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An analysis of commercial energy resources in India

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Abstract
The study mainly focused on the commercial energy sources in India, electrical energy source is focused this paper. The energy sources that are available in the market for a definite price are known as commercial energy. By far the most important forms of commercial energy are electricity, coal and refined petroleum products. Commercial energy forms the basis of industrial, agricultural, transport and commercial development in the modern world. The objective is commercial energy provide decentralized energy supply to agriculture, industry, commercial and household sector. The data's executed with the help of secondary data sources and it to establish and dedicated the renewable energy as well as "Special Economic Zones" (SEZ) to promote renewable energy. As far as utilization of renewable energy concerned, the prime factors like life span of the system, reliability, intermittent supply, site selection, investment and social acceptance have to be analyzed. It has also been suggested that the neural networks can be used in the energy forecasting and the fuzzy logic for energy allocation of the country.

Keywords: Standard of living, economic growth, supply and demand imbalances

Introduction
India's commercial energy demand is expected to grow even more rapidly than in the past as it goes down the reform path in order to raise standard of living. A large part of India's population does not have access to commercial energy. All the sources of energy, currently available for harnessing, can be linked to two fundamental forces in nature-gravitational and nuclear. The commercial energy is coal, petroleum, natural gas and nuclear energy. Economic growth, increasing prosperity and urbanization, rise in per capita consumption, and spread of energy access are the key factors that would be responsible for substantially increasing the total demand for electricity. Thus there is an emerging energy supply-demand imbalance. According to a Central Electricity Authority (CEA) report, the anticipated energy and peaking shortage in the country is estimated to be 10.3 percent and 12.9 percent, respectively, in 2011 and 2012.

Statement of the Problem
In view of electricity supply shortages, huge quantities of diesel and furnace oil are being used by all sectors – industrial, commercial, institutional and residential.

- Lack of rural lighting is leading to large-scale use of kerosene. This usage needs to be curtailed, as it is leading to enormous costs in form of subsidies, and increasing the country's import dependence.
- At the same time, a very large proportion of Indian citizens continue to live with no access to electricity and other forms of commercial energy. More than 50 percent of the population has little or no commercial energy access in their daily lives. Others with access often have to cope with poor and erratic availability and other fuels to complement the shortfall with constraints in resource availability and in delivery mechanisms, traditional means of energy supplies are falling short. This is likely to be the case in the foreseeable future; energy access will continue to remain a problem.
- In large and medium sized commercial buildings, both energy reduction and the analysis work to make it possible can be very complex. In order to deliver occupant comfort through the installed plant, many different control systems are often in play and not only are the systems complex in their own right, but their interaction can often cause detailed analysis to be beyond the reach of many engineers. A method needs to be developed to

allow interested technical staff to perform this complex task of energy use reduction while being guided through each stage. That guidance can be as long as one year.
- Possibility of substantial reductions in energy use and corresponding CO_2 emissions in medium and large commercial buildings. In practical experiences in Western Europe and Middle East, few commercial buildings appear to operate at good levels of efficiency.

Methodology

Research is nearing completion which links energy reduction with a detailed set of statistical guidelines and tests to ensure problem identification, process adherence and savings persistence. The results have shown that substantial energy reduction is possible in commercial energy without any diminution of occupant comfort levels. This reduction has been achieved with virtually no capital investment or plant upgrade or replacement.

Review of Literature

Walker *et al*. (2010), "Literature Review on Community Renewable Energy" there has been an emergence over the past decade in the UK of community renewable energy (RE) as a new discourse of government policy, particularly as it allows a "substantial focus for local activity on the ground." Some policymakers argue that a community approach to renewable energy initiatives can change the enterprise and results of implementing new energy technology initiatives.

Noel D. Uri (1978), "Renewable and Sustainable Energy" had developed a combined econometric model and time-series forecasting model based on Box–Jenkins approach to predict the monthly peak system load for a specific utility by taking account of changes in economic and weather related variables.

Kempton and Layne (1994), "Environmental Change Institute" point out how selling energy is very different from selling 'solid' commodities such as groceries. The kWh is easy to meter, for the utility, but 'irrelevant' to the buyer. We cannot assume that people will know how to act in order to reduce demand if they have little or no idea how much each end-use contributes to that demand, and how it might be altered. In educational terms, they need to be able to add accurate, trustworthy information (information that they cannot easily get hold of themselves) to what they already know about their own energy using habits.

Objective of the Study Follows

- The study of commercial energy has great economic value when compare to non commercial energy India.
- The commercial energy pollutes the environment badly, types of commercial energy are limited in nature and high capital investment is required in the purification. It is used in urban as well as rural areas.
- To provide decentralized energy supply to agriculture, industry, commercial and household sector.

