Book Review

Achieving Universal Energy Access in India: Challenges and the Way Forward

P C Maithani & Deepak Gupta (SAGE 2015)

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The book has been written in a lucid language and is an easy but knowledgeable read for all readers. It has 10 chapters covering different aspects of energy access in India, more specifically rural India. However, a chapter was also dedicated to global status and efforts of energy access.

India is among the countries with lowest per capita consumption of energy due to lack of energy access for a large section of its population. Power sector was somewhat neglected in early plan periods but started getting remarkable progress after the passing of the Electricity Act 2003. Capacity creation and access of electricity was improved substantially in the last decade. Progress about supplying modern cooking fuel was, however, not satisfactory with urban and rural rich enjoying much of the subsidies.

The book has critically questioned the strategy of providing grid connectivity and cooking gas to every household in the context of reality and other dimensions like human and financial resources and environmental issues. It has suggested an alternative strategy of providing electricity through renewable energy source wherever possible and focusing on improved cook-stoves for significant and poorest sections of the households. Revisiting the subsidy on and allocation of kerosene and alignment of electricity and cooking fuel provision policies also got substantial attention in the book. This book has also portrayed the energy access issues in the larger context of rural development along with equitable and inclusive growth. This larger dimension may help the energy access issue get a better attention and higher policy priority.

In the current context of economic, developmental and environmental issues, energy security and control of adverse impact on climate change due to energy consumption are two most priority areas for all countries. Developing countries are facing two other but interlinked challenges, financing and providing access of increased, reliable and affordable energy services. The relationship between energy consumption and poverty is bi-directional. As per IEA 2011, access to affordable and reliable energy service is a necessary condition for better standard of living, reducing poverty and improving health, increasing productivity and competitiveness and promoting economic growth. However, as per the energy plus framework, access to electricity for basic purposes is not sufficient, rather the usage of it for productive purposes is the pre-condition for betterment of life standard. However, it demands reliable availability of electricity rather than access just as connection to grid. It is well established in the literature that, energy disparity is worse than economic disparity especially in rural areas.

Inspite of having 16% of global population, India contributes only 4.2% of global energy use and 3.5% of global electricity consumption. Current per capita energy use (0.58toe) in India is only one-third of the global average and far below than that industrialized developed countries. The recent pace of economic growth, rapid urbanization and high growth of demand for consumer goods led to a steady growth in demand for electricity. Even after recent improvement in installation and capacity development, there is significant shortage of power and it may exist even in near future. The striking feature is that, there is general and peak power shortage inspite of having unutilized capacity due to fuel and schedule constraints.

Till now, generation in power sector in India is majorly dominated by conventional sources. This book has pointed out some serious issues related to the

generation through conventional sources including forest and environmental adverse impacts, production difficulties, financial constraints including bank credit, infrastructural and logistical bottlenecks. Generation from nuclear faces the most important challenge as belief and disconnection from the population. This book has posed great hope and belief in renewable generation. Within the renewable segment, solar play the most significant and futuristic role. This book has found immense potential in renewables but argued that in the current context of supply constraint, increasing generation from renewable with grid connection may not be the best solution. The book has clearly argues to proceed with idea of off-grid generation of renewable energy. It is optimistic about currently expensive renewables to become in parity with grid supply, even may be significantly cheaper with proper policy instrument. In the two years since the book was published, such optimism has turned out to be true.

The cost of supply to rural area is very high and multi-dimensional and it led to the actual cost being significantly higher than 'average cost of supply'. As the majority of the rural households cannot afford that high cost, utilities find no incentive to supply there apart from their inability regarding the capacity constraint. 'Consumer demand' in rural areas do not reflect actual power demand for the utilities, and they prefer 'load shedding' instead of purchasing power for them and making more loss. 'Under-pricing of energy' was identified as the fundamental problem of Indian power sector. Since utilities/distribution companies have to supply in rural areas, almost all utilities are making huge losses and it becomes a chronic problem and it demands for adoption of suitable but stringent measures at the earliest. Due to this loss making financial situation and capacity constraint along with unwilling-ness of utilities, providing rural access through centralized grid connectivity may not offer a real solution. For dramatic improvement in electricity access, alternative approaches need to be adopted. This book has proposed that it is rather desirable that for efficient/effective utilisation of generation from renewable, it is required to supply directly to remotest point of consumption from point of generation to avoid loss due to transmission.

This book has well documented the change in electrification policy and definition of household/ village electrification over time and discussed the major shortcomings of each policy along with its performance. This book has also identified that number of evaluation studies of the schemes are there which has pointed out the challenges, but proper detailing regarding actual hours of supply availability in rural area is missing. The book has also proposed an indicative guideline for rural electrification (page 65-66). There was also critical analysis of the franchisee system proposed under RGGVY. The book has pointed out that inspite of having a number of alternative franchisee models, wherever developed was mostly the simple franchisee for billing related and revenue collection. Based on the experience and evaluation of different franchisee models, the book has suggested that satisfactory supply is a pre-condition for the success of franchisee and probability will increase if the franchisee at least attends to the repairing and monitoring services over and above billing and revenue collection.

