	0	0	0
	Svay Prey	90.0	0	0	0	0	0	0
	Pou Bos	156.2	0	0	0	0	0	0
	Thmei	135.8	0	0	0	0	0	0
	Svay Dangkum	223.3	239	270	350	215	429	450
	Sala Kansaeng	164.2	738	1,000	1,050	40	50	50
	Kruos	154.4	209	209	209	13	13	13
	Vihear Chen	65.9	72	72	72	106	106	106
	Stueng Thmei	132.8	100	337	450	227	227	227
	Mondol Muoy	18.1	240	300	340	38	38	38
	Mondol Pir	35.8	835	1,150	1,200	238	238	238
	Ta Phul	114.6	1,145	1,670	1,850	138	138	138
<b>Total</b>	685.8	3,578	5,008	5,521	1,015	1,239	1,260	
Kouk Chak	Trapeang Seh	241.6	0	0	0	8	8	8
	Veal	865.1	0	0	0	0	0	0
	Teaksen Tboung	142.4	0	0	0	0	0	0
	Kouk Chan	445.5	0	0	0	0	0	0
	Khvien	142.3	0	0	0	0	0	0
	Kouk Beng	696.7	0	0	0	0	0	0
	Kouk Tnaot	698.2	0	0	0	0	0	0
	Nokor Krau	579.6	0	0	0	0	0	0
<b>Total</b>	3811.3	0	0	0	8	8	8	
Sala Kamraeuk	Voat Bour	253.0	620	1,000	1,300	511	950	1,000
	Voat Svay	148.8	0	0	0	0	0	0
	Voat Damnak	112.2	0	200	300	24	50	50
	Sala Kamraeuk	61.2	18	18	18	0	0	0
	Chonlong	58.0	0	0	0	0	0	0
	Ta Vien	117.5	24	24	50	38	130	149
	Trapeang Traeng	90.0	0	0	0	0	0	0
	<b>Total</b>	840.6	662	1,242	1,668	573	1,130	1,199
Nokor Thum	All vilages	5488.2	0	0	0	0	0	0
Chreav	All vilages	6580.2	0	0	0	0	0	0
Chong Khnies	All vilages	N.A.	0	0	0	0	0	0
Sambuor	All vilages	2697.0	0	0	0	0	0	0
Siem Reab	All vilages	5515.3	0	0	0	0	0	0
Srangae	Kaksekam	110.7	601	700	800	0	0	0
	Thnal	150.3	0	200	200	0	0	0
	Roka Thum	141.7	0	0	0	0	0	0
	Prey Thum	96.5	0	0	0	0	0	0
	Srangae	89.0	0	0	0	0	0	0
	Chanlaong	84.6	0	0	0	0	0	0
	Ta Chak	3065.4	0	0	0	0	0	0
<b>Total</b>	3738.3	601	900	1,000	0	0	0	
<b>Grand Total</b>		<b>10376.5</b>	<b>6,185</b>	<b>10,500</b>	<b>12,500</b>	<b>1,837</b>	<b>3,000</b>	<b>3,100</b>

Source: JICA Study Team.

Notes: Shadowed figures indicate the future urban area, \*Treang Commune is in the site for APSARA Hotel Zone

## 12. Recommendations

1. Siem Reap has so far experienced a tourism rush. The rush has taken place with few destinations and contents to enjoy other than Angkor Wat Complex. Basic public services cannot catch up with rapid hotel development. The city is still hardly safe, clean or convenient for individual family tourists. Policy makers should realize that the tourism and urban development in this pattern is not sustainable in the future. It should be shifted from quantity-oriented to quality-oriented and made compatible with natural environmental conditions. The government should seriously tackle with intensifying environmental and urban problems in Siem Reap. Otherwise, environmental degradation and possible damage to the image of the city may force tourists away from Siem Reap under fierce competition among tourist destinations in the world.

2. Among other things, the most critical element is the water for tourists, people and the agricultural lands as green belt. Individual pumping of groundwater for commercial purpose should be registered, monitored and charged when necessary. This is now possible with a full-scale urban water supply system being available. A province-wide plan should be prepared as soon as possible to manage existing and potential water resources and to coordinate different water uses in long term.

3. Land use control is another critical element. Urban development should be allowed only within the urbanization area as proposed. With this control, urban infrastructures can efficiently be provided. The historical sites and agricultural lands can be protected from uncontrolled urban spill over as well. For timely development of infrastructures, public space should be secured from unlawful building construction, settlements and land occupancy with full consideration of socially vulnerable people. Currently complicated administrative set-up for land use planning should be streamlined for the land use control to be effective.

4. This long-term master plan is a living document. It should be reviewed and revised in response to changing circumstances particularly by Siem Reap Province, APSARA Authority, Committee for the Development of Cambodia and Office of the Council of the Ministers. The proposed priority projects should fully be reviewed for their timely preparation and implementation. Together with these attempts, the provincial government should strengthen its function to monitor investments, land use, environment government projects and thus to revise the master plan.

5. Pilot projects entitled "A More Beautiful Siem Reap" and "Angkor Products Fair 2005" have been successful because of strong local initiative and wide-ranging national support. They should be a new step toward continued actions for upgrading urban environment and diversifying local economic benefits and local amenities. The local initiative taken by the provincial governor in particular, should keep being supported by concerned national ministries, private sector and the local people.

6. Capacity building of the government administration at the local level is the most crucial to sustainable development of Siem Reap. Of important is the provincial government. The provincial government should urgently strengthen its planning staff

with wide technical knowledge. It should promote sharing of developmental information among different departments and authorities at the provincial level by organizing a provincial development committee. It will eventually be something like a provincial CDC or a governor's board. There should be a basket fund at the provincial level specifically for the maintenance of strategic public services such as streets, waste collection and drainage. A deserved and viable source of the fund would be a part of the entrance fees to the Angkor monuments.

