PLUGGING INTO THE FUTURE: AN EXPLORATION OF ELECTRICITY CONSUMPTION PATTERNS-

Project based experience learning program

SRM ARTS & SCIENCE COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SCIENCE

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INTRODUCTION

1.1 Overview

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.

In 2015-16, electric energy consumption in agriculture was recorded as being the Highest (17.89%) worldwide. The per capita electricity consumption is low compared to most other countries despite India having a low electricity tariff.

In light of the recent COVID-19 situation, when everyone has been under lockdown for the months of March to June the impacts of the lockdown on economic activities have been faced by every sector in a positive or a negative way. The dataset is exhaustive in its demonstration of energy consumption state wise.

Analysing Electricity Consumption in India from Jan 2019 till 5th December 2020. This Dataset contains a record of Electricity consumption in each states of India, here we are going to analyse State wise, Region wise and Overall Electricity consumption in India.

1.2 Purpose

It was the time of rapid, unbridled innovation. Advances in electrified mobility were emerging at breakneck speed as companies raced to develop new ways to move the masses. In fact, electric cars accounted for a third of all the vehicles on the road.

This is not another rose-colored vision for a utopian future, but the reality of a fledgling auto-motive industry that was just finding its feet in the United States over a century ago. Ultimately, our first dance with electric vehicles (EVs) was cut short by the introduction of the

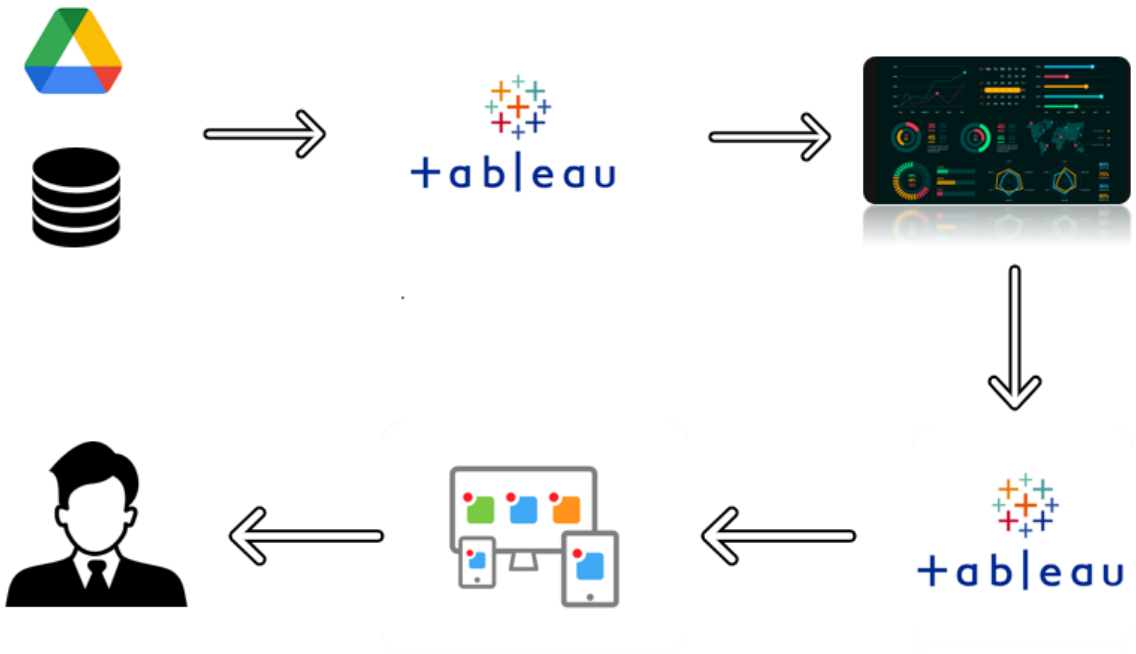
Ford Model T in 1908, setting up the following 10 decades of fossil fuel dominance that relegated EVs to the shadows.

