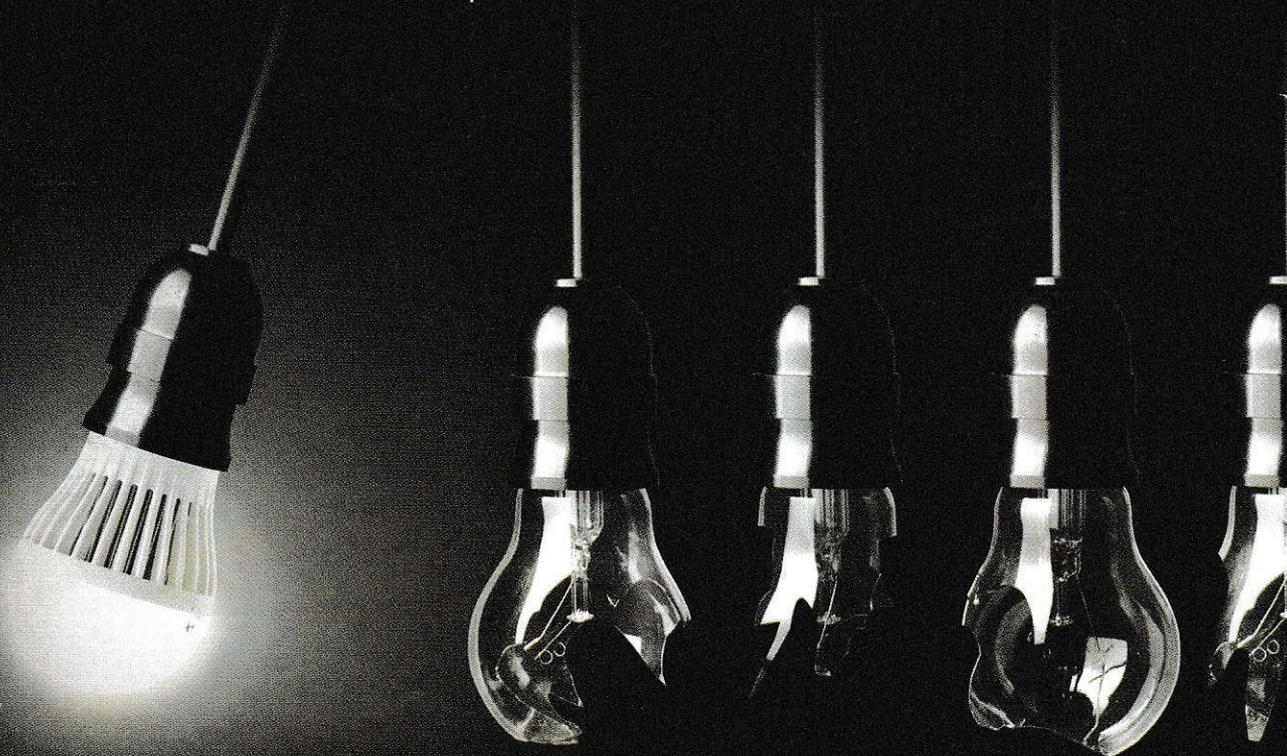


'SMART'

is the success mantra in the LED market

The ever increasing need for a smart, connected lifestyle and for energy efficiency will drive the LED lighting industry in the country

By Sudeshna Das
(with inputs from Sucha Ambastha)



Government initiatives to replace incandescent bulbs with LED bulbs, the growing energy demand-supply gap and declining prices are the factors driving the growth of LED lighting in India. According to the leading market research firm, Research and Market, the Indian LED lighting market is expected to reach US\$ 1.46 billion

by 2019, at a CAGR of 35.9 per cent, over the period 2014-19.

With the increasing energy requirements and the need to reduce the effect of global warming, countries across the globe have started investing in efficient outdoor street lighting systems. The smart lamps generate less heat and consume less energy. The smart street light-

ing poles automatically adjust the brightness according to the time of the day. These solutions can be operated manually as well as remotely. At present, most governments across the globe have completely banned or have implemented strict rules and regulations against the use of high energy consuming incandescent lamps.

Growth drivers

The key factors that are expected to boost the market include declining LED prices coupled with favourable government initiatives that provide LED lights at a subsidised cost and promote LED street lighting projects. In addition, growing awareness among consumers on account of awareness programmes by manufacturers and regulatory bodies is expected to play a vital role in shaping the country's LED market over the next five years. In the hazardous work areas across industries, too, most of the new lighting requirements are for LEDs. In addition to these growth drivers, there is also the replacement of conventional lighting with LEDs. Moreover, rising consumer awareness about the cost-effectiveness, enhanced life, better efficiency and inherent eco-friendly nature of LED lights will continue to drive volume sales from the industrial, residential and commercial sectors.

