DOMESTIC EFFICIENT LIGHTING IN INDIA: 3E’S EFFECT- “ENERGY, EMPOWERMENT AND EMPLOYMENT”

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ABSTRACT
This paper aims to develop a conceptual framework that examines the role government policies play in the development of domestic and street lighting in the cities and town of India and its impact on the economic development as energy is the vital thrust area of macro-economics. This study is build on the existing literature on clean energy and environment conservation. As it relates to controllable factor of environment, the outcome of literature review provides scope of study to the researcher for understanding the changeover that will have an impact on the overall energy efficiency and employability capacity of India by adhering to commitment towards climate change. For stakeholder(s), it will provide better understanding of various schemes launched under domestic and street efficient lighting and its merits in details. This study is an outcome of an integrated interface between generation and consumption of green and clean energy for saving earth and enlightening and empowering life and thought process of the people of India through. This paper reflect the means and ways of empowering India by providing cheap and clean source of energy through domestic and street efficient energy polices and program which in turn makes its citizens capable of being employable in different spectrum of life with the help of new knowledge, technology and information.

Keywords: Domestic & street lighting, Prakash path, Prakash Parv

INTRODUCTION
Lighting is the main source of visual description in its all sense. Lighting helps People to energise their efforts for achieving their ultimate goal of empowerment by creating them an useful human resources assets for the society and thereby strengthening the future of the nation as a whole. When lighting get associated with domestic households it becomes domestic lighting. Statistics shows that India is on the verge of achieving 100% rural electrification by March 2018 as projected in the Union budget 2017-18. Despite of this fact the efficient domestic lighting remains the core area of importance for the government because still large percentage of Indian households might be getting electric connections but they continue to depends largely on the sources of lighting which is either not clean or efficient which in turn doesn’t provides necessary support to reduce energy consumption and environment conservation. Keeping in view India’s adherence towards its commitment for green and clean energy for protecting environment, Government of India has initiated a nationwide flagship scheme “Unnat jeevan by affordable LEDs and Appliances “(UJALA) under the aegis of Energy efficiency services limited (EESL) which is a joint venture of four national public sector undertakings namely National Thermal Power corporation (NTPC), Power finance corporation (PFC), Rural Electrification corporation (REC) & Power grid under Ministry of Power which was launched by Prime Minister of India Shri Narendra Modi on 5th January 2015. This project was initiated under the “Domestic efficient lighting programme” (DELP) by providing people of India LED bulbs, LED fans, and LED tube light at very concessional rates of ₹70/7W LED bulbs, ₹220/20W LED tube lights and ₹1200/LED five star(***** ) rated LED ceiling fan which are nearly 65% in case of bulbs, 56% in case of tube light and
34% in case of fan less than market retail price fixed by leading manufacturer of luminaires @ ₹200 for LED bulbs, ₹500 for tube lights and ₹1800 for LED fans. Till October 2017, around 27 crore LED bulbs, 37 lakh tubelights & 13 lakh LED fans have been distributed to Indian household so far and this figure is rapidly changing every second on the UJALA dashboard.

In a bid to offer easy access to LED bulbs, LED tube lights & energy efficient fans to boost clean and efficient energy, government is providing all short of incentives for the manufacturer of luminaires which in turn resulting into dynamic shift of LED and electronic component manufacturing in India which is having huge potential to generate mega employment opportunities to its people under the flagship Programme “MAKE IN INDIA”

Central Government have come together to realise the dream of honourable Prime Minister Shri Narendra Modi’s of every citizen of India should having access to energy efficient appliances. With the same objective government has decided to distribute these appliances from the select petroleum retail outlets apart from the kiosks (Special Counters) set up at designated places in the cities of India. Memorandum of understanding (MOU) is being signed between EESL under Ministry of power and oil marketing companies under Ministry of Petroleum and natural gases for the distribution of LED appliances.

OBJECTIVES

To study the impact of domestic efficient lighting on the life of a common man of India in terms of 3 E’s effect.

RESEARCH METHODOLOGY

The paper is based on secondary data. The data has been collected from Reports, Research journal(s), articles, Case studies, News Papers, government websites. Graph and percentage method has been used to analyse the data.