7. Unlike most other provinces in Cambodia, the provincial of Siem Reap is dependent largely on tourism and urban sectors. The provincial government of Siem Reap should, therefore, substantially strengthen its authority and technical capacity to plan, monitor and maintain urban environment. The provincial authority and technical capacity should be made effective by technical and legislative support from relevant line ministries and departments as well as APSARA Authority.

8. The Angkor monuments are a symbol of the national identity, a world cultural heritage and a major source of foreign exchange. Siem Reap should thus be a model city of sustainable development in Cambodia. It will not just be sustainable in itself but will offer implications of the Angkorian wisdom for sustainable development and cultural diversity and people participation in the 21st century. It is not just the seat of physical monument either, but the source of universal spirit being conveyed to the rest of the world. It will also be a cultural magnet in Southeast Asia. Toward this end, all the ministries, authorities and councils of the national government should share a common understanding that it is worth to financially and technically support Siem Reap especially in urban and environmental improvement.

# **APPENDIX**

## Priority Projects and Programs

# JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town

## Project Brief

### Sector: Urban Development

No	Project Title	Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost	Project Priority
U-1	City Center Area Improvement Project	Urban population of Siem Reap (approximately 90,000) and visitors	Foreign Grant (Grant)	7,600 (thousand US\$)	Priority
	Project Site	Department	Contact Person	Telephone	E-mail
	In and around the city center of Siem Reap (see Background)	Implementation Agency Siem Reap Province			
	<p>The city center area is the center of administrative, commercial and tourism center of Siem Reap. The basic infrastructure of the city center, such as the road grid, was established in 1930's under the French Protectorate. Around the city center area are the peri-urban sprawl area where the infrastructure is poor. If no effective measure were taken, the whole area would face the deterioration of urban environment with pollution, congestion and random expansion of housing units.</p>	<p>Project and Program Outline/Components:</p> <p>(1) Improvement of sidewalk: about 3.0km (Sivatha Avenue and streets within Old Quarter Area)</p> <p>(2) Tree lining in Old Market area: about 2 km (Sivatha Avenue and streets within Old Market)</p> <p>(3) Improvement of street lighting: to be determined (mostly along the Siem Reap river)</p> <p>(4) Construction of an urban park</p> <p>(5) Redevelopment of the Provincial Hospital Area</p> <p>(6) Redevelopment of the crowded area in city center</p> <p>(7) Improvement of pavement of urban roads: about 10.5km (mostly in peri-urban area)</p> <p>(8) New construction of roads: about 1.1km (for east and south boundary of peri-urban area)</p>			
	<p><b>Project Purpose:</b></p> <p>This project aims at implementing various infrastructure needs with high priority of implementation, based on the visions and framework established under the present study. The project will be a multi-sector urban improvement project managed by the Provincial Government with the participation of relevant ministerial department.</p> <p>This Study proposed "Development Committee for Siem Reap", and this will be the coordination body of the multi-sector urban improvement.</p>				
	<p><b>Environmental and Social Impact:</b></p> <p>The project will select infrastructure needs that shall have little social and environmental impact.</p>				
	<p><b>Related Projects:</b></p> <p>Sub-arterial Road Network Project (Phase 1)[TR-2]</p>				
		<p><b>Project Output:</b></p> <p>The direct output of the project will be creating of a clean, attractive and decent urban environment in the target area. The indirect output is establishment of a coordination system of various ministerial departments under the Provincial leadership, and capacity building required for continuous implementation of similar projects in other locations.</p>			
		<p><b>Implementation Schedule:</b></p> <p>1) Land Acquisition Mar 06 - Dec 06</p> <p>2) F/S and D/D Mar 06 - Dec 06</p> <p>3) Funding arrangement Mar 06 - Jun 07</p> <p>4) Tender and award Jul 07 - Dec 07</p> <p>5) Construction Jan 08 - Oct 08</p> <p>6) O&amp;M Capacity Building May 08 - Nov 08</p>			
		<p><b>Project Cost Breakdown:</b></p> <p>1) Direct Cost 1,862</p> <p>2) Capacity building 300</p> <p>3) Physical contingency 186</p> <p>4) Price escalation 205</p> <p>5) Engineering service 186</p> <p>6) Land acquisition 4,864</p> <p>Total 7,604</p> <p>(Unit: thousand US\$)</p>			

# JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town

## Project Brief

### Sector: Urban Development

No	Project Title	Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost	Project Priority
U-2	Urban Planning Capacity Building Project	Urban population of Siem Reap (approximately 90,000) and visitors		To be determined	Priority
	Project Site Urban area of Siem Reap (see map)	Department Siem Reap Province	Contact Person	Telephone	
<p><b>Background:</b> Though Cambodia has a law and regulations for urban planning, the enforcement is still in a poor stage, due mainly to the lack of experience and confidence. This project aims at assisting the local government to enhance the capacity to sustainably enforce the urban planning visions and land use plan.</p> <p><b>Project Purpose:</b> This project aims at enhancing the capacity for effective enforcement of urban management, planning and GIS use as a tool for this purpose. Expatriate experts will conduct day-to-day technology transfer for urban management and planning practices on a multi-sect oral urban improvement format, in parallel with the Project U-1.</p> <p><b>Environmental and Social Impact:</b> The project will have no adverse effects on environment and social sphere.</p> <p><b>Related Projects:</b> This will be a follow-up of the SRAT master plan project.</p>		<p><b>Project and Program Outline/Components:</b> (1) Expert for urban planning (team leader) (2) Expert for local administration (3) Expert for urban infrastructure (4) Expert for GIS</p> <p><b>Project Output:</b> The direct output of the project will be the increased capacity for better urban management and planning enforcement.</p> <p><b>Implementation Schedule:</b> 2005: Request, appraisal and preparation 2006: Implementation of the 1st phase 2007: Implementation of the 2nd phase 2008: Post-evaluation</p> <p><b>Project Cost Breakdown:</b> To be determined</p>			

# JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town

## Project Brief

### Sector: Environmental Management

ID No.	Project Title	Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost (thousand US\$)	Project Priority								
E-2	Enhancing Environmental Awareness	Residents, tourists, hotels and commercial businesses		330	Priority								
	Project Site Siem Reap District	Department	Contact Person	Telephone	E-mail								
	Implementation Agency Department of Environment (DOE)	<p><b>Project and Program Outline/Components:</b></p> <ol style="list-style-type: none"> <li>1. Provision of the material and equipment for the public awareness.</li> <li>2. Conducting seminar for the empowerment of government authorities (DOE, SRWSA and EdC)</li> <li>3. Conducting public awareness by beneficiary group (Public and Hotel Association)</li> <li>4. Preparing guideline of environment-friendly lifestyle and businesses</li> <li>5. Action plan for the future</li> </ol>											
	<p><b>Background:</b></p> <p>The economic development and the increase of population are rapidly deteriorating the environment, both for natural resources and living environment in Siem Reap. The wastes, water and electric demand made a heavy load to natural resources and to public infrastructure management, such as investment cost for required treatment plant development.</p> <p>One of the essential measures to make the development sustainable is to refrain the people's demand of natural resources by educating people. hotels on the relation and effects on living environment and natural resources.</p>												
	<p><b>Project Purpose:</b></p> <p>The detailed objectives are as follows:</p> <ol style="list-style-type: none"> <li>1. To decrease required water and electric demand and reduce effect on natural resources.</li> <li>2. To decrease waste discharge amount and reduce the total public infrastructure management cost.</li> <li>3. To minimize future investment by suppliers by curving and leveling the demand.</li> <li>4. To maintain town more sustainable develop, environmental friendly and beautiful.</li> </ol>												
	<p><b>Environmental and Social Impact:</b></p> <ol style="list-style-type: none"> <li>1. Reduced water consumption and reduced costs for water supply and treatment</li> <li>2. Reduced wastewater quantity and reduced costs for treatment</li> <li>3. Reduction in the amount of the solid waste collected and disposed</li> <li>4. Reduction of electric consumption, the electric tariff and future investment cost</li> <li>5. Reduced environmental impact and more sustainable development</li> </ol>												
	<p><b>Related Projects:</b></p> <ol style="list-style-type: none"> <li>1. Enhancing People's Awareness for "A More Beautiful Siem Reap" which is the pilot project promoted by JICA</li> </ol>												
					<p><b>Project Output:</b></p> <ol style="list-style-type: none"> <li>1. Education on sanitation and living environment</li> <li>2. Promotion of 3R life style (Reduce, Reuse and Recycle of water, energy/electricity and solid waste)</li> <li>3. Minimization of future investment, and the tariff</li> <li>4. Promotion of beautifying the town</li> <li>5. Guideline</li> </ol>								
					<p><b>Project Cost: (000 USD)</b></p> <table> <tr> <td>1. Direct costs</td> <td>30</td> </tr> <tr> <td>2. Capacity development</td> <td>300</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>330</b></td> </tr> </table>	1. Direct costs	30	2. Capacity development	300	<b>TOTAL</b>	<b>330</b>		
1. Direct costs	30												
2. Capacity development	300												
<b>TOTAL</b>	<b>330</b>												
					<p><b>Implementation Schedule:</b></p> <table> <tr> <td>1. Procurement</td> <td>Oct-06</td> </tr> <tr> <td>2. Capacity development</td> <td>Jun-06</td> </tr> <tr> <td>3. Public relation</td> <td>Mar-07</td> </tr> <tr> <td></td> <td>2007-2012</td> </tr> </table>	1. Procurement	Oct-06	2. Capacity development	Jun-06	3. Public relation	Mar-07		2007-2012
1. Procurement	Oct-06												
2. Capacity development	Jun-06												
3. Public relation	Mar-07												
	2007-2012												



# JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town

## Project Brief

### Sector: Tourism Development

ID No.	Project Title	Beneficiaries and/or Target Group	Assumed Fund Foreign Loan (International)	Estimated Cost (USD (thousand US\$))	Project Priority
TO-1	Khmer Heritage Tourism Network and Tourism Facility Development Project	Tourists, local residents, tourism related businesses and public sector (Tourism and Department)	Foreign Loan (International)	26,550	Priority
	Project Site North west region (5 provinces)	Contact Person	Telephone	E-mail	
	Implementation Agency f. Provinces (Depts. of Tourism), APSARA, MPWT, MC				
	<p>Background:</p> <p>Most of Angkor temples in Cambodia were built between 7th and 14th centuries in Siem Reap and its surrounding provinces. In recent year, tourist will be able to visits not only Angkor Wat Complex and other temples in the Angkor Archaeological Zone, but also other Khmer temples and monuments such as Beng Mealeas, Koh Ker, Kbal Spean, Phnom Kuren, Banteay Chhmar and Sambor Prei Kuk for day trip tour. Tours to distant Khmer temples and creating Khmer heritage tour circuits are potential tourism resources for understand and follow the Khmer Heritage Routes. However, most of those distant temple and monument sites lack tourism signboard, tourism service facilities and infrastructure, where are not sufficiently to serve foreign tourist. Besides development and improvement of distant Angkor temples and monuments sites, various tourism facilities and infrastructure need to be developed in Siem Reap town, Angkor Archaeological Zone, Culture and Tourism Zone and Tonle Sap Lake area in order to improve Siem Reap as attractive tourism destination and enhance value of Khmer heritage, culture, art, local tradition and nature.</p>	<p>Project and Program Outline/Components:</p> <p>Project areas consist of four areas as follows:</p> <p>1. Angkor Heritage Park Area</p> <p>(1) Improvement of stalls and parking areas (2) Installation of street lighting and signboard</p> <p>2. Urban Amenities and Cultural Tourism Area</p> <p>(1) Development of Angkor Traditional Culture and Ethnology Museum (2) Development of Botanical Garden and Nature Study Center (3) Development of Cambodia National Institute of Tourism (Professional tourism training and research institute) (4) Development of Tourism information centers ( areas at Dept. of Tourism, the Old Market area, and bus terminal) (5) Development of Parking space at the Old Market area (6) Redevelopment of the existing Old Market building</p> <p>3. Tonle Sap Lake and Rural Area</p> <p>(1) Improvement of visitor facilities at Chong Khneas (Tourist information booth, toilet, signboard, resting area, parking) (2) Improvement of Phnom Kraom area (Observation facility, resting area, toilet, parking, signboard)</p> <p>4. Distant Angkor Monument Area (Khmer Heritage Network Development)</p> <p>Improvement and development of tourism infrastructure and facilities at Spean Thnaot, Sambor Prei Kuk, Beng Me</p>			
	<p>Project Purpose:</p> <p>The project aims to developed necessity tourism facilities in Siem Reap and promote Khmer heritage tourism tour and circuit by improvement and development of tourism service facilities and infrastructures.</p>	<p>Project Output:</p> <p>Siem Reap becomes more attractive heritage tourism destination with diversified tourism products, Khmer heritage network development and optional tourism attractions for foreign tourist. The project will help to disperse tourist concentration in the Angkor Archaeological Park at tourist peak time and season adn increase the length of stay of tourists in Siem Reap.</p>			
	<p>Environmental and Social Impact:</p> <p>The project will select sites, development infrastructure and facilities that shall have little social and environmental impact.</p>	<p>Implementation Schedule:</p> <p>2006: Request, preparation 2007: Feasibility study 2008: Detailed design 2009: Tender and award 2009-11: Construction 2012: O&amp;M Capacity building</p>	<p>Project Cost: (000 USD)</p> <p>1) Direct costs 20,000 2) Capacity building 500 3) Physical conti. 2,000 4) Price Escalation 2,050 5) Engineering service 2,000 sub-total 26,550 6) Land acquisition TOTAL 26,550</p>		
	<p>Related Projects:</p> <p>1) Community development project (handicraft making) funded by GTZ in Sambor Prey Kuk, started in 2004. 2) Improvement of roads in and around the Old Market area by Siem Reap Provincial Gov., started in Dec., 2005.</p>				

