

Role of MSMEs is setting up renewable energy systems in Indian Scenario

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Abstract:

Indian MSMEs are considered as the growth engines of the economy which provides more than 60% of the employment in the industrial sector. But this sector suffers from different problems; prominent among them is the unavailability of finance and lack of infrastructure in terms of access to energy. In this scenario, renewable energies represent the most adequate sources of energy. MSMEs renewable energy projects if given considerable importance could solve the energy problem for the MSMEs and also could find a good opportunity for the MSMEs to enter in generation of energy, manufacturing equipments of generation of renewable energy etc. This paper attempts to find out means of tapping non conventional energy resources by MSMEs to meet the growing energy needs, the commercial viability of this potential market by the MSMEs and the means of financing for MSMEs for their investment in renewable energy.

Introduction:

Part I Indian Energy Scenario

Indian economy is measured as twelfth largest in the world in terms of GDP of \$1trillion. It recorded GDP growth rate of 9.0% for the fiscal year 2007-08, next only to china. However this economic growth comes with a growing demand for energy, India is sixth largest consumer of oil with more than 70% of its energy needs are fulfilled through the imports of crude oil and natural gas and third largest consumer of coal in the world.

India accounts for 3.1 per cent of the world's electricity consumption in 2005 with an installed capacity of 1,12,058 MW as of September 2007. Of this, around 72% is generated by thermal power plants, 17% by large hydro plants, 3% by nuclear and 8% from renewable sources. The production of electricity in India rose from 1357 MW in 1950 to 112058 in 2004/05. The per capita consumption was 580 kWh in 2004/05 as against which is considered as the lowest in the world. Despite the significant growth in electricity generation, shortage of power continues to

exist primarily due to the growth in power demand outstripping the growth in generation and generating capacity addition. In May 2007, the country experienced an estimated eight per cent

energy shortage and 12.3 per cent shortage of peaking power. According to the 2001 census 12.5% of urban households and 56.5 % of rural households (around 80,000 villages) as still unelectrified.

Some of the strategies that can be used to meet future challenges to India's energy security are diversification of energy supply sources, increased capacity of fuel switching, demand restraint, development of renewable energy sources, energy efficiency and sustainable development.

The country has an estimated renewable energy potential of around 85,000 MW from commercially exploitable sources: Wind, 45,000 MW; small hydro, 15,000 MW and biomass/ bioenergy, 25,000 MW. In addition, India has the potential to generate 35 MW per square km using solar photovoltaic and solar thermal energy.

This objective of this paper is to find out means of tapping non conventional energy resources by MSMEs to meet the growing energy needs, the commercial viability of this potential market by the MSMEs and the means of financing for MSMEs for their investment in renewable energy.

This paper is divided into five parts. Part I deals with the Indian energy scenario and objectives of the study, Part II covers the types of renewable energies. In Part III MSMEs and use of non conventional energy is discussed. Part deals with the commercial viability of the project and the means of financing for investment in renewable energies. In Part V conclusions are shown.

Part II Types of Renewable Energy

The renewable energy sector can be divided into the various categories:

1. Solar Power

Solar energy is the utilization of the radiant energy from the Sun. Earth receives 174 PW of incoming solar radiation at the upper atmosphere, of which, around 30% is reflected back to space while the rest is absorbed by the atmosphere, oceans and land. The total solar energy absorbed by Earth's atmosphere, oceans and land masses is approximately 3,850 zettajoules (ZJ) per year. In contrast, worldwide electricity consumption was approximately 0.0567 ZJ in 2005, and total worldwide primary energy consumption was 0.487 ZJ in the same year.

2. Wind Power

Wind power is the conversion of wind energy into a useful form, such as electricity, using wind turbines. Wind power is generally converted to the form of electricity; large-scale wind farms are connected to electrical grids to supply energy. Individual turbines can provide electricity to isolated locations. In windmills, wind energy may be also used directly as mechanical energy for pumping

water or grinding grain. Wind energy is available freely, is renewable and clean and produces no greenhouse gas emissions.