IMPACT OF DOMESTIC EFFICIENT LIGHTING ON THE LIFE OF A COMMON MAN OF INDIA-3E’S EFFECT

(I) 1st E’S EFFECT—“ENERGY”

Energy always considered as most vital resource of empowering people and strengthening generations. Efficient and clean energy help(s) the nation to secure its energy for better utilization and provide large scope and opportunities for employment generation for its citizens. It is very difficult to imagine our society without electric lighting. In fact the level of macro-economic development in any country can be best evaluated and judged by the per capita usages of efficient lighting by its citizens. The aspirations of the people of India are also like that of having proper electric lighting in their households which will not only provide clean and green energy but also helps in protecting their environment (Deshmukh, volume 5 issues 8 August 2013 ISSN2250-3131). As India is energy scarce nation it is very important to have culture of adopting energy efficient products across private, publics and residential facilities nationally. So every person who is switching to LED appliances is helping this nation in lighting up someone’s life through energy savings. Keeping above target in mind the government is emplaning of creating new India “ENERGYFULL” India. Energy will bring not only empowerment to people but it will also help them to become employable in different spectrum of life. It is a win-win situation both for the government and the citizens as energy efficiency will provide them to do more with more energy available at their disposal.

The following graph shows the 1st E’s effect- “ENERGY” of efficient domestic lighting Programme in India under the flagship programme UJALA
The first “E” effect as depicted with the help of graphical method above visualises clearly that with the help of distribution of LED bulbs, tubelights and Fans, it is estimated that India will be able to save approximately 35,367 mn kwh energy annually. This electricity saving achieved under the efficient domestic lighting are equivalent to the building of one coal fired power plant of 500MW which would cost nearly 40 billion INR to build at current prices. This distribution will further helps in meeting India’s commitment towards climate change as it helps in the reduction of the greenhouse gas emissions estimated to be approximately 30 mn tonnes which is equivalent to absorption of CO2 by nearly 138bn trees and nearly removing 50million cars from the Indian roads (EESL).This distribution further helps the nation in avoiding the reduction of peak load demand estimated to be approximately 7163.64 MW annually (EESL).This will further helps in improving the efficiency of electricity distribution system of electricity boards in India. This saving of energy will boost additional generation of 4TWh of electricity for additional uses and could help power to at least an additional one million households in India. Thus the First E of efficient domestic lighting helps managing growing energy demand of India.

(II) 2nd E’S EFFECT-EMPOWERMENT

The Implementation of efficient domestic and street lighting has displayed the stakeholders that energy efficiency can deliver multiple benefits within a short span of time to all sectors of macroeconomics and importantly with limited or zero cost to the government .with the initiative of this programme under the umbrella of UJALA scheme, the nation able to do course correction of its high cost of electrification and saving scarce resources and reducing annual electricity bills of consumers i.e common man by approximately 15% as depicted in graph.
Saving of 15% of electricity bills annually results into savings of consumer’s income by over 16bn INR and it is equivalent to a week’s average earnings of an household. This programme also boosted the savings of the consumers in terms of expenditure incurred by them on the purchase of the bulbs annually. It reduces the purchase of the bulbs by the consumers as 1 LED bulb can last as long as 20 incandescent bulbs helping the consumer in increasing his savings. The households can now utilize these money saved by the use of these LED appliances at the concessional rates acquired by them under UJALA programme to improve their quality of life which in turn provides them cheerful, healthy and prosperous life of celebrating this festival of light “Parkash Parv”- to get them walkable in different spectrum of life with the help of “Prakash Path”- a way to life. With the help of efficient lighting families helps in saving income at their disposal will spend it in studying, reading and interfacing new technology and even working at night which can be proved as a driving force for increased productivity in families. This efficient domestic lighting in India as whole helps the nation from improving the prosperity of local society by providing immense benefit to small and medium scale enterprises. (Assessing the Employment and social impact of Energy efficiency, Nov 2015)

As India is on the verge of becoming economic superpower, energy is the most vital and crucial resource for achieving it. For the purpose of empowering people of India, the government of India is having target to make electricity access able to 100% household by march 2018 and in order to make rural India able to make optimum utilization of this electrification by the support of UJALA programme to make clean and green energy available to rural India , the government of India has initiated the concept of instalment payment for acquiring these LED bulbs by making an initial payment of ₹10 and the balance is paid through the consumer’s electricity bills in equal monthly instalment of 10INR. Under different schemes of grameen vidyutikaran, government has decided to provide LED lamps to BPL houses. The another important aspect of investment by government in UJALA scheme is that it is cheaper than electricity generation by the thermal power plant as it requires investment of only ₹2.3 INR per KWh as compared to ₹5.2 INR per KWh from coal plant.

