

# Chapter 3

## Project Evaluation and Recommendations

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### 3-1 Project Effect

The implementation of the Project will result in the following impacts on the residents of Siem Reap town.

**Table 3.1 Effect of Project Implementation and Extent of Present Status Improvement**

Present Status and Issues	Measures in the Project	Effect of the Project
<b>Direct effects:</b>		
The present water supply system serves only 3,185 residents in the proposed service areas.	Construction of a new water supply system with a capacity of 8,000 m <sup>3</sup> /d.	The service population will be increased to 26,000 or approximately eight times as much as the present service population in the target year 2008.
The existing water supply system with a capacity of 1,400 m <sup>3</sup> /d is in a deteriorated state and covers only 10% of the population in the water supply service areas with a consumption rate of only 100 lpcd.	ditto	The supply coverage will be increased to 65 % of the water supply service areas with an average water use of 120 lpcd in the target year 2008.
Tourism facilities develop their own groundwater sources individually due to the limited water supply coverage of 10 %.	ditto	The supply coverage will be increased to 40 % in the target year 2008, which will assist in controlling the unauthorized development of groundwater.
Water supply is interrupted occasionally and this results in a deterioration of supplied water quality.	ditto	Stable water supply for 24 hours will be achieved and the supplied water quality will be improved.
<b>Indirect effects:</b>		
Safe and hygienic piped water supply is so limited that people still drink well water and/or river water directly without any treatment, which causes waterborne diseases such as diarrhea or cholera.	ditto	Safe water supply will contribute to a reduction of water borne diseases.
Women and children have to fetch water for a long time.	ditto	Individual household water supply connections will save women and children from fetching water and enable them to spend their time productively.
Limited water supply constrains the development of the local tourism industry thereby adversely impacting the local economy and job opportunities.	ditto	Development of water supply system will promote the tourism industry in the area, which will stimulate the local economy and improve the economic status of residents.

### 3-2 Recommendations

To achieve the objectives of the Project and to maximize the effects of the Project, RGC is strongly requested to take the following measures timely.

#### (1) Before the Project Implantation

The project cost to be borne by RGC, including those costs for land acquisition, investigations for abandoned mines and buried archaeological remains, dispatch of the Project Team organized under MIME, increased personnel necessary for the Project implementation, construction of gates and fences, power

distribution to the proposed water treatment plant site, etc., should be budgeted and disbursed without delay to enable the Project implementation schedule to be met.

The rehabilitated monitoring facilities for groundwater level and land settlement must be maintained properly with the allocation of sufficient budgetary and manpower resources to enable continuous monitoring to take place so as to maintain a continuous check on the possible impact of the further development of groundwater sources. This activity should be continued after the completion of the Project.

RGC concerned agencies for the Project, including the Ministry of Industry, Mines and Energy (MIME), Siem Reap Province, Authority for the Protection and management of Angkor and the Region of Siem Reap (APSARA), should collect and analyze the data from the monitoring facilities. Proper corrective measures and actions should be taken if the monitoring data indicate an adverse impact is occurring. This activity should be continued after the implementation of the Project.

The development of tourism facilities is at present only some 2 km south of the Angkor Heritage. RGC should enact the “Water Law” as soon as possible and impose an additional legal control on the groundwater development in Siem Reap town as necessary. This activity should be continued after the implementation of the Project.

RGC should get required approvals for construction of the project facilities including EIA clearance in accordance with the relevant laws and regulations in Cambodia without delay to enable the Project implementation schedule to be met.

## **(2) During the Project Implementation**

The Project Team organized exclusively under MIME to supervise the Project implementation should be trained to understand the Project components and to acquire the necessary skills for proper operation and maintenance of the Project facilities.

The skills and knowledge acquired through the training activities including “The Project on Capacity Building of the Water Supply System in Cambodia” and the proposed soft component should be maintained at the appropriate level for proper operation of the water supply organization.

In close cooperation with the “Mekong Tourism Development Project” financed by the Asian Development Bank (ADB), RGC should take all necessary measures to cope with the increase of wastewater discharges to public water bodies that will arise as a result of the water supply Project.

## **(3) After the Project Implementation**

RGC should prepare an installation plan for the consumer meters to be procured under the Project and install them as planned by the end of 2008. This activity should be started during the project implementation as necessary.

Collections under the water tariff should be maintained at the appropriate level to ensure that the water supply entity can operate on a sound financial basis.

MIME should prepare a replacement and refurbishment plan for those existing distribution pipelines that

will not be replaced under the Project, so that NRW can be reduced as projected in the Basic Design and so that financial targets can be met and a sustainable water supply operation achieved in the target year 2008.

### **3-3 Appropriateness of the Project**

Judging from the following points of view, it is appropriate that the Project will be implemented under a grand aid program of GOJ.

The Project will contribute to the goal of SEDP II.

The Project will benefit the population in the service areas in Siem Reap town to meet the fundamental development challenges of reducing poverty and the stabilization of the people's livelihood.

The Project will benefit an improvement in the health status and quality of life of the people of Siem Reap town through providing a safe water supply.

The Project facilities/equipment will be properly operated and maintained in financial and technical with a sound operation of the Siem Reap Water Supply System.

The increase of wastewater discharges to public water bodies aroused by the Project will be minimized in close cooperation with the "Mekong Tourism Development Project" financed by the Asian Development Bank.

The Project will be feasible in applying the grant aid scheme of GOJ.

### **3-4 Conclusion**

The Project aims to meet the existing shortfall in supply immediately after the construction of the Project facilities, thereby meeting the fundamental development challenges of improving the quality of life of the residents in the service areas, and supporting the policies set out in SEDP II. The Project will result in many intangible benefits in the project area and provided that the abstraction of groundwater is maintained within the design capacity, the impact on the Angkor Heritage will be minimal. Consequently, it would be significant and appropriate to implement the Project with grant aid assistance from the Government of Japan.

However, the capabilities of the existing staff of the Siem Reap Water Supply System are presently lacking both in terms of numbers and experience to enable the new water supply scheme to be operated and maintained effectively. It will be necessary for RGC to provide sufficient budget to increase the required manpower to enable the skill-base to be strengthened through the training activities under the proposed soft component.

Finally, to implement the Project smoothly and effectively, it is recommended that the following measures be taken by RGC.

To secure the project cost to be borne by RGC,

To facilitate the required clearance for the Project implementation in accordance with the relevant laws and regulations in Cambodia,

To enact the "Water Law" and impose an additional control on the groundwater development in Siem Reap town as necessary,

To collect, analyze, and release the monitoring data of groundwater level and land settlement,

To participate the proposed training activities and strengthen the operation and maintenance capabilities,

To implement the proposed “Mekong Tourism Development Project” as scheduled,

To install the consumer meters to be procured as planned by the end of 2008,

To collect appropriate water tariff, and

To implement a replacement and refurbishment plan for the existing distribution pipelines to reduce the non-revenue water and the operation efficiency of the Siem Reap Water Supply System will be improved..