Project Documentation and Report

PROJECT TITLE:

Plugging into the Future: An Exploration of Electricity Consumption Patterns

CATEGORY:

Data Analytics

TEAM:

Team Size: 4

Team Leader: Pothala Moulika

Team member: Pediredla Sridevi

Team member: Senapathi Niharika

Team member: Yandrapu Anithya

Mounica Ross

FACULTY MENTOR: SASHI KANTH BETHA

INTRODUCTION:

OVERVIEW:

An exploration of electric power consumption of patterns Electric and electronic devices consumes electric energy to generate desired output light, heat, motion, etc. During operation, some part of the energy is lost depending on the electrical efficiency.

- This project embarks on a comprehensive exploration of how electricity is utilized across different sectors, aiming to uncover trends influences, and potential avenues for more efficient consumption. By delving into the intricacies of electricity usage, we seek to contribute meaningful insights to energy management, policy formulation, and a greener future.

Data Collection and Preprocessing:

A comprehensive dataset Collecting accurate and comprehensive electricity consumption data is fundamental to gaining insights into consumption patterns. Multiple sources will be utilized to gather data from different sectors, including residential, commercial, and industrial.

Exploratory Data Analysis (EDA):

EDA was conducted to gain a deep understanding of the dataset. Visualizations and summary statistics helped in understanding the Electricity consumption data.

Creating a Flask web application:

For Competitive Analysis of Electricity Power Consumption involves web Application where We can input relevant information, and the application will use the predictive model to estimate the Visualizing Data.

PURPOSE:

The purpose of conducting a Competitive Analysis of Exploration of Electricity Power Consumption gain valuable insights into the competitive
This analysis a comprehensive evaluation of the Purpose   an Exploration of Electricity Consumption Patterns.

- ❖ Overall, the purpose of the Flask web application is to empower user with actionable insights into their electricity consumption

patterns, enabling them to make informed decisions that lead to more efficient and responsible energy usage.

KEY OUTCOME:

1. Energy Efficiency and Savings

2. Behavioural Change

3. Environmental impact

4. Optimized Resource Allocation

5. Research and Insights

2.LITERATURE SURVEY:

The objectives of the literature survey, such as understanding trends in electricity consumption analysis, identifying methodologies understanding trends in electricity consumption analysis used and exploring the impact of consumption patterns on energy efficiency and sustainability.

Explore studies that analyse consumption patterns over different time scales (hourly, daily, seasonal) and spatial scales household community, region Highlight the challenges and benefits of each analysis approach.

THEORITICAL ANALYSIS

By observing the above map, we can identify electricity in every state in 2019 and we also observe Maharashtra is using highest electricity.
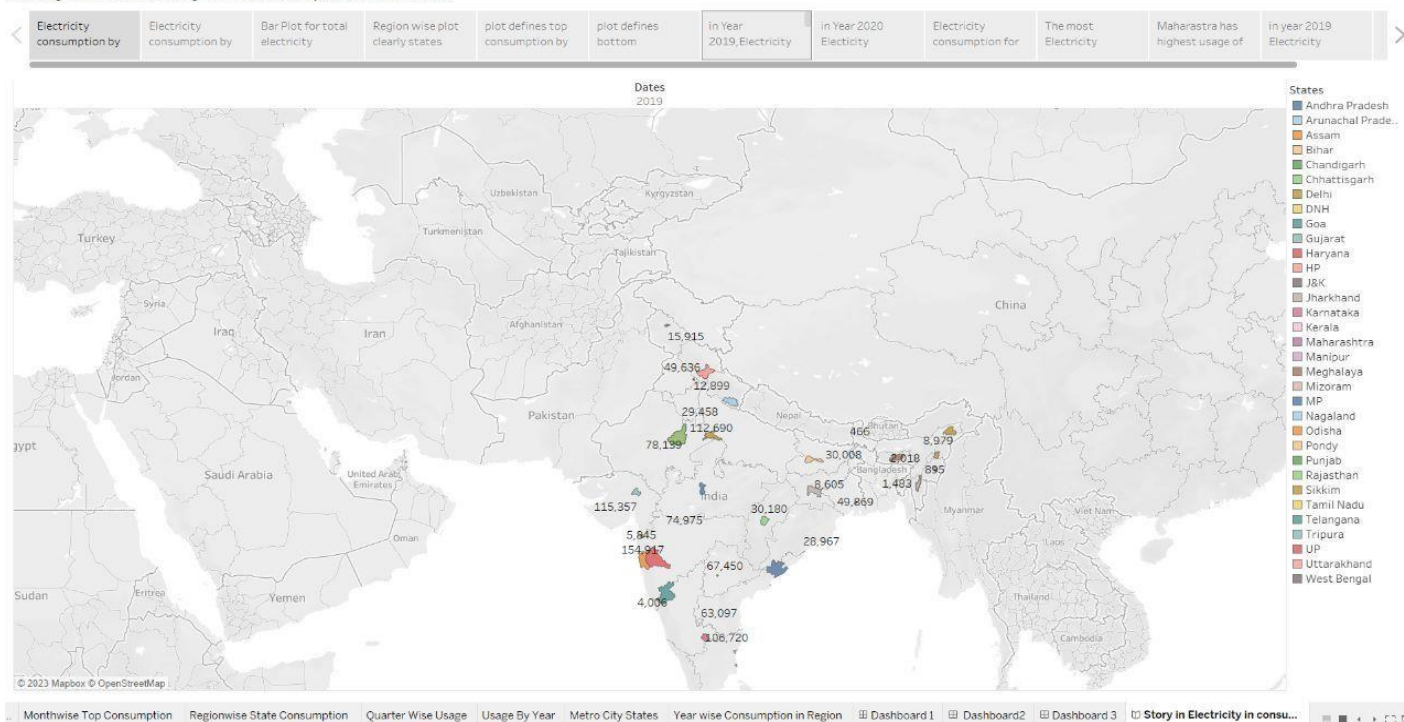
REATD AIRLINE DASHBOARD

