



“FACTORS GENERATING BUSINESS OPPORTUNITIES FOR MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED (MSEDCL)”

Authors

Dr. Rashmi Sharma

Bhusawal Arts, Science and P.O. Nahata Commerce College, Bhusawal

And

Ravindra Pitambar Padme

Assistant Engineer, MSEDCL, Bhusawal

Abstract

Maharashtra has a population of 112 million and is India's largest state economy. It contributes nearly 15 percent to India's gross domestic product (GDP) and its power sector has been the major success driver for the state economy. The power sector of Maharashtra effectively serves the largest consumer base in India. It not only provides successful operation of electricity but also provides quality electricity supply with a focus on environmental as well as financial sustainability. Power sector of Maharashtra has been at forefront in promoting clean energy and adopting digital technologies to achieve greater efficiencies and improve customer connect. Power sector of Maharashtra operates through 3 sub-sectors – Generation, transmission and Distribution. Out of these 3 sub-sectors Maharashtra State Electricity Distribution Company Limited (MSEDCL) is engaged in developing, operating and maintaining a distribution system to deliver electricity to customers in its supply region which covers all of Maharashtra excluding Mumbai.

The present research is based on secondary data obtained through various sources such as journals, government policies, reports and websites of the state and central government. The study endeavors determinants that generate business opportunities for MSEDCL and also on factors that influence employment in MSEDCL. The research also gauges the challenges that are currently faced by the power sector of Maharashtra.

Keywords – Power sector, MSEDCL, Employment

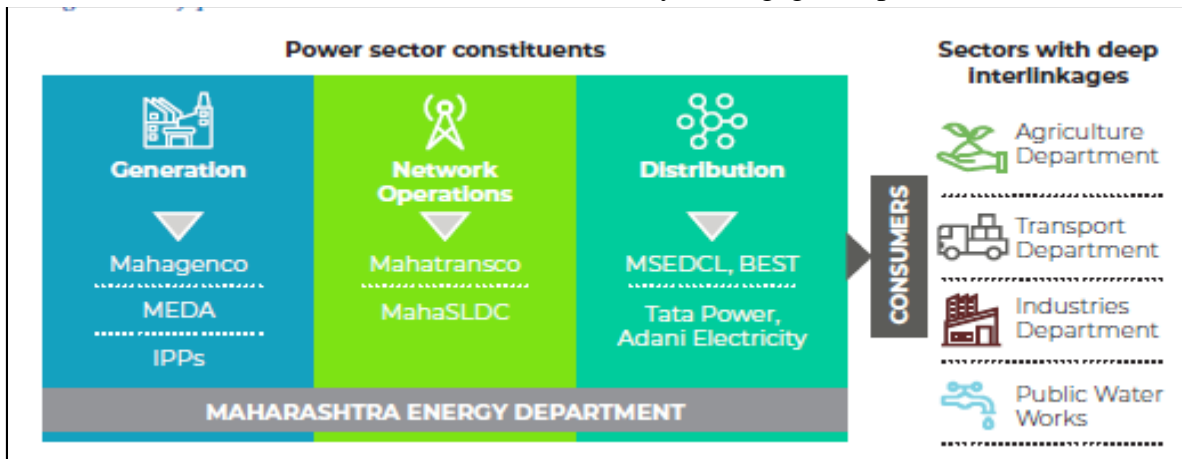
1. Introduction

Maharashtra, an Indian state is marching to achieve its vision 2030. Its vision statement is inclusive - 'All citizens of Maharashtra be happy, healthy, educated, empowered leading to peaceful and prosperous life'. To accomplish the vision statement, the state has targeted economic growth of more than 5 per cent in the agriculture and allied activities sector, greater than 12 per cent in the industrial sector and 15 per cent in the services sector. The state aims to increase total GSDP by 12 per cent and per capita income to ₹ 6 lakh

(Vision, 2030). The momentum of economic growth can be attained with the support of the power sector and vice versa.