Over the years, EVs have seen sporadic attempts at resuscitation, but they were never able to get around fundamental obstacles that included high production costs, limited driving range (particularly in cold weather), And lengthy charging times. However, over the last decade or so, rising pollution levels and the necessity to reduce dependence on imported fuel have prompted governments around the world to embrace a migration from fossil fuel-based vehicles to vehicles powered by electric motors. Having said that, this fundamental evolution in mobility is playing out in different ways around the world.

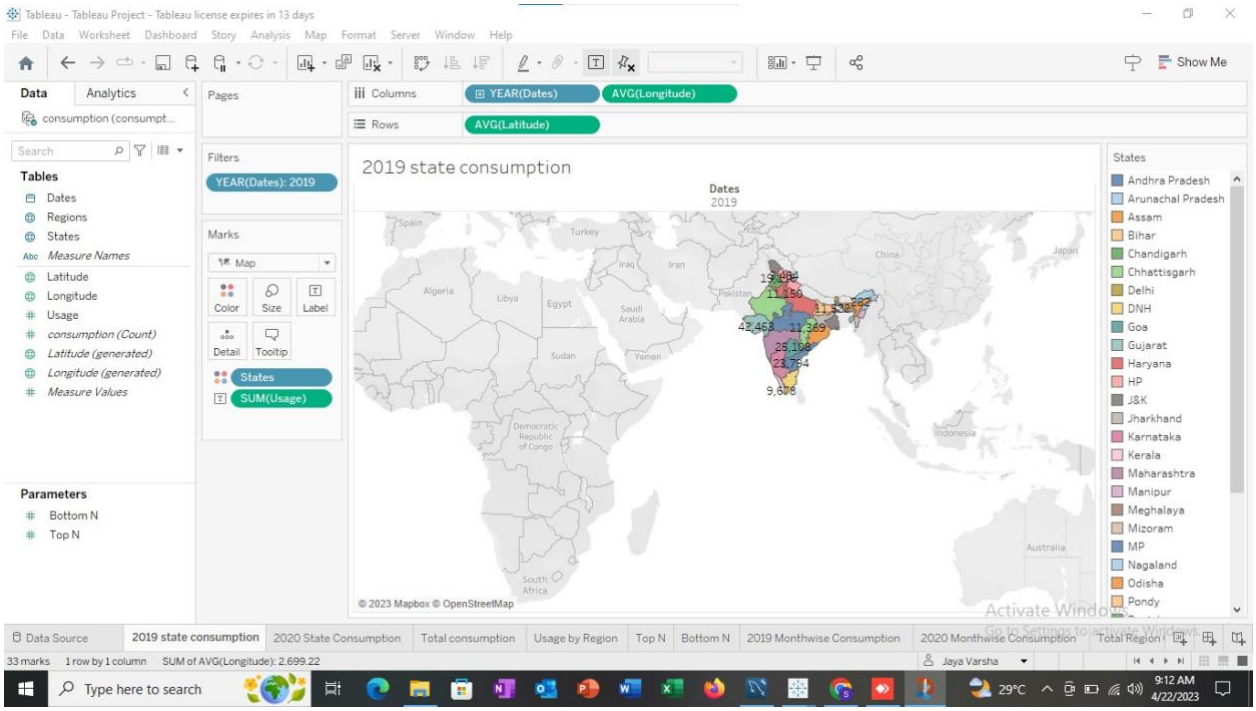
2 PLUGGING INTO FUTURE

2.1 Empathy Map

2.2 Technical Architecture



2.3 Ideation and Brainstorming Map



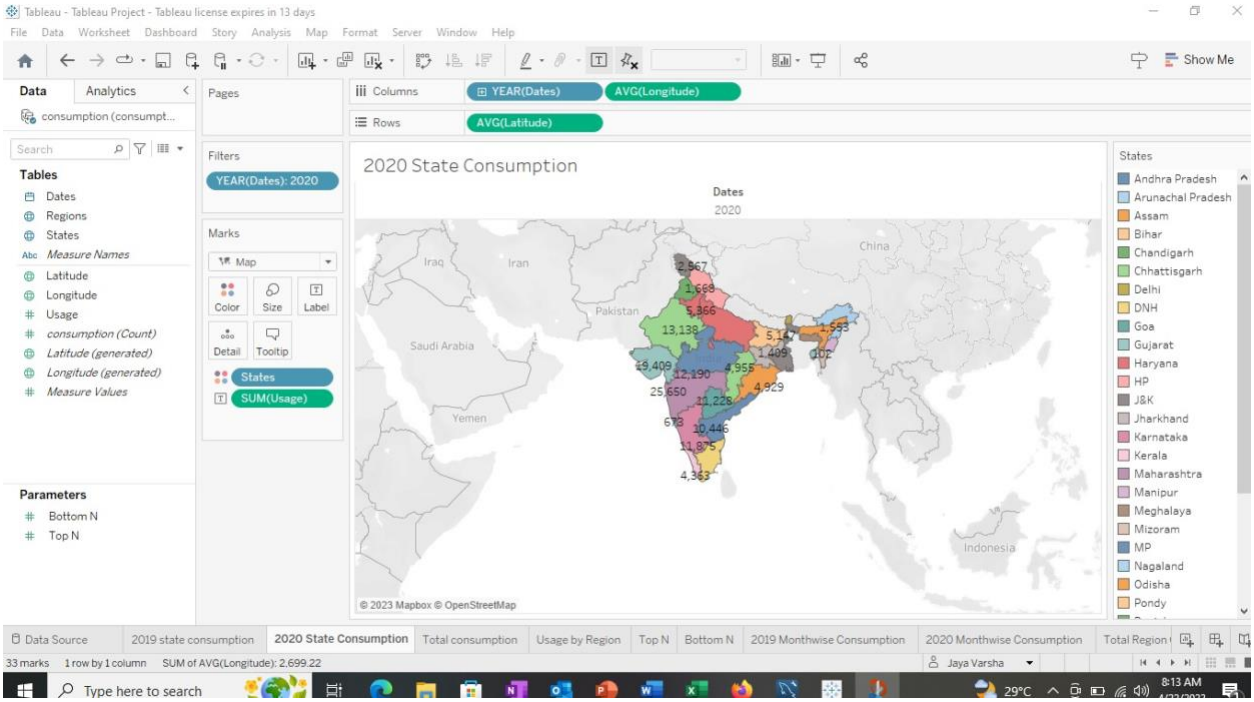


Tableau - Tableau Project - Tableau license expires in 13 days
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Show Me
Data Analytics
consumption (consumpt...
Search
Tables
Dates
Regions
States
Measure Names