The book has suggested that renewable based mini-grid type generation of energy system for telecom towers and villages has the potential to complement each other if done with proper and well-maintained strategy. The book has also discussed the functioning and success/challenges faced by different mini-grid and stand-alone systems in context of supplying through renewable generation. The cost and financing along with technological issues related to these systems were also discussed in details. The common issues identified includes underdeveloped market condition, financial challenges including credit constraint, lack of technical capacity, regulatory barriers, differentiated subsidy structure, willingness to pay and affordability of the consumers. Developing entrepreneurship and creation of business models to encourage productive use of electricity at household levels are fundamental changes required for effective channelization of electricity access. Analyzing all these issues, the book has suggested an alternative framework to achieve universal electricity access. The framework includes fundamental reforms in energy pricing, revisiting subsidy structure, development of sustainable eco-system which will evolve to a proper functioning market, and most importantly, developing a separate authority with proper autonomy, power, fund and direction. The book has also indicated the source of funding and the existing departments/institutes for necessary collaboration to establish the aforesaid authority.

Energy access literature is mostly dominated by discussion on electricity access with comparatively little discussion on access to cooking energy. This book has also followed the same trend by contributing only one chapter (out of 10) specifically for the same issue. Using primitive cooking fuel like biomass including firewood and chips has several adverse impact including health

and environmental issues. Without switching to modern and clean fuel, if the households atleast use improved cook-stoves (ICS), it has manifold benefits in terms of lesser health impact, fuel saving, time saving (both in cooking and collection) and most importantly women welfare and poverty reduction. However, there are lots of issues which hinder the adoption of ICS including cultural barriers, food and taste preference other than initial affordability and maintenance issues. This book has elaborately discussed the different policies and programmes introduced to address access to energy for cooking issues. Other than detail discussion on ICS (scheme, challenges, sustainability and funding issues), this book has significant discussion on biogas development and solar appliances for cooking. It was revealed from the analysis that awareness generation and addressing technical issues including maintenance are very much important other than funding and market development.

It is well established that usage of subsidy to induce the poor to switch to a modern cooking fuel is not sufficient. Apart from availability/supply issues, usage of LPG has two major challenges, initial cost and affordability of refills. For a poorer household, subsidized LPG/kerosene is not enough and market cost is significantly high, while biomass is almost freely available. Even if there is health and environment related individual/household and socio issues, biomass remains a comfort zone for bottom-line households. The book has rightly pointed out that raising awareness about health benefits and promoting behavioral change could be better option to induce people to shift to cleaner cooking fuel. In this context, improving overall rural economy especially, women empowerment, better employment opportunity and overall economic development can play important role, which are also related with electricity access. This also indicates that access to electricity and clean cooking fuel are bi-directionally related to rural development. It has also suggested that for poorer urban or peri-urban population without having affordability of clean energy, improved and efficient cook-stoves are cheapest and attractive option. It is very well argued that subsidy on LPG is huge and recurring while caters mostly to richer economic classes. However, subsidy on improved cook-stoves can reduce both subsidy burdens as well as improve health and biomass utilisation. The book has a specific chapter on 'subsidy and funding' (ch. 8) to elaborately discuss subsidy on different energy products and current as well as somewhat better way of funding energy access with existing resources through revisiting subsidy structure. The book has clearly indicated that, creation of proper and controlled market for improved cook-stoves not only reduces the cost and hence subsidy required for promoting it, but also has huge potential for employment generation. However, the book has an interesting stand regarding the usage of kerosene. It has indicated that a shift to kerosene for cooking from biomass is better option (compared to use of biomass in primitive stoves) while suggested to strictly reduce kerosene allocation linking with electrification progress.

The book has intensively explored different rural institutions with huge opportunity for power demand and suggested the way to satisfy that with renewable based local generation. However, the mode is mostly different types of solar based systems. Here, there may be a practical concern. Go for solar everywhere even if there is potential for eco-system development, potential for solar and its other dimensions like availability of resources (like trained personnel) may be explored cautiously.

Inspite of not being economists, the authors of the book have minutely analysed different economic issues based on discussion with economists and experts and proper analysis of different evaluation reports and from their personal and professional experience. It actually added significant values to the discussion because it was not constrained in a so-called 'economic perspective'. The book has nicely pointed out that following a renewable energy path may be easier for India as fossil based energy infrastructure is not fully developed and there is huge potential for development of renewable energy market. Going for renewable based solution has different advantages including meeting power shortage from conventional sources, reduced consumption of fossil fuels, mitigating carbon emissions, and improved all kinds of deficits other than reaching poorest and remotest in a most efficient way. However, the objective being providing energy access and hence demand side analysis, supply side management was not properly explored. In fact it nicely churned out the huge potential for decentralized renewable based energy solutions. The book concluded with a view that there are three dimensional solutions of energy access issues, "fossil fuel centric; high nuclear coal centric, and high renewables highly distributed energy efficient low demand centric. The last model will clearly win."

Finally, the book has few printing errors including incompleteness of sentences and wrong abbreviations, which may be addressed in next edition.