3. Hydro Power

Hydro Power is another source of renewable energy that converts the potential energy or kinetic energy of water into mechanical energy in the form of watermills, textile machines etc., or as electrical energy (i.e. hydroelectricity generation). There are various types 1) Hydroelectricity 2) Tidal Energy 3) Wave Energy 4) Waterwheels

4. Biomass/Biofuels

Plants use photosynthesis to grow and produce biomass. Also known as biomatter, biomass can be used directly as fuel or to produce liquid biofuel. Agriculturally produced biomass fuels, such as biodiesel, ethanol and bagasse (often a by-product of sugar cane cultivation) can be burned in internal combustion engines or boilers. Typically biofuel is burned to release its stored chemical energy. Research into more efficient methods of converting biofuels and other fuels into electricity utilizing fuel cells is an area of very active work.

Part III Micro Small and Medium Enterprises

The Indian MSMEs play an important role as a growth engine of the Indian economy, according to planning commission MSMEs contribute 50% of GDP, 60% of employment, produces 40% of the total industrial output of the country, manufactures more than 8000 items and contributes 35% of exports.

MSMEs are often constrained by lack of infrastructure, communications, and financial investment resources. Without these services, MSMEs cannot function effectively, and their contribution to economic and social development is limited. Given the significant contribution of MSMEs in job creation and income growth, it is crucial that infrastructure services be targeted to support these enterprises. Access to reliable, affordable energy services is vital for MSMEs to operate efficiently and profitably, yet such access does not exist in many countries. Chronic power shortages and poor-quality electricity services exact an enormous toll on economic development and constrain many of the services on which small businesses rely. Recent studies of energy and MSMEs in the developing world have revealed that the highest prices for electricity and modern fuels are generally paid by the smallest enterprises. Energy costs run from 10% to more than 65% of the total cost of production for many MSMEs.

Rising energy prices are generating new problems for MSMEs. The additional expenditure is burdening them. Planned investment measures and technical upgrading have to be deferred because of the tighter financial situation. The competitiveness of the MSMEs is further affected which is already hampered by their structural weaknesses.

The Energy-MSME Nexus

MSMEs require a range of modern energy services to function efficiently and profitably. Electricity is needed to power tools, appliances, and productive equipment, and modern fuels are needed for heating, food processing, and transportation. In cities, MSMEs need energy to operate shops, restaurants, hotels, small manufacturing operations, and service industry applications. Better access to energy opens up broad opportunities for income-producing activities. In rural locations, energy is needed to support agriculture, fishing, and aquaculture, which often dominate economic activities in these areas.

Modern energy services provide a way for people to move beyond subsistence farming and out of poverty. Dependable, reasonably priced energy services enable MSMEs to strengthen their market position, enhance their product and service base, increase business opportunities, and augment income flows in local and export markets. Energy services contribute to the development and maintenance of MSME activities in different ways:

1. Increasing productivity through mechanization and energy efficiency.
2. Improving food preservation.
3. Increasing operating hours.
4. Improving working conditions.
5. Creating marketplace attractions.

Modern Energy-Enabled Services and Impacts for the MSME Sector

Despite the popular focus on big industry, MSMEs - whose collective energy consumption and environmental impact are immense - are well placed to boost their energy efficiency and introduce renewable energy technologies, which are often local and small-scale by nature. New and renewable issues as well as energy efficiency are of great importance to MSMEs (regarding energy costs savings, new market opportunities in the field of renewable energy). Indeed, micro small and medium-sized enterprises must be aware of market opportunities offered by new and renewable energies. In addition, a more responsible and efficient use of energy will not only enable MSMEs to save money but will also have an impact on the image of a company as an energy- and environmentally-responsible company.

Meeting MSME Energy Needs

To satisfy MSME energy needs, a number of solutions are available. Grid-based electricity, where it exists, is the likely choice. In areas that are not grid-connected, however, MSMEs can obtain electricity from smaller scale decentralized generators run on diesel fuel, or renewable power sources such as wind, solar, microhydro systems, and/or biofuels. Modern petroleum-based fuels and biofuels provide transportation services as well as more efficient heating and food processing than do wood, charcoal, or dung. Technical assistance to MSMEs in modernizing their production systems and making them more efficient can significantly reduce the energy inputs required for their operations, making them more profitable and economically competitive. In addition, demand for improved energy services can provide opportunities for entrepreneurs. In areas unserved by the electric grid, energy supplies can be provided by small-scale, locally owned businesses. This allows for growth of new MSMEs and creates an added source of employment in energy service provision and maintenance, agriculture, and business management.