Latitude
Longitude
Usage
consumption (Count)
Latitude (generated)
Longitude (generated)
Measure Values
Parameters
Bottom N
Top N
Pages
Filters
YEAR(Dates): 2020
Marks
Map
Color
Size
Label
Detail
Tooltip
States
SUM(Usage)
Columns
YEAR(Dates)
AVG(Longitude)
Rows
AVG(Latitude)
2020 State Consumption
Dates
2020
China
Iraq
Iran
Pakistan
Saudi Arabia
Yemen
Indonesia
2,967
1,668
5,366
13,138
5,147
2,593
1,409
102
9,409
12,190
4,955
4,929
25,650
11,228
678
10,446
11,875
4,363
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States
Andhra Pradesh
Arunachal Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
Delhi
DNH
Goa
Gujarat
Haryana
HP
J&K
Jharkhand
Karnataka
Kerala
Maharashtra
Manipur
Meghalaya
Mizoram
MP
Nagaland
Odisha
Pondy
Data Source
2019 state consumption
2020 State Consumption
Total consumption
Usage by Region
Top N
Bottom N
2019 Monthwise Consumption
2020 Monthwise Consumption
Total Region
33 marks
1 row by 1 column
SUM of AVG(Longitude): 2,699.22
Jaya Varsha
Type here to search
29°C
8:13 AM

