

Chapter 23

Tackling Energy Issues in Rural India

Riju Antony George
IMT Ghaziabad, India

Kaustubh Singh Rana
IMT Ghaziabad, India

Vijayshree M.
IMT Ghaziabad, India

Shagun Agarwal
IMT Ghaziabad, India

Pavan Dev Singh Charak
IMT Ghaziabad, India

Ambadipudi Venkata Sai Dhiraj
IMT Ghaziabad, India

ABSTRACT

India is an energy deficient country and this deficiency is more felt in the rural villages of India. More than half of the villages are not electrified. Villages have many renewable resources and if these resources are put into effective use, the energy crunch can be mitigated. Such a renewable resource is rice husk which is perceived as a waste product. In this chapter, the authors have studied the potential of rice husk as a source of electricity for the rice producing villages of India. A particular village in the state of Uttar Pradesh was chosen to conduct the research to analyze the viability of a rice husk power plant. Various methods of converting biomass into energy have been discussed and based on research the biomass gasification method has been suggested as the most appropriate. The various advantages and challenges of using this technology, uses for by-products are discussed in this chapter. A workable business model has also been outlined along with future strategies and implications.

ENERGY ISSUES IN RURAL INDIA

India is a growing economy and it requires more and more energy to sustain its growth. It is imperative that India meets its growing energy necessities to sustain this growth. Even today, vast majority of people living in rural India do not have access to commercial forms of energy like electricity. This indeed is one of the key challenges faced by the energy sector in India. Most of the people in rural India depend on wood, dung and crop residue and they use primitive and inefficient technologies to harness power. Rural electrification is a must to facilitate inclusive growth and socio economic development of a country.

DOI: 10.4018/978-1-4666-8259-7.ch023

Tackling Energy Issues in Rural India

In India, 72% of people live in villages and they use only 33% of the generated electricity (Y, April 2012) as shown in figure 1. Electrified households in rural India gets only limited hours of electric supply. It generally varies from 9 to 11 hours per day. Voltage fluctuation and below voltage distribution is a common phenomena in rural India. A village is deemed to be electrified if 10% of household have access to electricity (Rural Electrification Policy, 2006). As per rural Electric Corporation, 78,743 villages are not electrified as on 31st December 2011 (Prem K. Kalra, 2007). This means that more that 78,000 villages do not have even 10% of its household electrified. As per the criteria of rural electrification, if we look into the number of households in rural India, more than half the number of households does not have electricity connection.

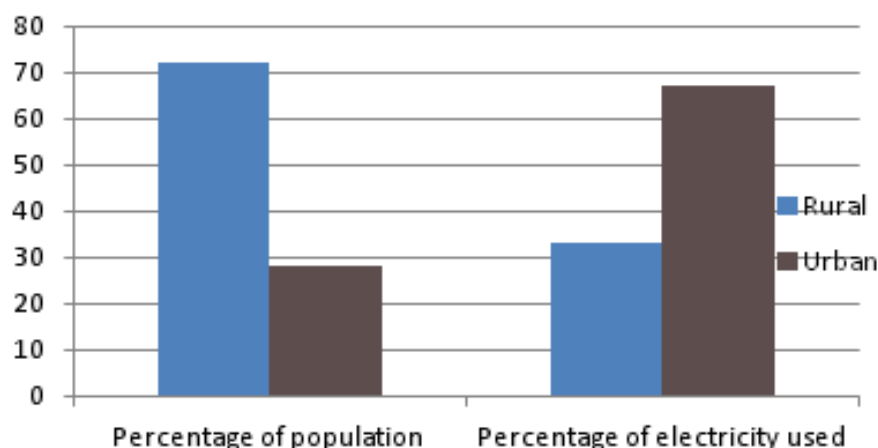
Biomass is the major source of energy used in rural India. Almost 75% of energy used in rural households is extracted from biomass. When it comes to rural industries (Pottery, brick making, smithy etc), biomass is used for more than 95% of energy requirement (Ramachandran, 2012). Traditional biomass fuels used are wood, animal dung, crop residues and charcoal. Other energy sources used in rural India are Bagasse, bio diesel with solar photo voltaic cells, Micro hydro power, wind turbines etc. Most of the rural households use kerosene for cooking and lighting purposes.

Indoor air pollution is another major issue faced by rural India due to the use of inefficient methods to extract energy from biomass. It majorly affects women and children in the household. According to a WHO (World Health Organization) study, 1.3 million people in India die due to Indoor air pollution which is more than double of the outside air pollution. Almost 27.5% of ‘under five’ mortality is also because of indoor air pollution as per TERI (The Energy and Resource Institute). India does not have any norm for indoor air pollution (Chauhan, 2013).

RESEARCH OBJECTIVE

The objective of the research is to check the feasibility of rice husk technology for production of electricity, availability of rice husk in certain parts of rural India and how this technology has been successfully implemented in other parts of the country to resolve the energy crisis.

Figure 1. Population percentage in rural and urban India and their electricity consumption



12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/tackling-energy-issues-in-rural-india/132396

Related Content

A Transition to a Circular Economic Environment: Food, Plastic, and the Fashion Industry

A. Seetharaman, Manthan Shahand Nitin Patwa (2022). *International Journal of Circular Economy and Waste Management* (pp. 1-13).

www.irma-international.org/article/a-transition-to-a-circular-economic-environment/288500

Digital Leadership Competencies in the Malaysian Context: A Study in Manager Levels

Sree Gayithri Maruthuvellu, Yashar Salamzadehand Christopher Richardson (2022). *Handbook of Research on Developing Circular, Digital, and Green Economies in Asia* (pp. 13-41).

www.irma-international.org/chapter/digital-leadership-competencies-in-the-malaysian-context/286405

Analysis Results for the Effectiveness of Monetary Policies With Cointegration and Causality Analyses

Hasan Dinçerand Serhat Yüksel (2023). *Research Anthology on Macroeconomics and the Achievement of Global Stability* (pp. 925-958).

www.irma-international.org/chapter/analysis-results-for-the-effectiveness-of-monetary-policies-with-cointegration-and-causality-analyses/310874

Bank Customer Green Banking Technology Adoption: A Sequential Exploratory Mixed Methods Study

Mohamed Bouteraa, Raja Rizal Iskandar Raja Hishamand Zairani Zainol (2022). *Handbook of Research on Building Greener Economics and Adopting Digital Tools in the Era of Climate Change* (pp. 64-102).

www.irma-international.org/chapter/bank-customer-green-banking-technology-adoption/309798

Increasing Sustainability Through Reverse Logistics: A Study on Expired and Waste Medicines in the Pakistani Pharma Industry

Musawir Ali Soomro, Urooj Nazirand Arham Khan (2022). *International Journal of Circular Economy and Waste Management* (pp. 1-17).

www.irma-international.org/article/increasing-sustainability-through-reverse-logistics/292007