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Tourism Development**

ID No.	Project Title		Beneficiaries and/or Target Group		Assumed Fund	Estimated Cost	Project Priority
	Project Site	Implementation Agency	Tourists, local residents, tourism businesses and public sector (Tourism and service) in Siem Reap	Contact Person	Foreign Grant	To be determined	Priority
<b>TO-3</b>	Public-Private Partnership Tourism Quality Improvement Program	Dep. of Tourism (Siem Reap), MOT, APSARA					
	<p>Background:  Siem Reap has been rapidly growing as mass tourism destination; however, urban area and tourist sites are not properly managed to accommodate foreign tourists with comfortable and lack of tourism marketing and promotion activities by public sector is constraint to Siem Reap for enhancing value of Khmer heritage with public and private</p>	<p>Project and Program Outline/Components:  1) Establishment of Siem Reap Tourism Promotion and Marketing Board  Preparation of strategic marketing and promotion plan for Siem Reap  2) Strengthening capacity of tourism sector in Siem Reap by dispatching foreign tourism experts in marketing &amp; promotion, human resource development/management, database/IT specialist, product development)  3) Public-private partnership (PPP) programs  4) Mass program and campaign  5) Government for tourism business sector  6) Holding events and forums  7) Tourism sector training program in Japan for government officials</p>					E-mail
	<p>Project Purpose:  The program aims to enhance value of Khmer heritage through reviving local cultural and traditional events, strength public and private partnership by establishing the marketing and board, prepare strategic marketing plan, carry out public awareness program for and prepare tourism guidelines for improvement of tourism quality in Siem Reap.</p>						
	<p>Environmental and Social Impact:  The program will have no adverse effects on environmental and social impact.</p>						
	<p>Related Projects:</p>						
		<p>Implementation Schedule:  2006: Preparation of program  2007-9:  1) Establishment of PPP Siem Reap Promotion &amp;  2) Sending foreign tourism expert  3) Preparation of strategic marketing  2010-12:  1) Public-private partnership (PPP) programs  2) Government officials (Tourism sector) training</p>				<p>Project Cost: ('000 USD)  1) Direct costs  2) Capacity building  3) Physical conti. -  4) Price Escalation -  5) Engineering service sub-total -  TOTAL -</p>	

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Agricultural Diversification and Local Products**

ID No.	Project Title		Beneficiaries and/or Target Group		Assumed Fund	Estimated Cost	Project Priority																
	Human Resource Development and Establishing Local Products Promotion Center	Project Site	Local producers of handicraft and agricultural products	Contact Person				Foreign Grant	(thousand US\$)	Priority													
A-1	Human Resource Development and Establishing Local Products Promotion Center	Siem Reap Province	Local producers of handicraft and agricultural products	Contact Person	Foreign Grant	80	E-mail																
		Implementation Agency Provincial Government	Department		Telephone																		
<p><b>Background:</b></p> <ul style="list-style-type: none"> <li>Institutional and human capabilities, planning capabilities, in particular, of provincial authorities are not sufficient for promoting and guiding local businesses</li> <li>The provincial government is lacking in comprehensive coordinating or core organization for local products promotional activities</li> </ul>		<p><b>Project and Program Outline/Components:</b></p> <ol style="list-style-type: none"> <li>Training of guiding officers</li> <li>Establishing Angkor Products Promotion Center (APPC)</li> <li>Promoting local products by information, production and marketing support</li> </ol>																					
<p><b>Project Purpose:</b></p> <ol style="list-style-type: none"> <li>To lead human resource development of guiding activities for tourism related local businesses</li> <li>To establish local products promotion center such as "Angkor Products Promotion Center (APPC)". APPC will promote local and community businesses by assisting information networking, design and technical upgrading, public relations and sales promotion</li> </ol>		<p><b>Project Output:</b></p> <ol style="list-style-type: none"> <li>Human resource development</li> <li>Information support for local products promotion</li> <li>production and marketing support for local products promotion</li> </ol>																					
<p><b>Environmental and Social Impacts</b></p> <ol style="list-style-type: none"> <li>Improve local product quality and replace imported goods</li> <li>Connecting local products to tourism related business</li> <li>Income improvement and economic diversification of residents/ farmers</li> </ol>		<p><b>Implementation Schedule:</b></p> <ol style="list-style-type: none"> <li>3 months training in Japan</li> <li>1 year for phase 1 (starting phase)</li> <li>Full-scale activities after phase 1</li> </ol>				<p><b>Project Cost: (000 USD)</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1) Direct costs</td><td style="text-align: right;">16</td></tr> <tr><td>2) Capacity building</td><td style="text-align: right;">54</td></tr> <tr><td>3) Physical conti.</td><td style="text-align: right;">2</td></tr> <tr><td>4) Price Escalation</td><td style="text-align: right;">7</td></tr> <tr><td>5) Engineering service</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;">sub-total</td><td style="text-align: right; border-top: 1px solid black;">80</td></tr> <tr><td>6) Land acquisition</td><td style="text-align: right;">-</td></tr> <tr><td style="border-top: 1px solid black; border-bottom: 3px double black;"><b>TOTAL</b></td><td style="text-align: right; border-top: 1px solid black; border-bottom: 3px double black;"><b>80</b></td></tr> </table>		1) Direct costs	16	2) Capacity building	54	3) Physical conti.	2	4) Price Escalation	7	5) Engineering service	2	sub-total	80	6) Land acquisition	-	<b>TOTAL</b>	<b>80</b>
1) Direct costs	16																						
2) Capacity building	54																						
3) Physical conti.	2																						
4) Price Escalation	7																						
5) Engineering service	2																						
sub-total	80																						
6) Land acquisition	-																						
<b>TOTAL</b>	<b>80</b>																						
Angkor Products Fair 2005 (Pilot Project)																							