2. Power sector of Maharashtra

Power sector of Maharashtra is the largest producer and consumer of electricity in India. It operates through 3 sub-sectors – Generation, Network Operation and Distribution. Stakeholders like Mahagenco, and some private companies are engaged in generation of power; Mahatranscois engaged in Network Operations and MSEDCL, BEST, Tata Power and Adani Electricity are engaged in power distribution.



3. Origin of the research problem

Electricity consumption has rapidly increased in Maharashtra. Since the financial year 2016, the demand supply gap of electricity in Maharashtra has reduced to almost 0 per cent. New paradigm is emerging in Maharashtra which will lead to an increase in electricity demand. To address the unprecedented opportunities as well as challenges that will follow; the power sector of Maharashtra needs to redefine its role and move forward with a well thought out and calibrated strategy.

4. Literature Review

Banks J. P., Bowman D. C., Gross T. P. and Guy J. (1998) in their study 'The Private Sector: Cautiously Interested in Distribution in India' found that privatization of electricity distribution initiatives is receiving an increasing amount of attention, owing to the rapidly deteriorating status of distribution infrastructure in the developing countries.

Annasaheb B Misal (2008) in his study 'Electricity Reforms: Exploring Institutional Alternatives in Maharashtra, (India)' investigates the institutional options to simultaneously promote positive autonomy and decrease negative interference in order to accomplish the competing goals of cost-effectiveness and efficiency in the electricity supply. There is a trade-off between control and autonomy, with complete privatisation leading to excessive autonomy and little control and traditional state administration leading to excessive control and little autonomy. Both are extreme examples and cannot simultaneously satisfy the goals of cost-effectiveness and efficiency in the electricity supply. As a result, hybrid arrangements, such as the Bhiwandi model of electricity distribution franchising in Maharashtra, may be the solution to reducing negative interference through control over setting the desired policies and enhancing positive autonomy through the transparent and effective execution of these policies.

Khalid and Khalid (2010) in their study 'The Determinant of Demand for electricity - The Case of Jordan' examined the factors that affected Jordan's electricity usage from 1979 to 2008. He found that real GDP per capita has a positive significant effect on energy consumption while real price of electricity and efficiency variables negatively affect energy consumption.

Kumar (2011) in his study 'Co integration and the demand for energy in Fiji' studied the demand for energy in Fiji for the period 1970-2005 using co-integration. He found that there was proportionate increase in energy demand and economic growth while energy price was inversely proportional to energy consumption.

5. Objectives of the study

Keeping in the mind above problems following are the objectives of the research:

1. To find out the determinants generating business opportunities for MSEDCL.
2. To find out factors influencing employment in MSEDCL.
3. To study the challenges those are currently faced by the power sector of Maharashtra.

6. Research Methodology

- **Type and source of data:** The study uses secondary data gathered from research papers, policies of the government, reports and websites of the state and central government.
- **Company under study:** Maharashtra State Electricity Distribution Company Limited (MSEDCL) is a company selected for the study as the company is regarded as one of the largest power distribution companies in both Asia and India in terms of the number of people served and the amount of electricity supplied.

7. Findings

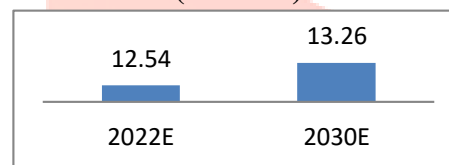
7.1 Determinants generating business opportunities for MSEDCL

Electricity demand forecasts form the basis for planning of supply (generation capacity, transmission and distribution (T&D) infrastructure).

1. Population:

The population of Maharashtra is projected to be 12.54 crore as of 1st March 2022 (Economic Survey of Maharashtra, 2021-22) and 13.26 crore by 2030 (Population projections for India and States, 2011 – 2036). With the rise in population the demand for electricity will also rise. Maharashtra's expanding population presents a great opportunity for MSEDCL.

