

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the methodology used to carry out the research topic. The research methodology includes the description of research site, data collection and techniques of data analysis. The main source of information is secondary data. Interviews were carried out with the relevant departments and officials. The analysis and discussion that follow are based on the data and information collected by the researcher. The limitations of the methodology used are also discussed at the end of this chapter.

3.1 Description of the Research Site

The area of research, Selangor Darul Ehsan is chosen because of its role as the centre of socio-political and economic activities in the country. This area has experienced the highest growth rate before the economic crisis in 1997. With a rapid expansion of economic activities, the region has attracted a large number of migrants and this has asserted higher pressure on the current water distribution system. Despite the importance of the economic role played by the state, it is one of the water-stress states in Malaysia (see Figure 1, p.5).

The state is divided into nine districts. The districts are Gombak, Petaling, Kelang, Hulu Langat, Kuala Langat, Hulu Selangor, Kuala Selangor, Sabak Bernam, and Sepang. The water authority has to ensure that water supplies reaches these areas. Because of the geographical location, Kuala Lumpur is also supplied by the same authority. Wherever possible discussion by district is attempted.

On the context of water users, only the industrial and domestic consumers are taken into consideration. Agricultural users and hydropower generation effect

on, water consumption is excluded because there has been a higher growth in Industrial and consumers compared to the rest. Furthermore, the authority is concerned with the effect of water on health and the quality of water supplied to the public. The authority is primarily concerned with potable water for the public.

3.2 Data Collection Procedures

In gaining background information on the water resources of the region and study area, a considerable amount of published and unpublished reports and studies were collected and reviewed.

The information gathered from these reports and studies was supplemented by extensive interactive interviews with government officials at the state and federal levels. For the collection of required data and information, various research procedures were adopted.

In order to assess water management in Selangor Darul Ehsan, letters were sent out to the relevant departments, that is, the Jabatan Bekalan Air Selangor (JBAS), the Jabatan Kerja Raya (JKR), Kuala Lumpur, and the Malaysia Water Association before visits were made to the respective departments.

Consent was also sought to use the library of the Geography Department of the Arts Faculty, University of Malaya. The library has a rich collection of materials including maps on water resources development.

Information on the supply and demand for water was obtained from consultants' reports and published and unpublished reports from the relevant government departments. Data on annual rainfall was obtained from the Annual Meteorological Reports dating from 1994 to 1996. Newspaper reports on the water crisis was also an invaluable source of information.

The information regarding the Concession Agreement between the State Government and a private company, that is, Puncak Niaga Sdn. Bhd. was obtained from the company's prospectus.

3.3 Data Analysis Techniques

Financial analysis was used to evaluate whether water resources development in Selangor was self-financing and sustainable. Water resource developments were considered self-financing if rates were at least equal to the LRMC of supplying water. Comparative perspective was used to measure the level of efficiency between the selected water authorities. The financial performance of the Penang Water Authority and the JBAS was compared to indicate comparative sustainability.

The Long-run marginal capital cost of a water scheme as used in this study is defined as:

$$\frac{\text{TCC}}{(1 - \text{NRW}) \times Q/i \times [(1 + i)^{-5} - (1 + i)^{-55}]}$$

- Where TCC - the total capital cost of the scheme;
NRW - the non revenue water rate;
Q - the annual quantity of water treated; and
i - the discount rate.

3.4 Limitations

Some problems were encountered during the data collection and information gathering process. Some information and reports were not available or classified.

Although the focus of the study is on Selangor Darul Ehsan, it has to be pointed out that many of the projections of demand and supply of water in Selangor Darul Ehsan include Kuala Lumpur.

Not all the data that was needed to compute the LRMC was available thus making the computation difficult. Assumptions had to be made in the absence of complete and accurate information of data, an attempt was made to compute the LRMC in order to assess whether tariffs covered the LRMC of supplying water.