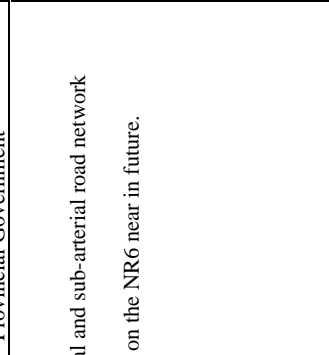
# JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town

## Project Brief

### Sector: Transportation

<b>ID No.</b>	Project Title		Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost	Project Priority																																							
<b>TR-1</b>	French Bridge Improvement Project		Residents in Siem Reap and Tourists	Foreign Grant	1,000 (thousand US\$)	Priority																																							
	Project Site	Implementation Agency	Department	Contact Person	Telephone	E-mail																																							
	Siem Reap city	Ministry of Public Works and Transport	DPWT																																										
<p><b>Background:</b></p> <p>1) Existing concrete bridge on the NR6 called French Bridge is a traffic bottleneck in Siem Reap.</p> <p>2) MPWT has started the construction of temporary bridge at about 200m upstream from French Bridge as the detour route for the traffic from east to west to resolve the congestion temporarily.</p>																																													
<p><b>Project Purpose:</b></p> <p>1) Resolve the traffic bottleneck by constructing new bridge parallel with existing French Bridge.</p>																																													
<p><b>Project Output:</b></p> <p>1) Traffic flow on NR6 will be improved by new bridge</p>																																													
<p><b>Environmental and Social Impact:</b></p> <p>1) Water pipe and facilities buried around the bridge will be affected by construction works.</p>																																													
<p><b>Related Projects:</b></p> <p>1) Temporary detour bridge is under construction at about 200m upstream from French Bridge</p>																																													
			<p><b>Implementation Schedule:</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">1) Land acquisition</td> <td style="width: 10%;">Mar-06</td> <td style="width: 10%;">Sep-07</td> <td style="width: 20%;">Project Cost: ('000 USD)</td> <td style="width: 10%;"></td> </tr> <tr> <td>2) Funding arrangements</td> <td>Mar-06</td> <td>Sep-06</td> <td>1) Direct costs</td> <td style="text-align: right;">713</td> </tr> <tr> <td>3) Feasibility study and detailed design</td> <td>Sep-06</td> <td>Dec-06</td> <td>2) Physical cost.</td> <td style="text-align: right;">71</td> </tr> <tr> <td>4) Tender and award</td> <td>Jan-07</td> <td>Mar-07</td> <td>3) Price Escalation</td> <td style="text-align: right;">71</td> </tr> <tr> <td>5) Construction</td> <td>Mar-04</td> <td>Dec-07</td> <td>4) Engineering service</td> <td style="text-align: right;">71</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">sub-total</td> <td style="text-align: right;">927</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;">5) Land acquisition</td> <td style="text-align: right;">30</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: right;"><b>TOTAL</b></td> <td style="text-align: right;"><b>957</b></td> </tr> </table>		1) Land acquisition	Mar-06	Sep-07	Project Cost: ('000 USD)		2) Funding arrangements	Mar-06	Sep-06	1) Direct costs	713	3) Feasibility study and detailed design	Sep-06	Dec-06	2) Physical cost.	71	4) Tender and award	Jan-07	Mar-07	3) Price Escalation	71	5) Construction	Mar-04	Dec-07	4) Engineering service	71				sub-total	927				5) Land acquisition	30				<b>TOTAL</b>	<b>957</b>	
1) Land acquisition	Mar-06	Sep-07	Project Cost: ('000 USD)																																										
2) Funding arrangements	Mar-06	Sep-06	1) Direct costs	713																																									
3) Feasibility study and detailed design	Sep-06	Dec-06	2) Physical cost.	71																																									
4) Tender and award	Jan-07	Mar-07	3) Price Escalation	71																																									
5) Construction	Mar-04	Dec-07	4) Engineering service	71																																									
			sub-total	927																																									
			5) Land acquisition	30																																									
			<b>TOTAL</b>	<b>957</b>																																									