Graph 1:
Population of Maharashtra
(in crore)



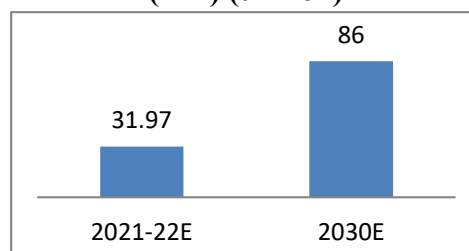
Source: Researchers Compilation

2. Gross State Domestic Product (GSDP):

Economic growth can encourage the development and utilization of energy on the large scale. There is a positive relationship between economic growth and energy consumption (Esen et al., 2017). Maharashtra's economy is projected to grow by 12.1 per cent between 2021 and 2022 (Economic Survey of Maharashtra, 2021-22) and retain its growth rate of 12 per cent till 2030 (Vision, 2030).

The nominal Gross State Domestic Product (GSDP) (at current prices) for 2021–2022 is expected to be ₹ 31.97 trillion (Economic Survey of Maharashtra, 2021-22). The Government of Maharashtra aims to increase its GSDP at current price to ₹ 86 trillion by 2030 (Vision, 2030). Growth in GSDP will boost the power sector and increase the demand for electricity.

Graph 2:
Nominal Gross State Domestic Product
(in ₹) (trillion)



Source: Researchers Compilation

3. Agriculture and allied activities:

Agriculture is the backbone of Maharashtra State. Allied activities like animal husbandry, dairy, fisheries and forestry play an important role in the development of the economy of Maharashtra. The average agriculture (crops and livestock) and allied activities sector growth rate is expected to be 4.4 per cent in 2021-22. Government targets to achieve average sector growth rate of 5 per cent by 2030.

Agriculture: State government aims to enhance crop productivity by improving yield and quality of horticulture & floriculture products. In 2020-21, the production of sugarcane and oilseeds was 98 MT/ha and 1,422 kg/ha respectively. Maharashtra Government aims to increase the production of sugarcane and oilseeds to 100 MT/ha and 1,500 kg/ha by 2030.

Allied activities: Livestock in Maharashtra were 33,080,000 in 2019 (Economic Survey of Maharashtra, 2021-22).

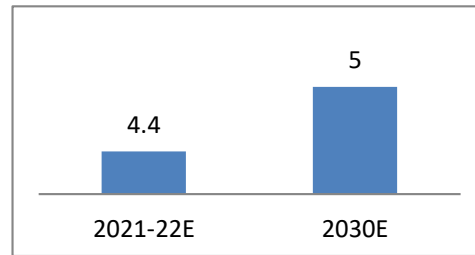
- **Eggs:** During 2019-20, the State ranked seventh in eggs production and per capita availability of eggs in the State was 52 eggs per annum (Economic Survey of Maharashtra, 2021-22). The Government of Maharashtra aims to increase the per capita availability of eggs to 84 eggs per annum by 2030 (Vision, 2030).

- **Meat:** In 2019-20, Maharashtra was the second largest producer of meat with 13.3 per cent share after Uttar Pradesh (Economic Survey of Maharashtra, 2021-22). Maharashtra Government intends to increase the per capita availability of meat to 10.4 kg per annum by 2030 (Vision, 2030).

- **Dairy:** Maharashtra ranked seventh in milk production and per capita availability of milk in the State was 269 grams per day in 2019-20 (Economic Survey of Maharashtra, 2021-22). By 2030, Maharashtra Government intends to increase the per capita availability of milk to 376 grams per day (Vision, 2030).

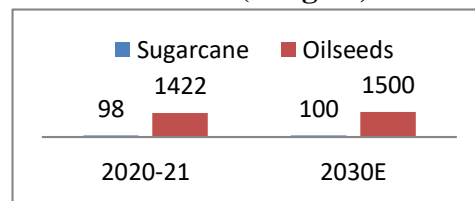
- **Fisheries:** The fish production of Maharashtra was 5.24 lakh MT in 2020-21 and 2.15 lakh MT till September 2021 (Economic Survey of Maharashtra, 2021-22). The Government of Maharashtra aims to increase the production of fish to 7.80 lakh MT 2030 (Vision, 2030).

