Chapter 4
Energy Poverty Jinx: Can India Overcome?

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ABSTRACT

The chapter starts by comparing India with China, U.S. and world as a whole in respect of composition, pattern of primary energy use, fuel access to clean cooking energy, and access to electricity for the households. Moving on, this relationship between energy and poverty has preoccupied development economists for decades and begs for a policy dialogue on whether the lack of energy in terms of the 3E's—energy security, energy accessibility, and energy use—makes a nation energy poor or not. This moves the focus on the state of equity in the distribution of energy in India. The chapter, then, looks at the issue of energy poverty, in particular, rural-urban magnitude of energy poverty by estimating the specific concentration curve using National Sample Survey (NSSO) household unit level data from the 68th round (July 2011 – June 2012). To conclude, the study comments on how the optimum fuel mix design should look and talks about sustainable strategies involving the use of new renewables for breaking India's energy poverty jinx.

INTRODUCTION

If conservation of natural resources goes wrong, nothing else will go right. — M.S Swaminathan (Quoted in saying as a part of a interview in News 18 Network, June 7, 2017)

In the last 500 years, the human civilization has been continuously expanding their technological limits manifold, increasingly drawing in huge amounts of energy resources from Mother Nature. The per capita energy that man has drawn is almost 100 times more than what his predecessors extracted in the neolithic age. To the extent, humans have overdrawn; the un-sustainability issue became prominent bringing with itself its two off-springs, *viz.*, climate change, consequentially global warming and energy poverty to which India is no exception. As the starting point, firstly, this chapter will traverse the different ages

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or epochs, right from Stone Age to fossil fuel age, to review the position of the energy demand-supply balance that existed and even existent in the human society at the present point of time. Moving on, this chapter will discuss more about the recent anthropocentric interference that has given rise to this menace called "energy poverty" in our society, in general.

Given the existing notions of the concept of sustainable development, redefining it, the author states that economic growth can be sustained when it socially, economically and environmentally non-disruptive. While economic sustainability requires the economic growth process to be cost effective (i.e. minimize the real source cost of production) to generate surplus and savings of a society, the social sustainability would require the process to be socially inclusive as well, so as to generate adequate gainful employment and thereby ensure equitable distribution of the benefit of growth among the people. Moving on, environmental sustainability requires on the other hand conservation of natural resources and control of generation of wastes arising from the entropic process of conversion of resources into products that there is no environmental risk of collapse of the ecosystems. The latter is of critical importance from the view point of control of the negative externalities of economic production on both human health and health of the ecosystems (i.e., their ability of regeneration) in the different regions of our planet. As this paper will discuss, these requirements of multidimensional sustainability has obvious implications in respect of the energy policy for sustainable development of the energy sector of India (Sengupta, 2015).

Energy poverty comes next. Energy is the most crucial infrastructural sector in determining the pace of economic development and impact of stress created by an economy on the ecosystem as measured by the carbon foot print component of the ecological foot print. The notion of energy poverty in India entails two conflicting issues, i.e., one of ensuring equity and the other of energy development given the dualistic nature of the society. This brings us to the specific context of energy policy for India, the sustainability of growth and the social sustainability of development process requires the following, — a) energy security at the macro level so that there is always a adequate supply and accessibility of such energy either in primary or final forms; b) the energy use should also meet the efficiency and cleanliness criteria before ensuring that there is no energy poverty resulting from the demand-supply mismatch of electrical energy. The process of economic growth thus gets conditioned on this. After looking into the rural-urban energy poverty scenario using NSSO data from the latest available rounds data in a set-up where the estimation of the specific concentration curve of energy (refer to key words definition section) is carried out, this chapter intervenes into this aspect that what should be the optimum choice of fuel mix if the long run growth has to be made sustainable. The paper further comments on strategies for breaking this energy poverty jinx based on a time series projection analysis.

Given the role energy plays in how a nation progresses, the long term prospects of energy policy needs to be sustained for India in terms of energy security, energy accessibility and energy use. While the considerations of the first two components are likely to raise the kind of use of fossil fuel, those of the third one are targeted to reduce it. In the Indian context, the sustainability of energy production and use in India in fact depends both on the consideration of energy security, accessibility (which includes affordability) and efficiency along with cleanliness of the fuel.

Thus, the question is then how an economy ends up in a situation of energy poverty? Figure 1 illustrates this diagrammatically. Since the author discusses the case of India, the focus will be on the nexus among energy security, energy use and energy accessibility (includes affordability) in the context of India. In India, since the proportion of people lying below the poverty line is comparatively higher than the developed ones, affordability issue arises. The income distribution of the households and fuel prices have to be such that there is universal access to cleaner cooking fuel (like, LPG) and lighting fuel (like,