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Transportation**

ID No.	Project Title		Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost	Project Priority																																			
TR-2	Sub-arterial road network project (Phase 1)		Residents in Siem Reap and Tourists	Foreign Grant	10,800 (thousand US\$)	Priority																																			
Project Site		Implementation Agency	Contact Person	Telephone	E-mail																																				
Siem Reap city		Provincial Government	DPWT																																						
<p>Background:</p> <ol style="list-style-type: none"> <li>Ribbon development of hotels and restaurants along NR6.</li> <li>Traffic concentration to the NR6 because of insufficient arterial and sub-arterial road network especially for east-west direction.</li> <li>Traffic demand forecast that shows the capacity over of traffic on the NR6 near in future.</li> <li>Poor road condition in width and surface pavement.</li> </ol>		<p>Project and Program Outline/Components:</p> <ol style="list-style-type: none"> <li>North Road (2-lane carriageway + sidewalk) <ul style="list-style-type: none"> <li>- new road construction for about 4.1km</li> <li>- widening of existing road for about 1.6km</li> <li>- construction of concrete bridge for about 30m</li> </ul> </li> <li>South Road (2-lane carriageway + sidewalk) <ul style="list-style-type: none"> <li>- new road construction for about 1.2km</li> <li>- widening of existing road for about 4.0km</li> </ul> </li> <li>Approach road (2-lane carriageway + sidewalk) <ul style="list-style-type: none"> <li>- new road construction for about 0.8km</li> <li>- widening of existing road for about 1.7km</li> </ul> </li> </ol>																																							
<p>Project Purpose:</p> <ol style="list-style-type: none"> <li>To untying the traffic concentration to the NR6 by developing the sub-arterial roads that run through the central city to the east-west direction.</li> <li>To improve the road condition in the residential area.</li> </ol>		<ol style="list-style-type: none"> <li>and 2) is proposed to be paved by asphalt concrete.</li> <li>is proposed to be paved by DBST</li> </ol>																																							
<p>Environmental and Social Impact:</p> <ol style="list-style-type: none"> <li>Resettlement is unavoidable in the expansion/construction of the objected road.</li> </ol>		<p>Project Output:</p> <ol style="list-style-type: none"> <li>Dispersion of concentrated traffic from NR6.</li> <li>Acceleration of development other than along NR6</li> <li>Separation of living traffic from tourism traffic..</li> </ol>																																							
<p>Related Projects:</p> <ol style="list-style-type: none"> <li>KOICA "Bypass Construction" project</li> </ol>		<p>Implementation Schedule:</p> <table border="0"> <tr> <td>1) Land acquisition</td> <td>Mar-06</td> <td>Sep-07</td> </tr> <tr> <td>2) Funding arrangements</td> <td>Jul-06</td> <td>Dec-07</td> </tr> <tr> <td>3) Feasibility study and detailed design</td> <td>Jan-07</td> <td>Sep-07</td> </tr> <tr> <td>4) Tender and award</td> <td>Oct-07</td> <td>Dec-07</td> </tr> <tr> <td>5) Construction</td> <td>Jan-08</td> <td>Dec-08</td> </tr> </table>		1) Land acquisition	Mar-06	Sep-07	2) Funding arrangements	Jul-06	Dec-07	3) Feasibility study and detailed design	Jan-07	Sep-07	4) Tender and award	Oct-07	Dec-07	5) Construction	Jan-08	Dec-08	<p>Project Cost: (000 USD)</p> <table border="0"> <tr> <td>1) Construction Cost</td> <td></td> </tr> <tr> <td>    North Road</td> <td>2,841</td> </tr> <tr> <td>    South Road</td> <td>2,032</td> </tr> <tr> <td>    Approach Road</td> <td>474</td> </tr> <tr> <td>        sub-total</td> <td>5,347</td> </tr> <tr> <td>2) Physical conti.</td> <td>535</td> </tr> <tr> <td>3) Price Escalation</td> <td>535</td> </tr> <tr> <td>4) Engineering service</td> <td>535</td> </tr> <tr> <td>5) Land acquisition</td> <td>3,888</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>10,839</b></td> </tr> </table>			1) Construction Cost		North Road	2,841	South Road	2,032	Approach Road	474	sub-total	5,347	2) Physical conti.	535	3) Price Escalation	535	4) Engineering service	535	5) Land acquisition	3,888	<b>TOTAL</b>	<b>10,839</b>
1) Land acquisition	Mar-06	Sep-07																																							
2) Funding arrangements	Jul-06	Dec-07																																							
3) Feasibility study and detailed design	Jan-07	Sep-07																																							
4) Tender and award	Oct-07	Dec-07																																							
5) Construction	Jan-08	Dec-08																																							
1) Construction Cost																																									
North Road	2,841																																								
South Road	2,032																																								
Approach Road	474																																								
sub-total	5,347																																								
2) Physical conti.	535																																								
3) Price Escalation	535																																								
4) Engineering service	535																																								
5) Land acquisition	3,888																																								
<b>TOTAL</b>	<b>10,839</b>																																								