Small-scale energy generation systems based on local supplies of bioenergy can help strengthen local infrastructure and ensure secure supplies. Bioenergy also has the potential to revitalize the agricultural sector and help rural areas diversify their economies

In Thailand eight small-scale energy providers after meeting their necessities, have sold power to the grid, while 40 others with a generating capacity of six megawatts received permission to connect to the grid, this electricity generated is enough to lighten 24,000 homes

Part IV Commercial viability of the project

An unprecedented increase in the demand of power in India is projected to continue for years to come, and will create a huge business opportunity for new investments in power generation, transmission and distribution. These enhance tremendous potential for MSMEs in the renewable energy segment.

Under the Asia Pacific Partnership program, PA Consulting on behalf of United State Agency for International Development and Ministry of New and Renewable Energy has undertaken the study to evaluate existing small and medium manufacturers with respect to their Infrastructure Capabilities as well their business competencies, with a view to assist discerning units to upgrade themselves. M/s APITCO Hyderabad has been assigned the "Study and Design of Policy Package for SME Manufacturers of New and Renewable Energy Equipments". The study will cover 100 MSMEs

involved in manufacturing of equipments for various renewable energy sources; Solar, wind, Biomass, biogas etc.

The key features of the study are

Regulatory aspects, evaluation & benchmarking of SME manufacturers of renewable technologies on all business aspects including technology, operations, sales, strategy, financing, customer orientation, Design computation method of manufacturing units, Identifying areas of intervention in policy framework, constraints in R&D, technology, operations and marketing activities, developing policy and incentive schemes to promote manufacturing of new and renewable energy equipments by MSMEs. Also to recommend the successful applied cost effective technologies available for MSMEs engaged in renewable technology equipments manufacturing.

Financing for MSMEs for renewable energy

Micro Small and medium-sized enterprises (MSMEs) from developing countries still hesitate to use renewable energy because finance is difficult to access, initial costs tend to be high, and they are often unable to meet high collateral requirements of lenders for fixed assets. Another important aspect of an MSME financial strategy is the tendency of business owners to limit long-term debt and cover short-term expenses from operating cash flow.

Funds are provided to micro small and medium-sized businesses to help them improve their competitiveness by adopting energy-efficiency measures. Energy efficiency and renewable energies require the development of new technologies and support to get them to the market.

The financial assistance for MSMEs will be through SIDBI, as well as through refinance to banks/ State Finance Corporations (SFCs) and Non Banking Financial Companies (NBFCs). Under the Line Technical assistance is also provided to financial institutions and MSME units for dissemination of information and successful implementation of Energy Savings projects in MSME Sector.

Recommended Debt Instruments

The most adequate public-private financial risk management instruments for small-scale projects are:

- a) Partial Credit or Risk Guarantee mechanisms
- b) Venture funds

Small Scale Renewable Energy (SSRE) SME loan guarantee programs can be delivered by agencies already involved in the broader agenda of micro and SME development & finance. Many countries have both commercial and state-owned SME loan guarantee agencies, sometimes as independent agencies or as units or programs within their national development banks. Technical assistance can be provided in partnership with professional rural associations, as well as with non-governmental organizations (NGOs).

V Conclusions

1. The Funding in renewable energy will increase MSMEs' competitiveness by reducing energy costs. Greater transparency concerning energy flows, costs and energy savings options
2. Creation of a regional market for energy efficiency in micro small and medium size enterprises. This will help MSMEs to strengthen their position economically, technically and environmentally.
3. Market opportunities for innovative companies in field of energy efficient products
4. Energy efficiency policies can be used as a marketing tool to boost a company's image.
5. Support is important for smaller businesses to overcome lack of resources. Also important to help companies develop more efficient energy-using equipment
6. Manufacturing and marketing of the renewable energy products can create lot of job opportunities.
7. Other benefits in using renewable energy – security of supply. Supplies of oil and gas are finite

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