(III) 3rd E’S EFFECT-EMPLOYMENT

Our definition of employment in this sector of economy is the employment in firms where the supply of goods and services are in demand by the consumers with a main attribute of energy efficiency. In 2014 general elections in which NDA headed by Shri. Narendra Modi had won one of the historic elections where after three decades of interval a single party had secured majority in the lower house of Parliament i.e. Lok Sabha with one of the promise of providing employment to the youth of India. The government headed by him started providing employment both to the skilled and unskilled workforce in different sectors of economy. One of the area that could become one of the most prominent area of providing employment is the lighting Industry in this regime. With strong support from the government towards its emphasis for promoting and creating awareness for the use of efficient energy appliances to help India in achieving its target for energy saving and environment conservation with the objectives of protecting climate change, large investment started in the lighting Industry with the help of Electric lamp and component Manufacturers’ Association of India (ELCOMA) in which all the leading players of lighting Industry starting from Philips India, Surya Roshini Ltd to Osram India (P) ltd are the members. All initiatives by government towards energy efficient India by providing LED appliances under the aegis of UJALA programme boosted the demand of all types of LED appliances and its component and the reach of LEDs across India has risen from 0.4% to 10% in domestic market. Efficient domestic lighting programme through EESL are encouraging the development of high quality lamp manufacturing industry in India and it becomes second largest LED market in the world worth 21.1 bn revenues per year and likely to continue to grow further (frost & sullivan, 2014).

The given graph depicts the expected growth in the India’s Lighting Industry as per ELCOMA sources.
It is expected that the LED markets in India will grow to ₹21.6k cr by 2020 making the LED market-60% of the total lighting Industry (ELCOMA). There is huge potential in lighting industry to generate employment ranging from the field of Research & development to the front of manufacturing of LED luminaires, electronic components, design capabilities for luminaires, control gear and systems as >40% of the domestic consumption of LED lighting is manufactured in India. With the strong incentives by the Central and state governments in India for developing strong domestic manufacturing hub for LED lighting products and luminaires by providing Innovative technology and state-of-art manufacturing facilities all of which are at the soul of the “Make in India” Campaign led by Prime Minister Narendra Modi. In the current state of affair the Initiative of the government for providing clean and green energy through distribution of LED lighting bulbs and luminaires under the aegis of UJALA has provided 60,000 new jobs both to skilled and unskilled workforce amounting to 1200mn paid as wages per month indicating significant contribution to local economies and families in making their life happy and wealthy.

**FINDINGS**

1. Efficient Domestic and street lighting under the aegis of UJALA programme is becoming increasingly popular due to the following factors-
   a. Affordable LEDs for everyone-Now a days LED prices have dropped significantly;
   b. Economies in bulbs purchase-The use of LEDs luminaires has resulted in the reduction of electricity bill costs to the consumer reducing bulbs purchase;
   c. Increase in Family’s Savings-The Life of LED bulbs is equivalent to 20 Incandescent bulbs approximately leading to increase in the family’s savings on bulbs purchase
   d. Reducing air pollution—The Use of LED’s bulbs also contributed significantly in the protection of environment by reducing Co2 emission.

2. The Efficient Domestic and street lighting programme in India has reflected a steady and positive economic impact;

3. The investment in energy efficiency will yield moderate level of employment opportunity in India;

4. For given level of Investment, energy efficiency initiative are widely seen in this study as capable of creating more jobs

**CONCLUSION**

There is a vital scope in future to transform the efficient domestic lighting from bulbs, fans, tubelights to air conditioners to provide multiple benefits to Indian household at concessional rate. There is a need of an hour to set up more manufacturing clusters foe electronics and LED lighting products with facilities like cheaper land, unitterupted power supply and good supply chain management etc.
Government should also require supporting more Research and development for LED products in order to boost this sector where there is huge potential of generating employment is still untapped.

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