By observing these graphs, we know both top and bottom states usage of electricity consumption in India.

Maharashtra, Gujarat, Uttar Pradesh, Tamil Nadu, Rajasthan these are highest states in usage of electricity consumption.

Sikkim, Mizoram, Arunachal Pradesh, Nagaland, Manipur these are the lowest in usage of electricity consumption.

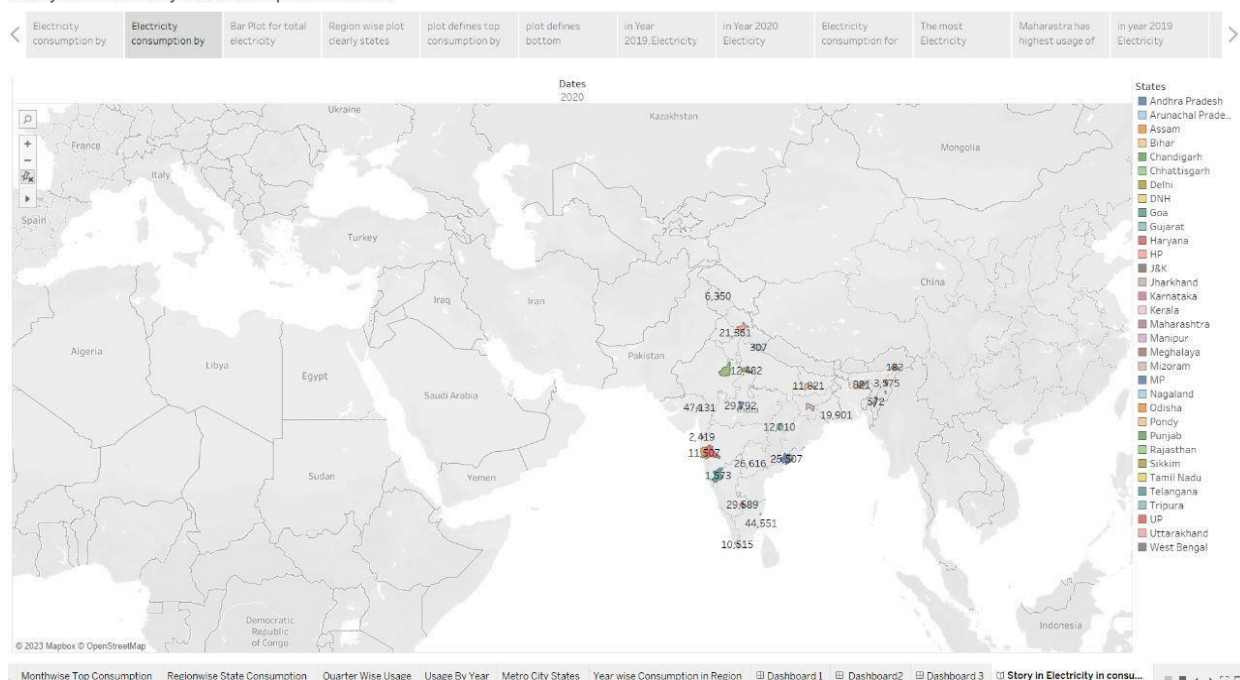SOFTWARE OR HARDWARE DESIGNING:

