

## 1. Introduction

An adequate supply of inexpensive energy is vital for economic development. As a country's economy grows and begins to modernise, the demand for energy will also increase at an accelerated rate. This demand for energy will be more pronounced in the modern or non-agricultural sector than in the traditional sector. Within the last decade or so the modern sector has grown at a faster rate than the agricultural sector. Consequently, the energy demand of the manufacturing sector has also increased (WECS 1989). This study is concerned with the manufacturing sector only.

Nepal's population is growing rapidly and the need to generate more employment opportunities to absorb the increasing population has become a serious concern. Traditionally, the agricultural sector absorbed the increasing population, but the sluggish growth in this sector has resulted in an overall decline in labour productivity. The manufacturing sector in Nepal is very small compared to the agricultural sector. Currently, the manufacturing sector's contribution to total real GDP is improving, but it remains below 40 per cent and employs less than 12 per cent of the total population. This sector has a potential for growth and for the generation of income and employment, as well as the potential to contribute a larger share to the total GDP. The large-scale migration from rural to urban areas provides an indication that the agricultural sector is no longer able to continue absorbing the growing population. Annually, a large number of rural people migrate to urban areas in search of jobs, but employment opportunities have not grown rapidly enough to absorb the new entrants to the urban labour markets.

The development rhetoric of today is environmentally-friendly economic growth. The increasing concern over environmental degradation has added another dimension to the economic growth process (Banskota et al. 1990). It has been realised that growth accompanied by lack of environmental concern is unsustainable since the resource base of a nation gradually degrades over time and development becomes unsustainable (WCED 1987). Non-renewable energy sources that are used by the manufacturing sector constitute a major factor that has caused concern about the process of economic growth, since these types of non-renewable energy also pollute the environment. In the case of Nepal, the situation is even more serious as a large number of industries continue to use wood - a renewable energy source. This has resulted in deforestation which has already reached alarming proportions in Nepal. Water resources can be tapped to generate non-polluting hydropower, but the sluggish development in hydropower generation does not make this a reliable energy source for the manufacturing sector. Hence, for some time to come, the energy types that will be consumed by the manufacturing sector will continue to be a mix of various energy types.

This study is divided into eight sections. The second section describes the problems and objectives of the study. The third section briefly highlights the overall energy consumption pattern in Nepal based on time series data. The fourth section presents the methodology used in this study, consisting of the translog cost function, in order to understand the relationship between the different energy types needed by the manufacturing sector. The fifth section presents the data construction and parameter estimation technique of the translog cost function. The sixth section provides a more detailed discussion of the energy consumption pattern of the manufacturing sector based on 1986/87 census data to estimate the translog cost function. The seventh section is devoted to a discussion of the results generated by the translog cost function. Policy implications are discussed in the last section.