

Chapter 7: Conclusions and Reflections

This concluding chapter discusses the main lessons emerging from the work contained in this book. Key results pertaining to the empirical analysis conducted, together with observations on the methods used are presented. It acknowledges the difficulties of conducting research that transcends some established methodological boundaries and presents the main limitations of the research in this context. While some of the key findings from the analysis presented in previous chapters are revisited and main achievements highlighted in this chapter, it does not present a comprehensive summary of all the results. The chapter is organised in three sections. The first provides some general conclusions from the empirical part of the research. The key findings of applying a household perspective to study energy consumption in the Indian scenario are also discussed and some general reflections and implications of the work are presented. In the second section, the general findings, from the application of the different methods to the Indian data and situation, are highlighted. The main methodological limitations, largely pertaining to data availability and quality, are also discussed. Finally, the last section presents the scope for future research in this field.

7.1 Key Empirical Findings and Their Implications

Important changes have occurred in household energy use in India over the period 1983-84 to 1999-00. Changes in lifestyles, technologies, demographics, and affluence levels have had significant effects on total household energy requirements. The interplay of these factors will also determine future energy needs of India.

Changes in lifestyles, as characterised by the structure of consumption of households, are significant. The results of this study suggest that counteracting trends may be at play. A general shift towards the consumption of more energy-intensive manufactured goods is evident for higher income classes. However, at the same time, there is also a trend towards higher

spending on less energy-intensive services. In terms of direct energy use, there is a definite shift from the use of non-commercial energy to more efficient commercial forms of energy. Analyses of patterns of indirect energy requirements of households shows that energy requirements of food items still dominate total indirect energy requirements for poor households (almost 40%), but the share of food energy requirements in the total decreased with increase in levels of income (less than 25% for the top income class). At the same time, the contents of the food basket is also seen to change with increasing income levels with a general shift from cereals and grains to fruits and vegetables and to meat, eggs and processed foods. The proportion of non-food indirect energy requirements is also seen to change with a rise in income. In particular, the share of energy required for manufactures and transport is seen to increase significantly with a rise in levels of total expenditure, especially for urban households. Increased need for mobility and poor public transport infrastructure in most Indian cities has meant that with rising incomes, people opt for personally owned modes of transport. In addition, the better availability, accessibility and visibility of manufactured goods in urban areas has meant that with increasing urbanisation and income levels, there has been a greater degree of penetration of these items in Indian households leading to an increasing share of non-food indirect energy requirements in better-off households.

In addition to changes in patterns of consumption, key demographic changes are also taking place within the country. The study shows that change in household size, levels of urbanisation, literacy rates, and age distribution of the population have important implications for energy use. Despite some progress in recent years in stabilising the rate of growth of population in India, the population of the country is projected to increase from 1.028 billion in 2001 to 1.264 billion in 2016. In addition, according to the Planning Commission's projection (Ramachandran et al. 2000), average household size in 2010 is likely to be 4.86 in contrast to the value of 5.3 estimated by the 2001 census. Analysis presented in Chap. 5 and Chap. 6 indicates that both these trends will exert an upward pull on total household energy requirements. According to the predictions of the United Nations, the degree of urbanisation in India in 2010 will also increase to about 35% (UN, 1990). All other factors remaining the same, the regression model quoted in Chap. 5 predicts a marginally lower per capita energy requirement for urban residents as compared to those living in rural areas. Therefore, an increase in the urbanisation rate should reduce the average per capita total energy requirements other factors remaining the same. However, if the increasing urbanisation is accompanied by rising incomes