CHAPTER 2
FRAMEWORK OF THE FEASIBILITY STUDY

CHAPTER 2 FRAMEWORK OF THE FEASIBILITY STUDY

2.1 Selected Priority Projects in the Master Plan

The feasibility study is conducted focused on the priority projects which were identified during the Mater Plan. Taking into account the significance and urgency to solve problems which the NPVC and the people of Vientiane are encountering, the restoration work of the existing water supply system, the rehabilitation of the Kaolieo Treatment Plant and improvement of the Chinaimo Treatment Plant, and the expansion of the Kaolieo Treatment Plant and transmission/distribution pipelines are selected as the priority projects. These projects are indispensable to improve the water supply conditions in Vientiane and are urgently required to meet increasing water demand. For the selection of the priority projects, the Lao PDR side and the JICA Study Team have mutually agreed on the projects and priorities and the scope of the priority projects are as follows.

- Rehabilitation of the existing Kaolieo Treatment Plant which has a production capacity of 20,000 m3/day
- Improvement of the Chinaimo Treatment Plant which has a production capacity of 80,000 m3/day. This includes:
    - Expansion of the reservoir (10,000 m3), including additional distribution pumping facilities
    - Installation of a new transmission pipeline from Chinaimo Treatment Plant to the existing transmission pipeline (separation of the transmission and distribution systems)
- Expansion of the Kaolieo Treatment Plant, to increase the capacity of 40,000 m3/day, so that the total capacity of the plant will become 60,000 m3/day
- Improvement of the Km6 BP Station
- Installation of 2.2 km of transmission mains
- Installation of 15.2 km of distribution mains

(1) Rehabilitation of the Existing Kaolieo Treatment Plant

In order to secure water supply to the existing service area from the Kaolieo Treatment Plant, it has been judged that the rehabilitation work for the Kaolieo Treatment Plant is indispensable and selected as a priority project.

(2) Improvement of Chinaimo Treatment Plant

As pointed out in the Master Plan, because of the mixture of distribution and transmission systems at

the Chinaimo Treatment Plant, the distribution system can not meet hourly fluctuations and the transmission system becomes unstable, depending on the quantity of distributed water

From these existing conditions, the separation of the distribution and transmission systems is indispensable to achieve stability in these systems. For the separation of these systems, a number of modifications will be required. The first requirement is an expansion of the reservoir (a new reservoir adjacent to existing one), and secondly, the installation of distribution pumps to meet hourly fluctuations of demand. The final requirement is for the installation of an independent transmission main from the plant to the branch point of the existing transmission pipeline.

(3) Expansion of Kaolieo Treatment Plant

In order to find the best method to increase the treatment capacity to cope with the future demand in 2015, an alternative study was conducted to investigate five different alternatives, as discussed in the Master Plan. As a result of the alternative study, the expansion of the existing Kaolieo Treatment Plant was selected as the best alternative for the expansion of the treatment capacity. The capacity will be increased to 60,000 m3/day, additional capacity of 40,000 m3/day, in the 1st Stage expansion of the existing Kaolieo Treatment Plant.

(4) Improvement of Km6 Booster Pumping Station

Improvement of the Km6 BP Station will secure the water supply to the northern part of Vientiane, especially to the Dongdok area. The improvement will include the replacement of the existing pumps with new, larger capacity and higher head pumps, and the construction of a pump house.

(5) Installation of Transmission Pipelines

As a priority project, the installation of a transmission pipeline to transmit water to the Dongdok ground reservoir independent of the distribution network will be required for the following section.

- Installation of 2.2 km of pipelines of 450 mm diameter, which will be branched from the existing transmission pipelines of 500 mm diameter near the junction of National Road 13 and the Phonephanao-Phonetong Road, near Phonekheng, to the Km6 Booster Pumping Station.

(6) Installation of Distribution Pipelines

Although the total requirements of the distribution pipelines discussed in the best alternative plan studied in the Master Plan was identified as 24.2 km, the selection of priority projects and the feasibility study for distribution system will be conducted by the AFD study. However, at a meeting among representatives from the AFD, JICA, and Lao PDR, held at the beginning of the feasibility study, it was concluded that the minimum requirement of the distribution pipeline was 15.2 km and

was included in the JICA feasibility study.

It should be noted that detailed scope of work such as length of pipeline will be based on the results of topographical and geotechnical surveys which will be conducted during the feasibility study.

2.2 Population and Water Demand for the Feasibility Study

2.2.1 Target Year of the Feasibility Study

Target year of the Feasibility Study was set as year 2007, at the time of completion of the priority projects of the 1st stage of the project. In the following section, the framework of the feasibility study will be discussed and shown until the year 2007.