Graph 3:
Growth of Agriculture and allied activities (in Percent)



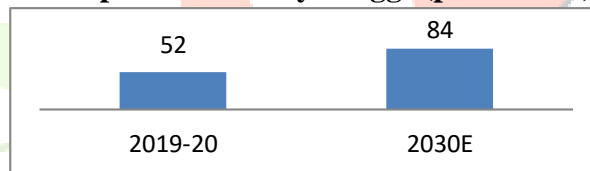
Source: Researchers Compilation

Graph 4:
Production of sugarcane (in MT/ha) and oilseeds (in kg/ha)



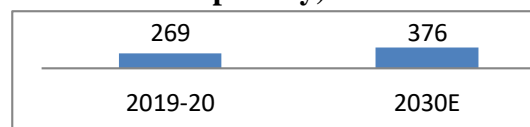
Source: Researchers Compilation

Graph 5:
Per capita availability of eggs (per annum)



Source: Researchers Compilation

Graph 6:
Per capita availability of milk (gram per day)



Source: Researchers Compilation

Graph 7:
Fish production (lakh MT)



Source: Researchers Compilation

Flourishment in the agriculture and allied sector will lead to an increase in demand for electricity. For instance, farm's post-harvest activities like drying and storing create demand for electricity, increased agricultural produce flourishes agro-based industries and increased cattle rearing flourishes dairy industries that runs on electricity, increased production of perishable farm produce, milk, meat and fish generate demand for cold storage facilities that operates on electricity.

4. Irrigation: Agriculture heavily depends on rain. Irrigation can reduce dependency on rain and facilitate production of crops throughout the year. Fields are mostly irrigated with the help of motors that run primarily on electricity and secondary on diesel. Irrigation potential created upto June, 2020 by major, medium and minor irrigation (State sector) projects was 54.15 lakh ha during 2020-21 (Economic Survey of Maharashtra, 2021-22).

The state aims to create potential irrigation to 99.10 lakh hectares by 2030 (Vision, 2030). Electrical power is mostly used in the agricultural field to run electrical motors for water pumping. Upto 31st March, 2021, about 45.20 lakh agricultural pumps was energized in Maharashtra. During 2021-22 upto December, 1.11 lakh agriculture pumps were energised. Growth of irrigation and agricultural pumps will lead to an increase in demand of electricity.

5. Industrial: Maharashtra is one of the most industrialized states in India. In 2020-21, proposed industrial investment was ₹15.09 lakh crore (Economic Survey of Maharashtra, 2021-22). Maharashtra government eyes to pull industrial investment of ₹22 lakh crore by 2030 (Vision, 2030). Increase in investment assures industrial growth and demand for power.

6. Railway route:

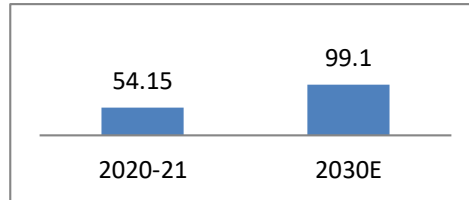
Railways in Maharashtra mostly run on electricity. As on 31st March 2021, Maharashtra has a railway route of length 1.89 (km) per hundred sq. km of area (Economic Survey of Maharashtra, 2021-22). The government of Maharashtra plans to increase railway routes of length 2.66 (km) per hundred sq. km of area by 2030 (Vision, 2030). Surge in railway routes will bring about a surge in electricity demand.

7. Urbanization:

The pace of urbanisation is very high in Maharashtra. During 2001-2011, urbanization took place at the rate of 23.6 per cent (Economic Survey of Maharashtra, 2021-22). There is large-scale migration to urban areas for employment, comfort, facilities, etc. Urbanisation creates demand for homes and consumer durables that operate on electricity. Thus, urbanisation creates demand for electricity.