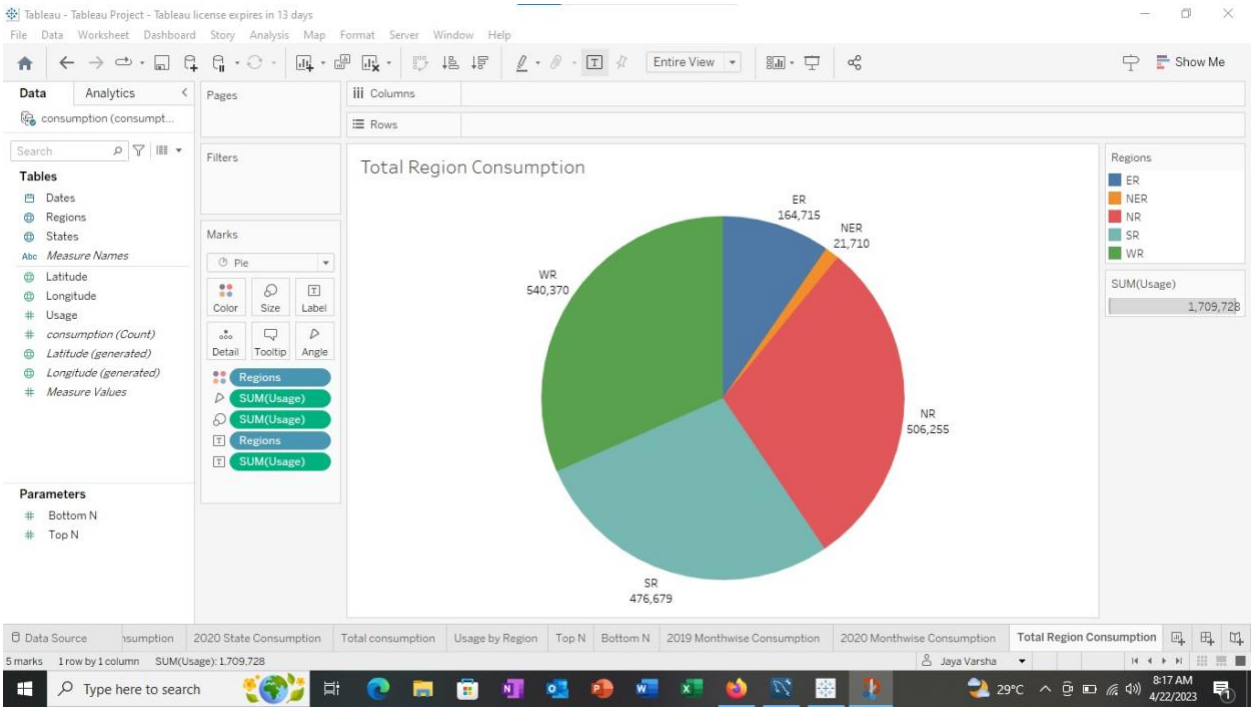
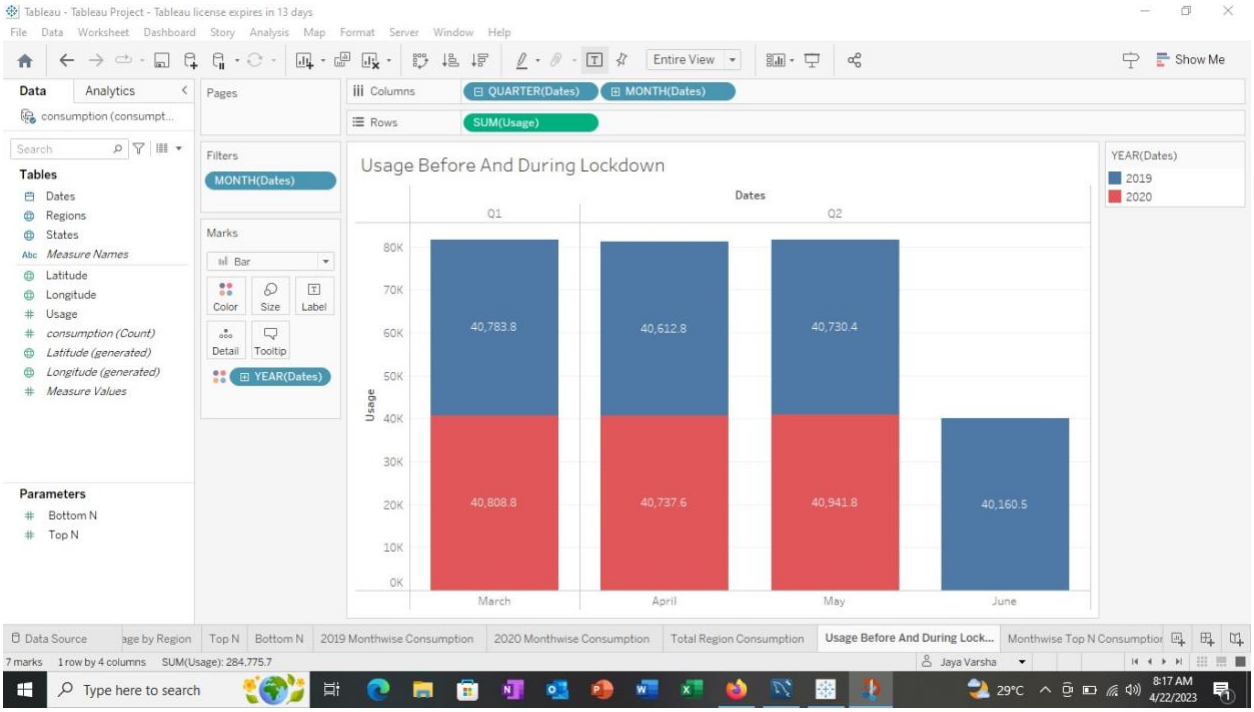