SOFTWARE REQUIREMENTS:
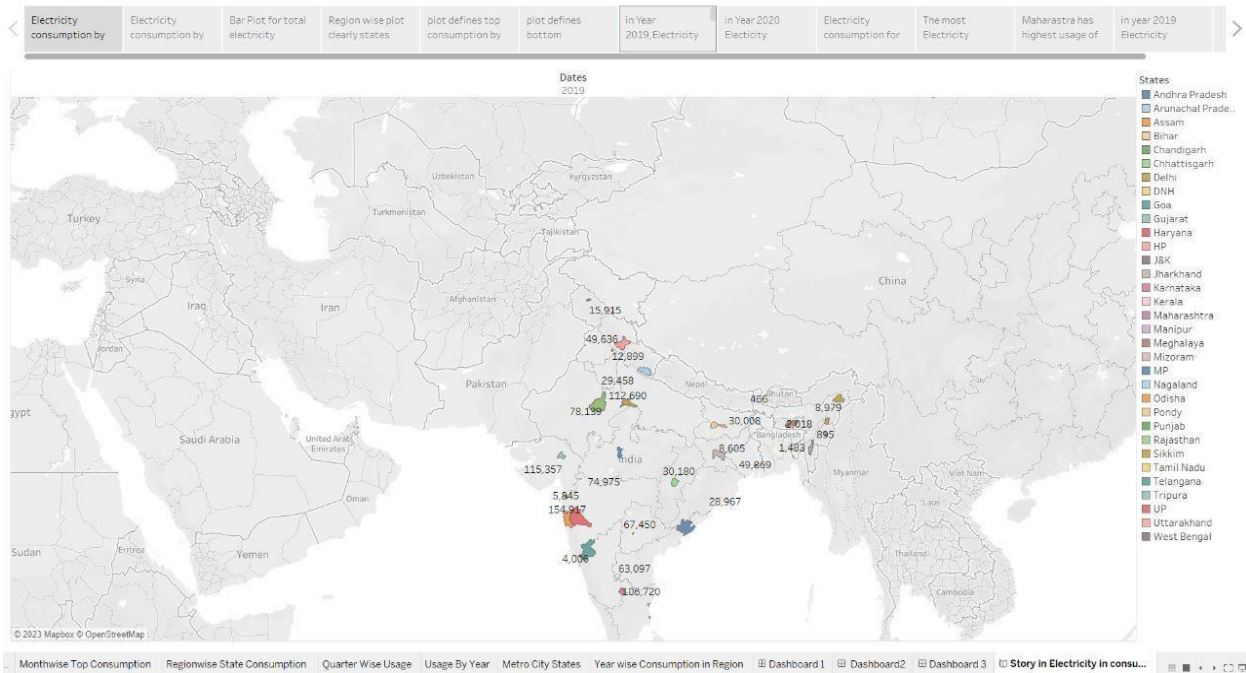- SQL server
- Tableau
- Visual studio code
- Boot stramp

RESULT:

DATA VISUALIZATIONS:
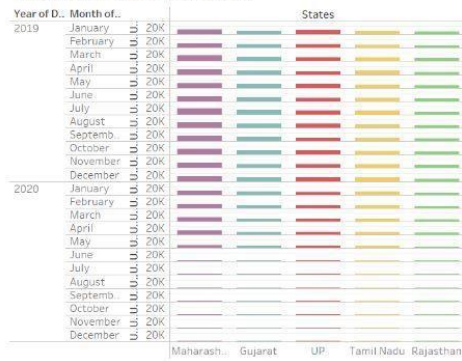
Story in Electricity in consumption in india

Dates
2019

15,915
49,636
12,899
29,458
112,690
78,199
456
8,979
30,008
2,018
895
8,605
1,483
115,357
74,975
30,180
49,869
5,845
154,317
28,967
67,450
4,006
63,097
108,720