Graph 8:

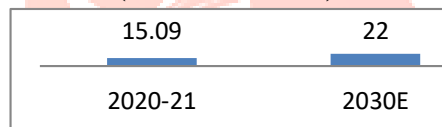
Irrigation potential created (lakh Ha)



Source: Researchers Compilation

Graph 9:

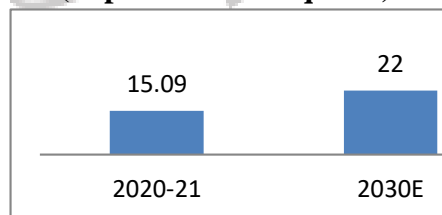
Proposed industrial investment (in ₹ lakh crore)



Source: Researchers Compilation

Graph 10:

Length of Railway route (in per hundred sq. km)



Source: Researchers Compilation

8. Increased use of appliances:

Maharashtra has emerged as a significant hub for IT, ITeS and electronics, and captive business outsourcing industries.

- **Increased employment of women:** More and more women are getting educated and employed in various sectors. Higher education and increased employment have elevated their position in the family and given them the autonomy to make their own purchasing decisions. Women freely purchase and use a wide range of appliances that help them with house chores. Increased use of appliances generates demand for electricity.
- **Increase in disposable personal income:** India's proportion of world consumption would rise to 23 per cent (\$12777 billion) by 2030 (H. Kharas). Rise in consumption expenditure would be due to rise in disposable personal income. Increase in disposable personal income would increase standard of living. For instance, Consumer durables like air conditioners, refrigerators, washing machines, CTVs, water purifiers and LCD TVs are now seen more as necessities than as luxury items. Changing lifestyle might result in increased consumption of appliances that operate on electricity.
- **Increased affordability of appliances:** Appliances have become affordable due to advanced technology, increasing competition and economies of scale. Affordability has led to an increase in demand for appliances that work on electricity.
- **Increased Average Temperature:** Global warming is the result of deforestation, increased pollution, industrialisation, greenhouse gases, etc. Global warming is causing a rise in the average temperature of the earth. Increase in average temperature is resulting in demand for appliances like A.Cs and refrigerators that work on electricity.

9. Mobile phones:

In 2019, Maharashtra had 91 million mobile phone users and 40 million internet subscribers (Magnetic Maharashtra, 2019). Growing digitization will lead to an increase in the number of mobile phone users and internet subscribers which will generate demand for electricity.

10. Electric Vehicles (EVs):

Rural residents of Maharashtra depend more on their own vehicles as they have fewer mobility options as in the vast majority of rural communities public transportation services are still scarce. In cities, public transport systems are unable to keep pace with the rapid and substantial increases in demand for mobility. As a result, people have turned to private modes of transport such as two-wheelers and four-wheelers.

Owning a vehicle which requires less maintenance and downtime is becoming significant for households. Conventional fuel-powered motor vehicles cause vehicular pollution which has a negative impact on environment and human health. Electric Vehicles (EVs) are vehicles that require less maintenance and are responsible for negligible amounts of pollution. To encourage the use of EVs in Maharashtra, state governments have drafted EV policy in 2021. As per the policy, Maharashtra state targets to achieve 25 per cent electrification of public transport and last-mile delivery vehicles by 2025 in five targeted urban agglomerations (Greater Mumbai, Pune, Nagpur, Nashik and Aurangabad); convert 15 per cent of Maharashtra State Road Transport Corporation (MSRTC) existing bus fleet to electric, make Maharashtra the country's top producer of BEVs in India, in terms of annual production capacity; target establishment of at least one Gigafactory for the manufacturing of advanced chemistry cell (ACC) batteries in the state (Maharashtra State Electric Vehicle Policy – 2021). Increased use of EVs will lead to increased demand for electricity in Maharashtra.