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Transportation**

ID No. <b>TR-7</b>	Project Title Rural Heritage Road Network Rehabilitation Project	Beneficiaries and/or Target Group Residents in Rural Area and Tourists	Estimated Cost 33,200 (thousand US\$)	Project Priority <b>Priority</b>																												
Project Site North West Region of Cambodia		Department Contact Person	Assumed Fund Foreign Grant/ Loan	Telephone																												
Implementation Agency DPWT		E-mail																														
<p><b>Background:</b></p> <ol style="list-style-type: none"> <li>1) Tourist destination is over-concentrated to Angkor Wat.</li> <li>2) There are many heritages still undeveloped and not restored in the rural area.</li> <li>3) Hard accessibility to the rural heritages, especially in rainy season.</li> </ol>	<p><b>Project and Program Outline/Components</b></p> <ol style="list-style-type: none"> <li>1) Rehabilitation of roads between Siem Reap and Rural heritages, as listed below, into weather-proof condition. (Approx. 300km in total) <ul style="list-style-type: none"> <li>- Kubal Spean,</li> <li>- Bakan,</li> <li>- Preah Vihear,</li> <li>- Koh Ker, and</li> <li>- Phnom Kulen.</li> </ul> </li> </ol> <p>It is noted that access route to Beng Mealea, Sambor Prei Kuk and Banteay Chhmar are under rehabilitation.</p>																															
<p><b>Project Purpose:</b></p> <ol style="list-style-type: none"> <li>1) Diversification of concentrated tourists from Angkor Wat and other famous heritages</li> <li>2) Provision of the various heritage tourism other than Angkor Wat</li> <li>3) Provision of the weather-proof road network in the rural area.</li> </ol>	<p><b>Project Output:</b></p> <ol style="list-style-type: none"> <li>1) Diversification of heritage tourism other than that in AAP</li> <li>2) Weather-proof road condition in the rural area</li> </ol>																															
<p><b>Environmental and Social Impact:</b></p> <ol style="list-style-type: none"> <li>1) Some forest may be affected by the road expansion or improvement of existing alignment.</li> </ol>	<p><b>Implementation Schedule:</b></p> <table border="1"> <tr><td>1) Land acquisition</td><td>Jun-06</td><td>Dec-09</td></tr> <tr><td>2) Funding arrangements</td><td>Jul-06</td><td>Dec-08</td></tr> <tr><td>3) Feasibility study and detailed design</td><td>Jan-07</td><td>Sep-09</td></tr> <tr><td>4) Tender and award</td><td>Oct-07</td><td>Dec-09</td></tr> <tr><td>5) Construction</td><td>Jan-08</td><td>Dec-10</td></tr> </table>	1) Land acquisition	Jun-06	Dec-09	2) Funding arrangements	Jul-06	Dec-08	3) Feasibility study and detailed design	Jan-07	Sep-09	4) Tender and award	Oct-07	Dec-09	5) Construction	Jan-08	Dec-10	<p><b>Project Cost: (000 USD)</b></p> <table border="1"> <tr><td>1) Direct costs</td><td>25,500</td></tr> <tr><td>2) Physical conti.</td><td>2,550</td></tr> <tr><td>3) Price Escalation</td><td>2,550</td></tr> <tr><td>4) Engineering service</td><td>2,550</td></tr> <tr><td>sub-total</td><td>33,150</td></tr> <tr><td>5) Land acquisition</td><td>N/A</td></tr> <tr><td><b>TOTAL</b></td><td><b>33,150</b></td></tr> </table>	1) Direct costs	25,500	2) Physical conti.	2,550	3) Price Escalation	2,550	4) Engineering service	2,550	sub-total	33,150	5) Land acquisition	N/A	<b>TOTAL</b>	<b>33,150</b>	
1) Land acquisition	Jun-06	Dec-09																														
2) Funding arrangements	Jul-06	Dec-08																														
3) Feasibility study and detailed design	Jan-07	Sep-09																														
4) Tender and award	Oct-07	Dec-09																														
5) Construction	Jan-08	Dec-10																														
1) Direct costs	25,500																															
2) Physical conti.	2,550																															
3) Price Escalation	2,550																															
4) Engineering service	2,550																															
sub-total	33,150																															
5) Land acquisition	N/A																															
<b>TOTAL</b>	<b>33,150</b>																															
<p><b>Related Projects:</b></p> <ol style="list-style-type: none"> <li>1) ADB "NR6 rehabilitation project between Siem Reap and Poipet"</li> <li>2) WB "Provincial and Rural Infrastructure Project (PRIP)"</li> <li>3) ADB "Northwest Regional Development Project (NRDP)"</li> <li>4) Thai Government "NR64 Urgent Rehabilitation and F/S for Rehabilitation"</li> </ol>																																

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Water Resources and Water Supply**

ID No.	Project Title	Beneficiaries and/or Target Group		Assumed Fund	Estimated Cost	Project Priority
W-3	Replacement of Old Pipeline	All public water supply service customer		SRWSA and Loan	450 (thousand US\$)	Priority
	Project Site	Department	Contact Person		Telephone	E-mail
	Siem Reap District	Portable Water Supply	Meng Saktheara			
	Implementation Agency	Project and Program Outline/Components: Replacement works (construction) of old pipeline with total length approximately 6.5km together with necessary accessories, such as valves, chambers and supporting structures.				
	Ministry of Industry, Mines & Energy (MIME)					
	Background: There remains old pipeline in the present distribution network system, with approximate length of 6.5km. The old pipeline causes water leakage and decrease water quality. To reduce water leakage and improve supply water quality, it is necessary to replace the old pipeline as soon as possible.					
	Project Purpose: 1) Reduce water leakage 2) Improve water supply quality					
	Environmental and Social Impact: 1) Reduce the negative health impacts associated with water supply					
	Related Projects: 1) Study on the Project for Improvement of Water Supply System in Siem Reap Town (JICA)					
	Project Output: New distribution pipeline.					
	Implementation Schedule: 1) Procurement works 2) Construction works	Apr-06 Jul-06	Jun-06 Mar-07	Project Cost: (000 USD) 1) Direct costs 375 2) Capacity building 38 3) Physical conti. 38 4) Price Escalation 38 5) Engineering service sub-total 450 6) Land acquisition TOTAL 450		

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Water Resources and Water Supply**