China
Turkey
Uzbekistan
Kyrgyzstan
Turkmenistan
Syria
Iraq
Iran
Tajikistan
Afghanistan
Jordan
Pakistan
Nepal
Bhutan
Egypt
Saudi Arabia
United Arab Emirates
India
Bangladesh
Myanmar
Viet Nam
Oman
Laos
Sudan
Eritrea
Yemen
Thailand
Cambodia

© 2023 Mapbox © OpenStreetMap

States
- Andhra Pradesh
- Arunachal Prade..
- Assam
- Bihar
- Chandigarh
- Chhattisgarh
- Delhi
- DNH
- Goa
- Gujarat
- Haryana
- HP
- J&K
- Jharkhand
- Karnataka
- Kerala
- Maharashtra
- Manipur
- Meghalaya
- Mizoram
- MP
- Nagaland
- Odisha
- Pondy
- Punjab
- Rajasthan
- Sikkim
- Tamil Nadu
- Telangana
- Tripura
- UP
- Uttarakhand
- West Bengal

Usage before and during Lockdown

Dates

	Q1		Q2

Q1 — March: 99,834 / 77,012
Q1 — April: 103,151 / 78,242
Q2 — May: 101,728 / 53,559
Q2 — June: 96,776 / 15,661

Usage (axis): 0K, 50K, 100K, 150K

Monthwise Top Consumption

Year of D..	Month of..		States
2019	January	20K	
	February	20K	
	March	20K	
	April	20K	
	May	20K	
	June	20K	
	July	20K	
	August	20K	
	Septemb..	20K	
	October	20K	
	November	20K	
	December	20K	
2020	January	20K	
	February	20K	
	March	20K	
	April	20K	
	May	20K	
	June	20K	
	July	20K	
	August	20K	
	Septemb..	20K	
	October	20K	
	November	20K	
	December	20K	

Maharash.. Gujarat UP Tamil Nadu Rajasthan

Regionwise State Consumption

Regions	States	2019	2020
ER	Bihar	30,008	11,821
	Jharkhand		
	Odisha	28,967	11,507
	Sikkim		
	West Bengal	49,869	19,901
NER	Arunachal Pradesh		
	Assam	8,979	3,575
	Manipur		
	Meghalaya	2,018	821
	Mizoram		
	Nagaland		311
	Tripura	1,483	
NR	Chandigarh		
	Delhi	29,458	12,482
	Haryana		
	HP		3,873
	J&K	15,915	
	Punjab		21,361

Dates

Usage: 0K 100K 200K | 0K 100K 200K

Quarter Wise Usage

Dates

	2019				2020			

2019 — Q3: 326,221
2019 — Q2: 301,654
2019 — Q4: 299,914
2019 — Q1: 288,416
2020 — Q1: 238,717
2020 — Q2: 147,463
2020 — Q4: 54,900
2020 — Q3: 52,444