11. Maharashtra governments' policies:

Maharashtra government's policy aims to provide 24x7 power for all, electricity market reforms, domestic manufacturing via Make in Maharashtra, electric mobility, etc. will positively influence the demand of electricity.

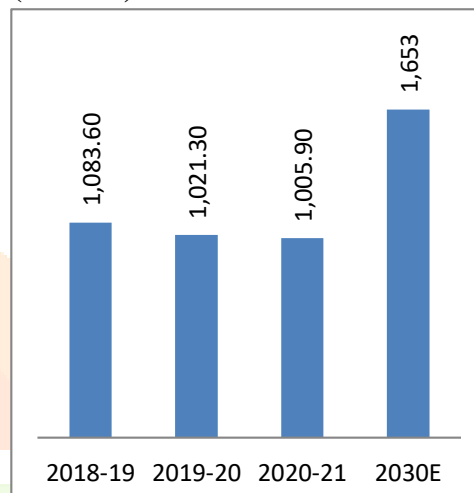
7.2 Factors influencing employment in MSEDCL

MSEDCL is a 'State Government Company' developing, operating and maintaining a distribution system to supply electricity to the consumers in its service region. Currently, it provides electricity throughout Maharashtra covering 41,928 villages and 457 towns. The company serves more than 2.70 crores consumers. The Company manages a vast network that spans a 3.08 million square kilometre geographic area in Maharashtra and includes 4,000+ 33/11 kV sub-stations and switching stations, about 25,000 high voltage feeders, about 8 lakh distribution transformers, 3.30 lakh KMs of 11 kV lines, and roughly 50,000 KMs of 33 kV lines.

1. Per capita power consumption:

In 2018-19, per capita consumption of electricity in Maharashtra was 1,083.6 units which rose to 1,021.3 units in 2019-20 and approximately 1,005.9 units in 2020-21. To provide the services, the company operated through a network of offices consisting of a Corporate Office, 4 Regional Offices, 16 Zonal Offices, 46 Circle Offices, 147 Divisional Offices and 652 Sub-divisional offices comprising more than 70,000 employees. Maharashtra Government aims to increase per capita power consumption to 1,653 units by 2030 (Vision, 2030). Increase in per capita power consumption would require increased installed capacity, generation and distribution of electricity. Increased distribution of electricity would generate huge scope for employment opportunities in MSEDCL.

Graph 11:
Per capita consumption of electricity
(in units)



Source: Researchers Compilation

2. Capacity of renewable energy:

Electricity is generated through renewable and non-renewable sources. Coal, Natural Gas, Lignite and Crude Oil are non-renewable sources of electricity generation. Currently, the stake of renewable energy sources in electricity generation in Maharashtra is meager and needs push to improve further. The Maharashtra government plans to install a capacity of renewable energy to 10,000 MW by 2030 (Vision, 2030). This would require increased installed capacity, generation and distribution of electricity. Increased installation capacity of renewable energy would generate employment opportunities in MSEDCL.

3. Franchisee models:

All residents of Maharashtra now have access to electricity. The 2003 Electricity Act marked a turning point in the reform process. New business strategies are implemented. To increase efficiency, more private distribution participation is encouraged. Franchisee models have been successfully implemented in Bhiwandi in Maharashtra, where there have been rapid improvements in metering, billing, and collection. This franchisee's success has prompted MSEDCL to apply the same approach in further locations like Nagpur, Aurangabad, etc. The future adoption of the franchisee model by MSEDCL will influence employment in MSEDCL negatively.

