

## **Chapter 2: An Overview of Energy Consumption in India**

### **2.1 Lifestyles, Energy and Development over the Last Half-Century**

India has experienced and is expected to continue experiencing accelerating growth and substantive changes in the scope, scale and form in which human and economic activity is arranged and performed within its boundaries. This, in turn, will impact on the types and ways in which energy is accessed, transformed and used. The country's current population of over one billion people is spread over an area of 329 million hectares (3.29 million square kilometres). In terms of geographical area it is the seventh largest country in the world. It is also the second most populous country and is projected by the UN to be the most populous by 2030 (UN 1990). The country exhibits wide variations in climate, topology and geography and also has wide economic, social, ethnic, religious and cultural differences amongst its inhabitants. This heterogeneity accounts for differences in habits, attitudes and lifestyles and also manifests itself in varying levels and patterns of energy use throughout the country.

An examination of the history of energy use in India over the last half a century reveals enormous changes and provides a reflection of how the economy and society have developed. At the time of independence, in 1947, India was a largely poor agrarian economy and its inhabitants had low per capita incomes and consumption levels. The majority of the population lived in rural areas and relied primarily on traditional non-mechanised sources of energy such as human and animal power, and non-commercial biomass like wood, crop wastes, and animal dung to meet their energy needs. Over the last half-century, the country has undergone many

changes in agricultural practices and rural agrarian lifestyles. However, even today, the agricultural sector in India is characterised by the co-existence of a subsistence traditional sector, engaged in non-mechanised agriculture, i.e. a small-scale pre-technical system of rain-fed farming using human and animal labour to supply power and producing grains largely for self consumption; alongside a modern commercial sector that is engaged in large scale agriculture, with large plots of land cultivated; multiple cropping; intensified input use; mechanised systems; and producing cash crops on a large scale for the Indian market and for export. While traditional subsistence agriculture was a 'way of life' for most farmers in the past, it is now slowly becoming obsolete and uneconomic and has started to give way more to modern commercial agriculture.

These emerging changes and the erosion of the traditional agrarian way of life have important implications for the patterns of energy use in both rural and urban areas. Fragmentation of land holdings over generations and the erosion of the traditional subsistence agricultural system have resulted in unemployment and underemployment and a need by these segments of the population to search for alternative means of livelihood. Many have become migrant rural labourers. Some of the rural poor move to urban slums that often have no or poor provision of any kind of infrastructure. Whereas earlier, these populations, in many cases, at least had access to non-commercial biofuels that they could collect from nature, they are now often forced to buy energy from the market and often pay high monetary prices for scarce biomass resources that are still burnt in inefficient and polluting ways, and have high social, health and environmental costs for the users.

Major changes have been simultaneously occurring in the industrial and commercial sectors of the economy. Before independence, the industrial and commerce sectors in India were largely unorganised and arranged in informal small-scale household enterprises. During the early years after independence, the government gave a big thrust to the development of basic infrastructure and heavy and capital goods industries through the public sector in order for the country to achieve self-sufficiency in the production of steel, cement, fertilizers, metals, heavy machinery and other such highly energy intensive basic goods. Over the last couple of decades, there has been a further shift away from heavy and basic industries, to more manufactured goods, consumer goods and service industries. This in turn, has had consequences for the energy intensity of the economy and the indirect energy use in households. The process of industrialisation and expansion of the modern sector has also resulted in a basic transformation of the so-