PROJECT REPORT

AN EXPLORATION OF ELECTRICITY CONSUMPTION PATTERNS

1 INTRODUCTION

1.1 Overview

Electricity consumption is an essential component of the modern life. It not only provides clean and safe light throughout the day, but also in many countries refreshes homes on hot summer days, and in others warms them in winter. In all countries, it allows the use of electrical and electronic equipment in which the use of electricity is essential to ensure their proper functioning.

India is the world's third-largest producer and third-largest consumer of electricity. The national electric grid in India has an installed capacity of 370.106 GW as of 31 March 2020. Renewable power plants, which also include large hydroelectric plants, constitute 35.86% of India's total installed capacity. During the fiscal year (FY) 2019–20, the total electricity generation in the country was 1,598 TWh, of which 1,383.5 TWh generated by utilities. The gross electricity consumption per capita in FY2019 was 1,208 kWh.

1.2 Purpose

Insights from smart metering data eMARC   is an initiative by Prayas (Energy Group) to provide insights on electricity consumption in Indian homes. Under eMARC, minute-wise data related to electricity consumption is collected using smart meters from a sample of households and appliances. Interactive dashboards based on the analysis of this data are available on the eMARC website. In this blog series we present key observations based on the data collected from 115 households from January 2018 to June 2020. The households include urban households from Pune City and semi-urban and rural households from the districts of Pune, Aurangabad, Kanpur Rural, and Gonda. In this post we present the insights on the electricity consumption patterns of the sample households.

2 PROBLEM DEFINITION & DESIGN THINKING

2.1 Empathy Map
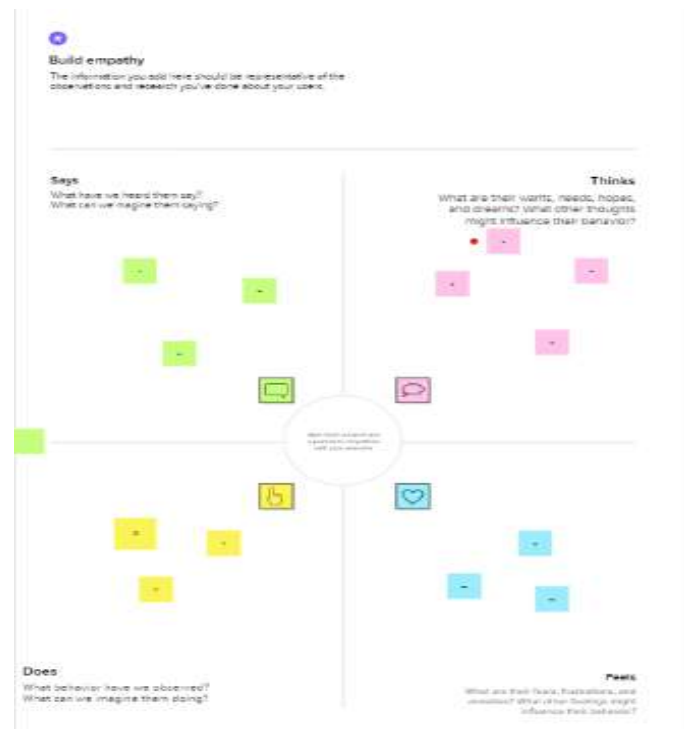
## 2.2 Ideation & Brainstorming Map
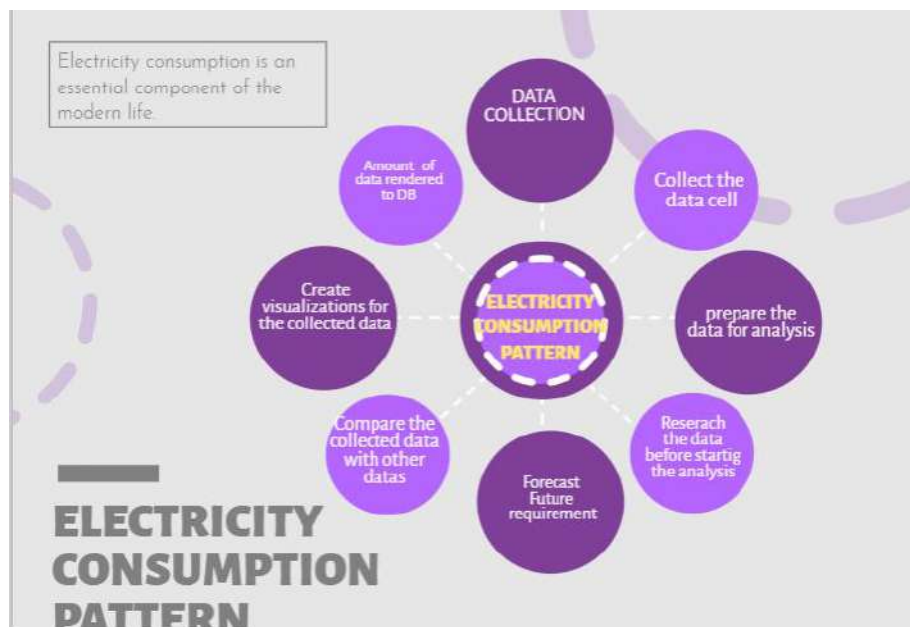
3 RESULT