Usage (axis): 0K, 100K, 200K, 300K

Year of Dates
- 2019
- 2020

States
- Gujarat
- Maharashtra
- Rajasthan
- Tamil Nadu
- UP

Top N
5

Usage
52,444 — 326,221

Usage By Year

Metro City States

Year wise Consumption in Region

Total Consumption

Consumption | Quarter Wise Usage | Usage By Year | Metro City States | Year wise Consumption in Region | Dashboard 1 | Dashboard2 | Dashboard 3 | Story in Electricity in consum... | Dashboard 4 | Dashboard 5 | Dashboard 6
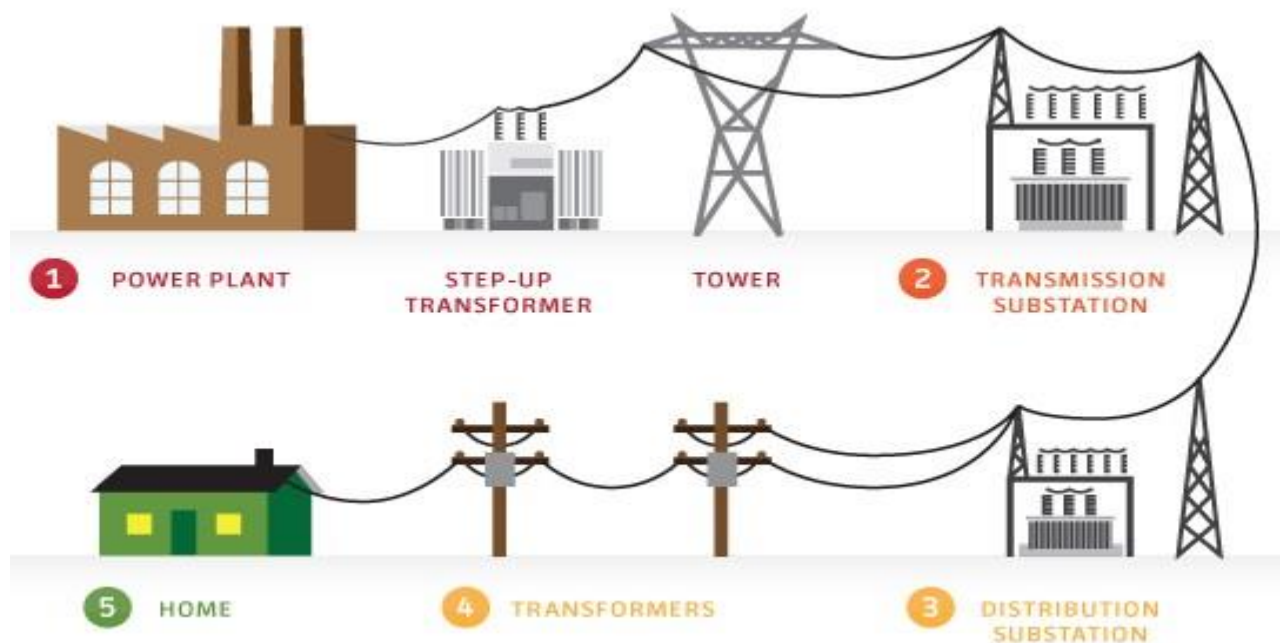
WEB INTEGRATION

ADVANTAGES

- Insight Generation
- Efficiency Improvements
- Demand Forecasting
- Cost Reduction
- Environment Impact

DISADVANTAGES

- Data Complexity
- Privacy Concerns
- Accuracy Challenges
- Resource Intensive
- Changing Behaviour

APPLICATIONS

The competitive analysis of exploration of electricity power consumption of patterns has various practical applications.

- Energy Efficiency
- Demand Forecasting
- Load Balancing
- Billing and Tariffs
- Infrastructure Planning
- Renewable Integration
- Anomaly Detection
- Environmental Impact
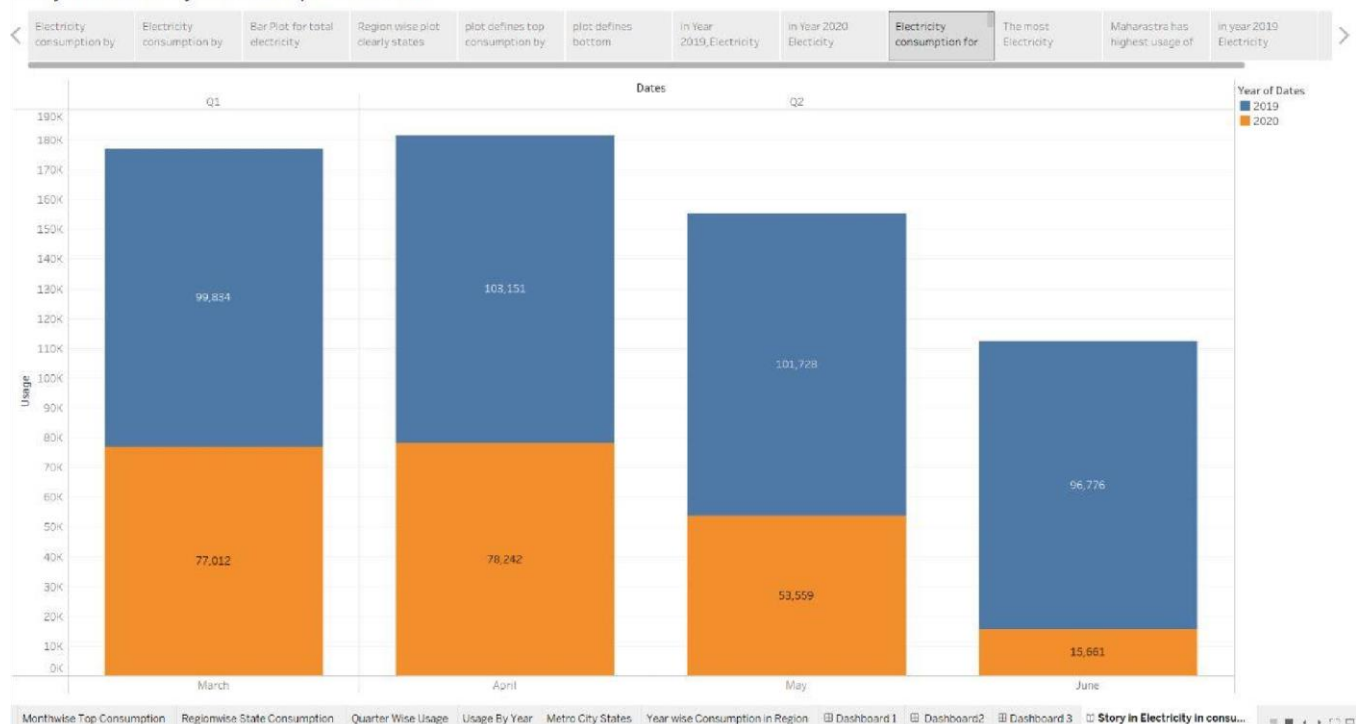- Research and Policy
- Smart Grid Optimization