ID No.	Project Title		Beneficiaries and/or Target Group		Assumed Fund	Estimated Cost	Project Priority
	The Strategic Study on Integrated Water Resources Management for Siem Reap River Basin and Roluos River Basin	Implementation Agency	Residents, commercials and agriculture activities in the river basins	Contact Person			
W-4	Siem Reap and Roluos River Basins	Ministry of Water Resources and Meteorology	Department	Veng Sakhon	Telephone	7,282	E-mail
<p><b>Background:</b>  Water shortage especially during dry season for agriculture, water supply and environmental uses become serious problem. Moreover, lack of present water resources related information/data makes difficulties to provides its countermeasures.  To improve management and sustainability of water resources, it is necessary to conduct a strategic study on integrated water resources management. The strategic study should cover both of surface water and groundwater resources to meet demands on agriculture, water supply and environmental uses.</p>		<p><b>Project and Program Outline/Components:</b>  1) Establish and set-up surface water monitoring/measurement system  2) Conduct hydraulic calculation for the river basins  3) Conduct groundwater investigation and prepare vein (groundwater distribution) map  4) Formulate an integrated water resources management plan  5) Prepare water resources development master plan  6) Prepare draft water use right for Siem Reap River Basin and Roluos River Basin  7) Conduct a feasibility study on the priority projects</p>		<p><b>Project Output:</b>  1) Surface water level and water flow measurement system  2) Integrated water resources management plan  3) Master plan on water resources development  4) Feasibility study on priority projects</p>		<p><b>Project Cost: (000 USD)</b>  1) Direct costs 6,620  2) Capacity building  3) Physical conti. 662  4) Price Escalation  5) Engineering service sub-total 7,282  6) Land acquisition  <b>TOTAL 7,282</b></p>	
<p><b>Project Purpose:</b>  1) Establish surface water measurement/monitoring system for Siem Reap and Roluos River Basins  2) Grasp groundwater distribution condition and its potential  3) Define water resource capacity/potential, both for surface water and groundwater  4) Formulate an integrated water resources management plan  5) Prepare water resources development master plan</p>		<p><b>Implementation Schedule:</b>  1) Measurement system preparation Jan-07 Jun-07  2) Management plan &amp; Master plan Mar-07 Dec-08  3) Feasibility study Oct-08 Jun-09</p>		<p><b>Environmental and Social Impact:</b>  1) Increase amount of water utilization by sufficient water resources management  2) Improve agriculture activities and production during dry season  3) Reduce the negative health impacts associated with shortage of water supply  4) Improve river sanitation problem and provide amenity on Angkor Remains</p>		<p><b>Related Projects:</b>  1) West Baray Improvement Project (Gov. of India)  2) Rural Water Supply Project for Siem Reap Province (ADB)  3) The Study on Water Supply System for Siem Reap Region (JICA)  4) Preliminary water flow and capacity estimation (AFSARA)</p>	



**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Sewerage and Drainage**

No	Project Title	Beneficiaries and/or Target Group	Assumed Fund	Estimated Cost	Project Priority
<b>SD-2</b>	Urban Development Project Siem Reap-Angkor	Residents, hotels and commercial businesses in east district	AFD Grant	4,800 (thousand US\$)	<b>Priority</b>
Project Site		Department		Telephone	
East district zone 1, 2 and 3		Contact Person		E-mail	
		Mr. Yves Terracol AFD			
Background:					
The area east of Siem Reap River and along NR6 is being urbanized at a rapid pace and the formal construction of roads and drains should proceed as soon as possible while land and road allowances are still available. AFD has carried out a feasibility study and identified a number of priority projects for roads and drains. The feasibility study also identified the urgent need for additional studies related to Siem Reap River and city wide drainage.					
Project and Program Outline/Components:					
1) Design and construction of roads and drains identified as priority projects in feasibility study.					
2) Drainage master plan for all of Siem Reap and Angkor town					
3) Detailed hydraulic and hydrological studies of Siem Reap River including erosion and sediment control.					
Project Purpose:					
1) Implement priority projects to improve storm water drainage and roads for growth areas East of Siem Reap River					
Project Output:					
1) Storm water effectively removed from streets and conveyed via open drains to agricultural areas					
2) Open drains coordinated with the construction of roads.					
3) Master plan for drainage					
4) Action plan for protection and management of Siem Reap River					
Implementation Schedule:					
1) Funding approval Dec-05					
2) Detailed design for priority projects Jan-06 Dec-06					
3) Tender and award Dec-06 Jun-07					
4) Construction roads and drains Jun-07 Jun-09					
5) Master plan for drainage Jan-06 Dec-07					
6) Hydraulic study of Siem Reap River Jan-06 Dec-07					
7) Capacity building Jan-09 Dec-09					
Project Cost Breakdown: ('000 euro)					
1) Master Plan 450					
2) Detailed Engineering 300					
3) Construction 3,000					
4) Capacity building 250					
x 1.2(US\$/Euro)= 4,800					
Environmental and Social Impact:					
1) reduce disease vectors by eliminating stagnant water					
2) reduce the impact of urban stormwater on agricultural areas					
3) facilitate organized development of urban growth					
Related Projects:					
SD-4: proposed "Siem Reap Sewerage Project Phase II"					
Separate sanitary sewers and wastewater treatment plant					

**JICA - Study on Integrated Master Plan for Sustainable Development of Siem Reap/Angkor Town**  
**Project Brief**  
**Sector: Power**

ID No.	Project Title	Beneficiaries and/or Target Group		Assumed Fund	Estimated Cost	Project Priority
<b>P-1</b>	Project for urgent installation of diesel generators	Local residents and tourists in Siem Reap	EdC		2,090 (thousand US\$)	<b>Priority</b>
Project Site Siem Reap district		Department Planning department	Contact Person	Telephone	E-mail	
Background: Against rapidly increasing demand, an additional installment on the electrical generation is required as soon as possible. In consideration of a short-term countermeasure it could be a suitable and reasonable solution that diesel generators are installed tentatively.		Project and Program Outline/Components: 1) Provision of package type generators with a total capacity of about 7MW 2) Provision of 400v/22kV transformers 3) Provision other auxiliary 4) Installment of the generators in the premises of EdC				
Project Purpose: With a capacity of about 7MW of package type diesel generators, tentatively, imminent crisis of shortage of power will be solved.		Project Output: For the time being, supply capacity for livings of native people will be satisfied for the people living in the distribution covering area.				
Environmental and Social Impact: Environmental and Social Impact are negligible		Implementation Schedule:		Project Cost: (000 USD)		
Not yet confirmed		1)Funding arrangement	Jan-06	Dec-08	1) Direct costs 1,900	
		2)Implementation	Apr-06	Jul-06	2) Capacity building 190	
					3) Physical conti. 190	
					4) Price Escalation sub-total 2,090	
					5) Engineering service TOTAL 2,090	
					6) Land acquisition *Lease contract is possible	