7.3 Key Challenges of electricity consumption

The power sector in Maharashtra is grappling with many issues and challenges. Some of them are as follows:

1. Retaining subsidised consumer base of industrial and commercial consumers.
2. Reduction in AT&C losses in rural areas as better collection efficiency remains a challenge.
3. Due to Mumbai's subterranean cabling, efficiency, cost, and downtime reduction during network repair continue to be a concern for distribution firms operating in Mumbai.
4. Power sourcing restrictions for Mumbai from outside as the available transfer capacity of the intra-state transmission network connecting Mumbai is less compared to the demand.
5. Distribution firms operating in Mumbai face the problem of lowering power purchase costs as they encounter intra-state transmission bottlenecks.
6. Providing cost effective power supply to the consumer by reducing overall costs of transmission and improvement of operational efficiencies.
7. Reduction of layings-off in the system resulting from automation of power flows in the network.
8. Efficient transmission planning to prevent asset stranding and to enable effective power flows and dispatch.

8. Scope of the Study

- A number of factors influence each region's demand for power. The aim of the current study was to identify the key drivers that influence demand of electricity and the causes of growth in those variables.
- MSEDCL is spreader over the whole Maharashtra with a strong consumer base. This forms the basis of its selection in the study.

9. Limitations and scope for further research

There are many factors on which demand for electricity depends. Time factor can influence their demand. In the current study, detailed study of such factors and their relationship is out of scope. However, this study can serve as a base for more in-depth investigation into those factors.

10. Suggestions:

The power sector needs to not only overcome the present difficulties but also deal with the impending disruptions if it is to continue serving as a significant growth enabler. To enhance and retain the consumer base, MSEDCL may consider the following suggestions.

- Increasing operational effectiveness while reducing costs.
- Automation of electricity flows.
- Utilizing cutting-edge tools and technologies for effective dispatch of electricity.
- Increase efficiency in planning the transmission network.
- Upgrading network
- Increase efficiency in maintenance procedures.

11. Conclusion

Maharashtra's aim to become India's first trillion dollar state economy in the coming few years can be achieved with the support of the power sector. Maharashtra has effectively managed power supply in rural as well as urban areas. It has also successfully provided electricity to agricultural, industrial, commercial and household consumers. New paradigm is beginning to emerge in Maharashtra which would raise demand for electricity. The power sector of Maharashtra needs to continually evolve to address the continuous rising

demand for electricity. Companies in the power sector could entice customers by improving operational effectiveness, lowering delivery costs, and catering to a variety of consumer needs.

12. Reference

1. Banks J. P., Bowman D. C., Gross T. P. and Guy J. (1998), The Private Sector: Cautiously Interested in Distribution in India in *The Electricity Journal*, pp. 1-18.
2. *Economic Survey of Maharashtra*, 2021-22.
3. Khalid, I., & Khalid, B. (2010). The Determinant of Demand for electricity. The Case of Jordan (1979-2008), www.Caus.org.1b/PDF/EmagazineArticles/economics
4. Kharas, H. The Emerging Middle Class in Developing Countries
5. Kumar, S. (2011). "Cointegration and the demand for energy in Fiji". *International Journal of Global Energy Issues*, 35(1), 85-97.
6. *Magnetic Maharashtra*, 2019
7. *Maharashtra State Electric Vehicle Policy – 2021*
8. Misal, A (2008), 'Electricity Reforms: Exploring Institutional Alternatives in Maharashtra, (India)', The Hague, the Netherlands, pp. 1-62.
9. Omer, E. and Metin, B (2017), Does more energy consumption support economic growth in net energy-importing countries?., *Journal of Economics, Finance and Administrative Science*, Volume 22 Issue 42, ISSN: 2218-0648.
10. Population census, <https://censusindia.gov.in/census.website/data/population-finder>
11. Population projections for India and States (2011 – 2036), July 2020, National Commission on Population Ministry of Health & Family Welfare.
12. Shangliao, S, Penetration rate of consumer durable market in India in 2020, by segment, July 29, 2021, <https://www.statista.com/statistics/932996/india-consumer-durable-market-penetration-rate-by-segment/>
13. *Vision 2030*, Planning Department, Government of Maharashtra, https://plan.maharashtra.gov.in/Sitemap/plan/pdf/final_Vision_Eng_Oct2017.pdf