7. CONCLUSION

Story in Electricity in consumption in india
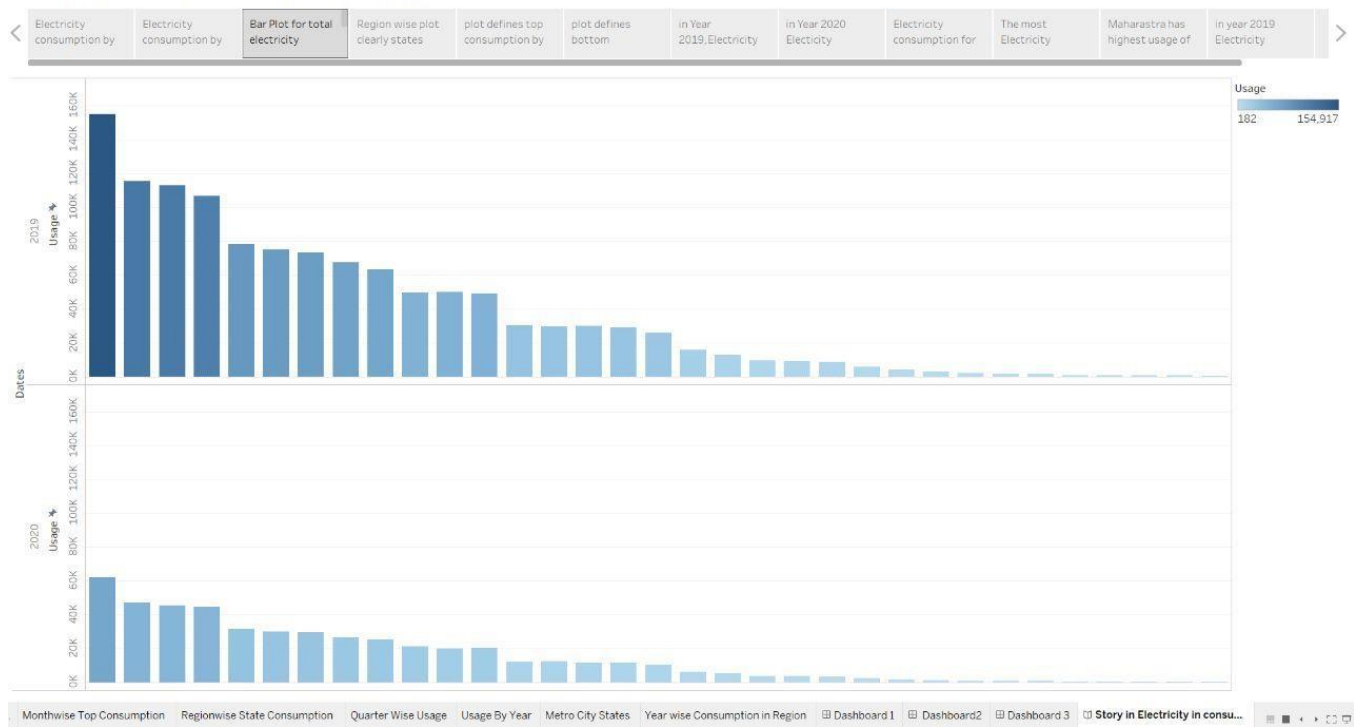
Maharashtra is the highest electricity consumption user of India. Sikkim is the lowest electricity consumption of India.

Electricity consumption was more in 2019 in month of march to June before lockdown, less in 2020 in month of march to June during lockdown.

THANK YOU