India's pledge at the climate summit in Paris (COP21) clearly articulates its intention to follow "a cleaner path than the one followed hitherto by others at a corresponding level of economic development." To this end, India has established goals rapidly to expand its use of renewable energy and more efficient technologies.

Some of the key drivers that influence the growth of the LED lighting sector in India are:

- The increasing adoption of smart lighting systems
- The rising demand for power-efficient lighting across industries
- The growing concerns over the depletion of non-renewable sources of power
- The declining price of LED lights due to efficient public distribution of LED lamps through EESL



Harshvardhan Chitale, vice chairman and MD, Philips Lighting India

LEDs represent the next generation of lighting technology and have taken lighting beyond its functional aspect, offering unlimited opportunities for both personal and professional use with the play of colours, dimming, and their compatibility with controls. The major shift in the LED space has been the transformation from a product based solution to a comprehensive connected lighting solution, paving the way for a fully digital world.

Low energy consumption, low costs, modular designs and ease of use have made LED lighting the first choice in industrial, commercial and domestic applications.

The Smart Cities initiative by the Indian government, which began in 2015, is also one of the factors contributing to the demand for LED lighting. APAC is the major revenue-contributing region in this market, owing to the presence of a large number of LED lighting manufacturing units and industries in it.

With a strong focus on energy efficiency, the government has addressed the demand-side management of LED lights, which has proven to be a game changer. Many municipal authorities and utilities throughout India have been promoting LED lights by offering them at discounted rates and on monthly instalments too, thereby making it extremely affordable for common people to adopt these modern lighting systems.



V.P. Mahendru, chairman, MD, EON Electric

These smart cities and smart street missions have led to the exponential growth of LED streetlights, which are also growing in Tier-II cities. However, the most important hurdle in the growth of LED manufacturing in India is our inability to make LED chips and micro chips. These still have to be imported at high cost, resulting in constraints in developing a wider variety and more colours, apart from enhancing performance and enabling innovations in LED lights.

A SWOT analysis of the Indian LED industry

Strengths



- Huge demand forecasted for all types of lighting products, especially LEDs and CFLs, driven by increasing awareness and rural electrification
- Large distribution network, with a huge number of retail outlets
- Availability of vast pool of manpower (skilled/unskilled)
- Availability of natural resources, except rare earth materials
- Strong manufacturing capabilities and capacity for luminaires and light sources (GLS, CFL, FTL), which are ready for conversion to LED manufacturing plants

Weaknesses



- The Indian lighting industry is less energy-efficient compared to other countries
- Low capability for domestic production of electronics components
- Less government support compared to global competitors like China etc.
- Low capabilities in R&D and testing labs
- Unavailability of rare earth materials
- High cost of capital due to high interest rates
- Low consumer confidence, due to poor quality products in the market
- Low awareness among consumers about the benefits of LEDs
- Poor power quality requires products to have very strong specifications
- Weak logistics infrastructure
- Inefficient and high transportation costs

Threats

- Low quality, cheap imports (e.g., from China) flooding the market and competing with locally manufactured products
- India faces an acute shortage of experts in fields like chemical, optics, lighting and thermal management. This expertise is primarily required for the manufacture of LED chips, which again calls for huge investments
- Disruptive technological changes, which require time and money for adoption by local manufacturing plants
- Adoption of protectionist policies by many countries, closing out the option of exporting locally manufactured products
- Forex volatility, leading to fluctuating raw material costs for LEDs, most of which are imported today



Opportunities

- Huge potential to move LEDs and electronic components manufacturing to India
- India likely to become cost-competitive vis-a-vis China for the export of manufactured goods due to increasing labour costs in China, and a strengthening yuan, coupled with a weakening rupee
- Potential to move to greater automation in lighting via a strict and mandatory energy conservation building code (ECBC). This would also leverage India's software skills for automation
- Fast growing Indian infrastructure (projected CAGR of 5-7 per cent over the next five years)
- Scope for more environment-friendly products that can also be disposed of in a 'green' way
- LED demand generation supported by various government initiatives like the JNN Solar Mission, DeitY's Electronics Policy, rural electrification programmes, 100 smart cities, UJALA, etc.





Current estimates put the LED lighting market in India at ₹ 40 billion and it is expected to reach ₹ 210 billion by the year 2020. The industry is likely to grow at a CAGR of 50 per cent over the next five years. But the biggest challenge facing the industry today is the mushrooming of low quality production units, the sub-standard quality and low cost of Chinese imports in India.