3.1 Social Impact: By providing access to electricity, the analysis can help to improve the quality of life for people living in areas without access to electricity, including providing access to lighting, heating, and cooling, and powering essential services such as hospitals and schools.
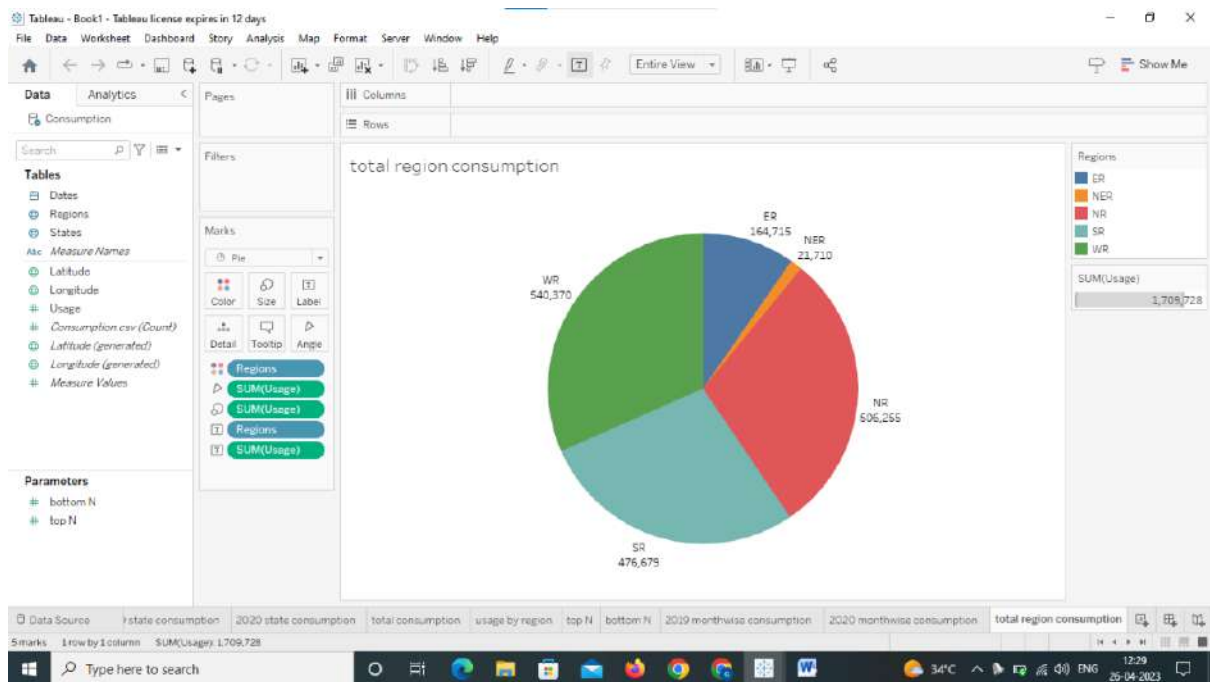
Business Model/Impact: By understanding consumption patterns and trends, the analysis can help businesses identify market opportunities and develop strategies to meet the growing demand for electricity in India.
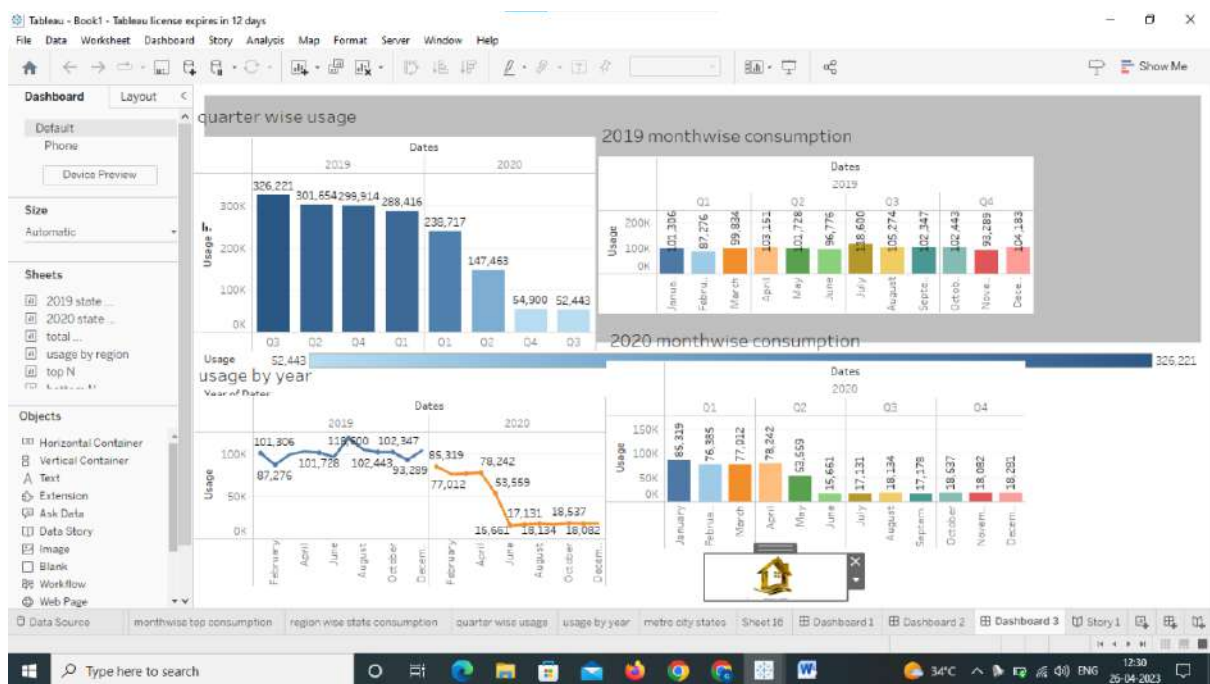
3.2 Activity & Screenshot