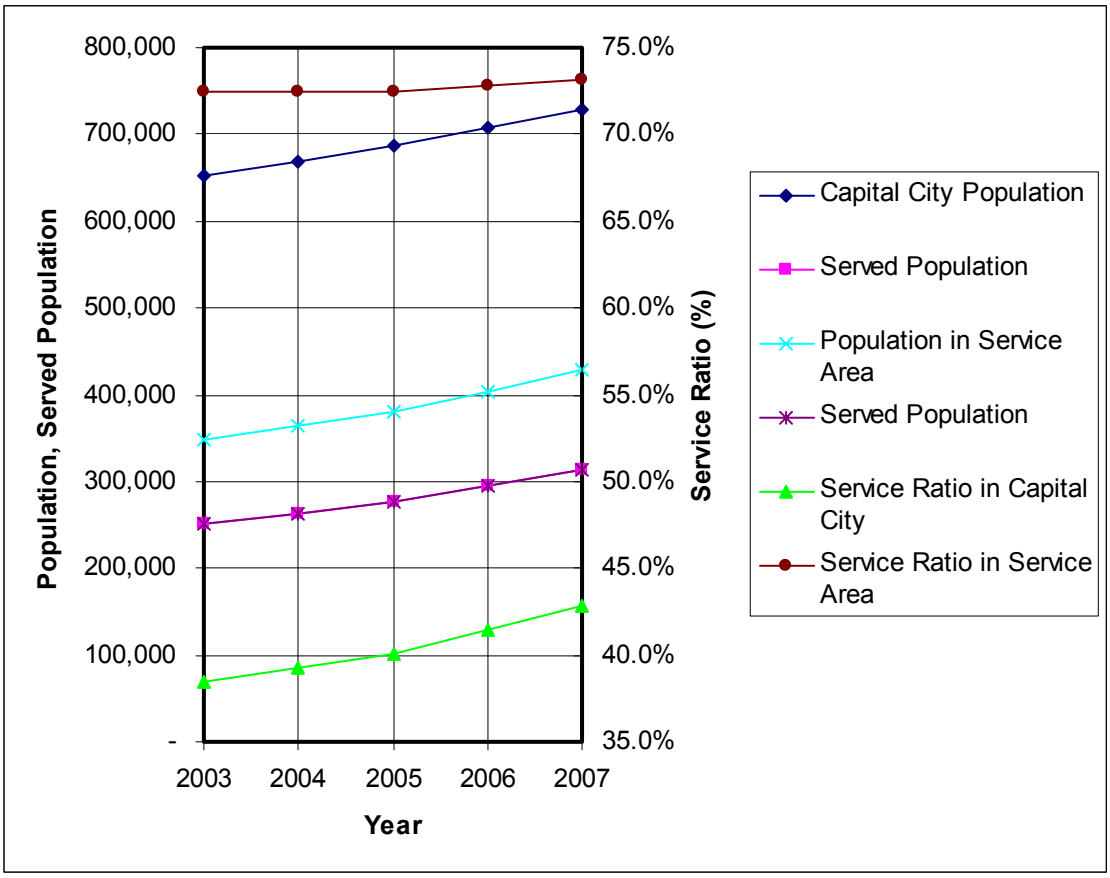
2.2.2 Population, Served Population, and Service Ratio

The population, served population, and service ratio were estimated and calculated, as shown in Table 22-1 and Figure 22-1. As shown in the table and figure, the future service ratio in the target year will increase to 73.1 % of the population in the service area. The average service ratio in the whole capital city area will still remain about 43 %. The served population of each village which will be included in the service area is shown in Annex 24.

Table 22-1 Population, Served Population, and Service Ratio

	Unit	2003	2004	2005	2006	2007
Capital City Population	People	651,850	669,467	687,084	707,300	727,516
Served Population	People	251,549	263,558	275,567	294,508	313,448
Service Ratio in Capital City	%	38.5%	39.3%	40.1%	41.5%	42.9%
Population in Service Area	People	347,235	363,789	380,342	404,221	428,100
Served Population	People	251,549	263,558	275,567	294,508	313,448
Service Ratio in Service Area	%	72.4%	72.4%	72.5%	72.8%	73.1%

Figure 22-1 Population, Served Population, and Service Ratio



2.2.3 Service Area

The service area for the priority projects is shown in Figure 22-1. As shown in the figure, the service area in the target year 2007, will cover the existing service area and the expanded service area by the AFD distribution pipeline project. Villages which will be included in the service area are shown in Annex 24.