Arun Gupta, managing director, NTL Group

Applications in demand

In India, government backed schemes are leading the demand in the residential segment. The increased focus of the government to provide sustainable lighting solutions, especially in the lamp category, is expected to further increase the adoption of LEDs at the grassroots.

Another segment that is expected to grow significantly in the coming years will be outdoor lighting, as it would be backed by the government. The Centre has taken steps and is committed to installing LEDs for domestic and street lighting in 100 cities. The mandate to change 27.5 million streetlights to LEDs over the next few years will help in saving more than 5GW

of electricity consumption over a period of three years. Many states have already started to replace old streetlights.

The upward trend will continue and the projected demand is likely to be increased mainly in outdoor (street and road) lighting. According to the Market and Research report, the smart street lighting market in India is expected to grow at a CAGR of 42.2 per cent during the forecast period of 2016-2022.

In some parts of India, LED street lighting projects have been implemented. But this is still at a nascent stage; it is expected that in the next five years, most parts of the country would have switched to smart street lighting.

Awareness in the consumer segment is already increasing and the inclination to choose LED bulbs, especially in the urban areas, is also growing. Demand for LED lamps has grown manifold due to the UJALA scheme initiated by the government to provide sustainable lighting solutions. The industry is also witnessing great demand in commercial projects and offices, which is expected to touch greater heights in the coming days.

The demand for LEDs, backed by government policies, has grown exponentially in India and the size of the market has also grown tremendously. The key drivers in the LED residential sector are energy efficiency, RoI, low maintenance costs and environment friendliness. EESL's remarkable initiatives to provide free LED lamps in the rural areas and subsidised lamps in urban areas are ensuring large scale adoption of this technology across the country. For commercial projects, RoI and energy efficiency become the most important aspects while making the purchase decision. LEDs have the fastest RoI and help reduce energy consumption and light wastage.

There is also a big awareness campaign about LED lighting in the mass media involving celebrities. This has been initiated by the leading players in the vertical along with government efforts, which will further promote the use of this technology. This has also changed the perspective of common customers and the benefits are visible across the retail category. New projects/renovations in both the commercial and residential segment are witnessing enhanced use of LED lighting across the board.

Globally, residential applications of LED lighting dominate the market, followed by architectural lighting and outdoor applications. The residential lighting segment accounts for over a 40 per cent share of the LED market.



The best quality LEDs in the world are still manufactured in countries like USA, Japan, Taiwan and Korea. India presently faces an acute shortage of experts from fields like chemical, optics, lighting and thermal management. This expertise is primarily required for the manufacture of LED chips, which again calls for huge investments

Joerg Fitzek, MD, R. STAHL (P) Ltd



●● Nonavailability of raw material, especially in high end LED applications, be it AC mains or solar creates lot of manufacturing issues.

The government should promote manufacturing of electronic components in India so that not only are supply chain issues sorted out, especially when a lot of components are imported but local manufacturing will also get a boost.

Parimal Rajkunwar, director, Macon Power

Emerging trends

The advent of LEDs has transformed the way we see lighting. The very nature of LED lighting has opened up immense possibilities and has helped to lower consumption levels, with the convenience of longer life and aesthetics that create an ambience that is welcoming and blends in effortlessly with the colour, mood, beauty and style of the place.

Some interesting trends in the global lighting sector are discussed below, though these trends may take some time to reach India.

Indoor location tracking, camera

based lighting controls, smart control systems (that are on the self-learning mode and remember legacies) and Li-Fi are some of the technologies that are witnessing the maximum developments, globally

Smart lighting technology for common areas that have inbuilt motion sensors, is in. This leads to massive energy savings for corridors, banqueting areas, common wash rooms, attached baths, lawns, pool areas, spas, wellness areas, staircases and so on. In any area that is not being used, extra lights are automatically switched off and only basic il-

lumination is kept on for safety. This also leads to energy savings.

Smart lighting technology that uses sensors to check/recalibrate the needs based on the available light/sunlight is mostly used for lobbies, conferencing and banqueting facilities. As soon as the exterior/normal sunlight levels dip, the automatic dimmers come into play to brighten the areas, and vice versa.

The use of dynamic coloured LEDs for different areas is becoming commonplace. Different coloured lights are used for exterior and façade lighting, while different choices are made for wellness areas and pools. The red spectrum with proven health benefits makes one feel energised. The blue light spectrum makes one feel awake and alert, and is excellent for conferencing and social areas like restaurants and bars.

Today, every establishment requires a lighting solution that can reduce its energy consumption and also provide quick returns on investment. LEDs not only do that but also enhance the visual appeal of the lit up areas, and are smart enough to create the desired mood or ambience. They will continue to improve on this 'smartness' in the future.

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