Sheet-1
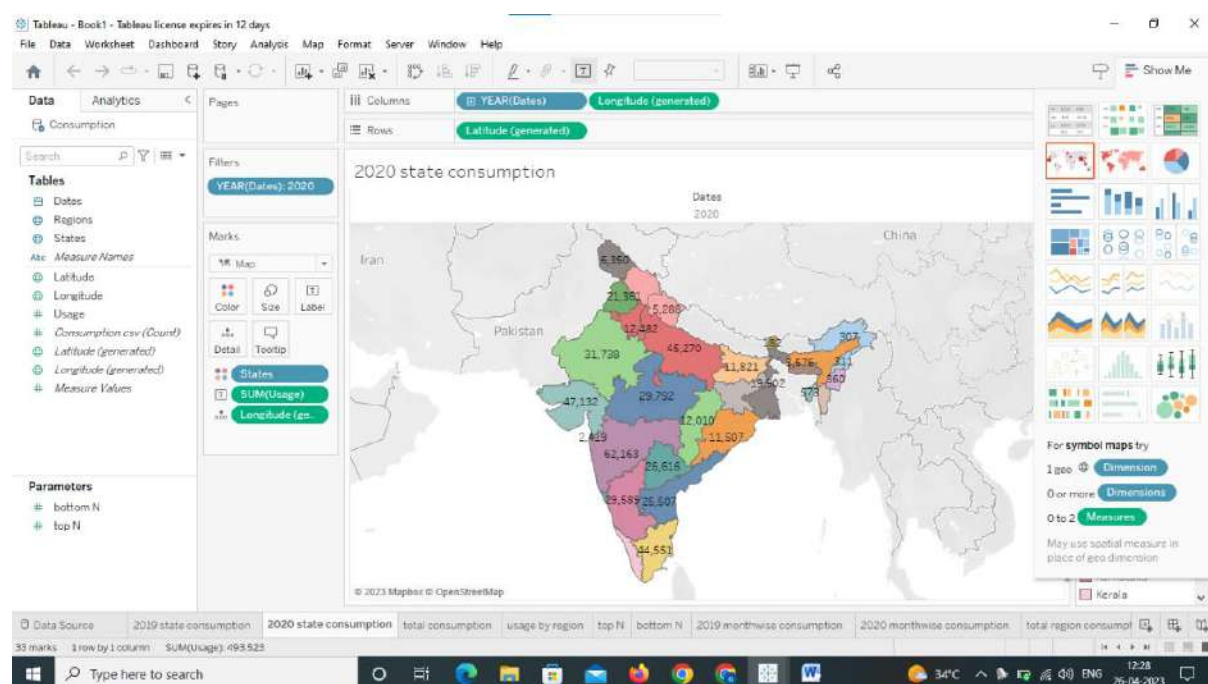
Sheet -9

Dashboard-3

4 TEAM DETAILS

Team Lead- K.Farkana Sirin

Team Member 1 –S.Gayathri

Team Member 2- N.Swathi

Team Member 3-M.Vinitha

5 ADVANTAGES & DISADVANTAGES

ADVANTAGES

According to the U.S. Energy Information Administration, fossil fuels such as natural gas, coal and petroleum produced 67 percent of the nation's electricity in 2013.

In addition to obtaining electricity from nuclear power plants, some people can get hydropower, or electricity that comes when you harness the energy of falling or running water.

If you live in a windy area or one that receives lots of sun, wind or solar power might be an attractive energy option.

It's also possible to generate electricity by using heat from below Earth's surface to produce steam that turns turbines.

People also generate electricity from biomass, which is material from sources such as wood, fuel crops and agricultural wastes.

DISADVANTAGES

Power plants that burn biomass release sulfur dioxide and nitrogen oxides, two undesirable pollutants, into the air. Power plants that burn fossil fuel pump carbon dioxide into the atmosphere. Carbon dioxide is a greenhouse gas that causes Earth's temperature to rise. Nuclear power plants must find ways to dispose of radioactive waste safely. Building dams to create hydropower plants can affect wildlife and natural resources adversely.

You may have lived without electricity when storms or accidents disabled power lines or transformers or experienced brownouts during which you received reduced electricity. These incidents may occur when power demands exceed a utility company's ability to provide it.Unless you generate your own power using a source such as solar, you probably pay a monthly utility bill that varies between regions. If you get your electricity from your own solar or wind source, you have no monthly fees.

In fact, it's sometimes possible for you to sell excess power you generate using these methods to utility companies. Although you must pay for solar equipment and installation, prices continue to drop as the market matures.

6 APPLICATIONS

- o Entertainment.
- o Healthcare.
- o Engineering.
- o Transport and Communication.

7 CONCLUSION

We conclude from this project the electricity consumption patterns includes the description of electricity consumption and services, the structure of electricity consumption and requirements among others.

8 FUTURE SCOPE

India will reach 405 giga watts of renewable energy capacity by 2030. It's expected to surpass the government's target of producing 50% of its electricity from non fossil fuel sources by the end of the decade.

APPENDIX

Source code - Dashboard

https://public.tableau.com/views/AnExplorationOfElectricityConsumptionPatterns/Dashboard1?:language=en-US&:display_count=n&:origin=viz_share_link

Source code - Story

https://public.tableau.com/views/Story_16824804144450/Story1?:language=en-US&:display_count=n&:origin=viz_share_link