Hypothesis of the Study

Objectives stated above the several causes for commercial energy production. Hence the following hypotheses have been formed on the basis of this study.

- Lack of rural lighting is leading to large-scale use of kerosene.
- Very large proportion of Indian citizens continues to live with no access to electricity and other forms of commercial energy. More than 50 percent of the population has little or no commercial energy access in their daily lives.

Data sources

The data derived from the secondary data from the various sources like internet source articles and journals of there is abounded of commercial energy sources in India.

Secondary Data

The commercial sector economic factors currently used in life cycle cost analysis for the three scenarios are shown below.

Parameter	Scenario 1 (publicly-owned)	Scenario 2 (privately-owned)	Scenario 3 (ASHRAE 90.1-2013)
Period of Analysis	Measure life, up to 30 years	Measure life, up to 30 years	Measure life, up to 40 years
Energy Prices	Latest national average prices based on current Energy Information Administration data or local current prices depending on purpose of analysis	$0.1032/kWh $0.990/therm	
Energy Escalation Rates	From latest annual energy outlook	3.76%	
Loan Term	N/A	Measure life, up to 30 years	Measure life, up to 40 years
Loan Interest Rate	N/A	6.00%	6.25%
Nominal Discount Rate	3.90%	6.00%	7.00%
Real Discount Rate	3.00%	4.60%	6.05%
Inflation Rate	0.90%	1.30%	0.90%
Federal Income Tax Rate	N/A	34.00%	34.00%
State Income Tax Rate	N/A	State values vary; highest marginal corporate rate used	6.50%

Source: US Department of energy, energy efficiency and renewable energy

Explanation

Scenario 1: (also referred to as the *publicly-owned* method): Life cycle cost analysis method representing government or public ownership (without borrowing or taxes). This scenario uses economic inputs that have been established for Federal projects.

Scenario 2: (also referred to as the *privately-owned* method): Life cycle cost analysis method representing private or business ownership (includes loan and tax impacts). This scenario uses typical commercial economic inputs with initial costs being financed, and considers tax impacts for savings, interest and depreciation.

Scenario 3: Represents a private ownership point of view, and uses economic inputs established by the 90.1 ASHRAE Standing Standard Project Committee.

Energy Needs of Growing Economy

Economic growth is desirable for developing countries, and energy is essential for economic growth. However, the relationship between economic growth and increased energy demand is not always a straightforward linear one. For example, under present conditions, 6% increase in India's Gross Domestic Product (GDP) would impose an increased demand of 9 % on its energy sector. In this context, the ratio of energy demand to GDP is a useful indicator. A high ratio reflects energy dependence and a strong influence of energy on GDP growth. The developed countries, by focusing on energy efficiency and lower energy-intensive routes, maintain their energy to GDP ratios at values of less than 1. The ratios for developing countries are much higher.

Recommendation

- International benchmarking of energy producing and consuming sectors.
- Develop a long-term (25 years) Technology Vision-2025 for identified priority areas and technologies. Actively promote R&D on Fast Breeder Reactor and thorium-based technologies for nuclear power, solar, gas hydrates, clean coal technologies, fuel cells etc. Effective strategies to address the concern of energy supply security.
- Possible options include maximizing domestic production, diversifying the fuel mix and the source of supply, investing in equity oil/gas, creating strategic domestic reserves and maintaining a manageable level of import dependence.
- Develop a national rehabilitation and resettlement policy to help accelerate the development of the hydro and coal sectors. A large number of hydro and coal projects have been facing implementation delays and cost overruns in the absence of such a policy. Both these sectors are vital to meeting the country's future energy needs.
- Develop environmental standards and enact a transparent regulatory and legislative framework that allows easy enforcement of these standards. Concerted efforts to meet the energy requirements of the rural areas at the lowest economic cost.
- The future policy initiatives, therefore, should focus on the development of the required infrastructure and continue to aim to provide universal access of commercial fuels at affordable prices.
- Emphasis on preparing a time bound plan for people's participation through panchayats, cooperatives, non-government organizations (NGOs) and private entrepreneurs in planning, operation and maintenance, revenue collection and expansion of local energy supply options to ensure success.

Conclusion

Energy is consumed in a variety of forms in India. Fuelwood, animal waste and agricultural residues are traditional sources of energy that continue to meet the bulk of energy requirement in rural India. A high rate of economic consumption is on account of several reasons. If generally shift non-commercial energy to commercial energy to commercial source of energy. The non-commercial energy sources like firewood, cow dung, agriculture wastes, animal power etc., are being substituted by the commercial energy sources of energy like goal, petroleum products and electricity. Commercial energy expands to production activities. Households and commercial sectors use more energy either to provide greater amenities or to adjust to changed conditions of urbanization and industrialization.

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