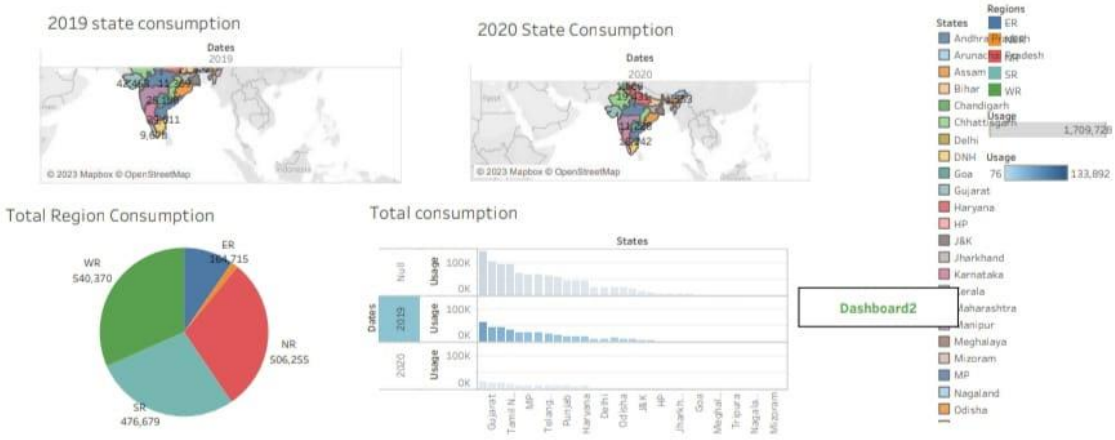
Tableau - Tableau Project - Tableau license expires in 13 days
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Entire View
Show Me
Data
Analytics
consumption (consumpt...
Search
Tables
Dates
Regions
States
Measure Names
Latitude
Longitude
Usage
consumption (Count)
Latitude (generated)
Longitude (generated)
Measure Values
Parameters
Bottom N
Top N
Pages
Columns
Rows
Filters
Marks
Pie
Color
Size
Label
Detail
Tooltip
Angle
Regions
SUM(Usage)
SUM(Usage)
Regions
SUM(Usage)
Total Region Consumption
ER
164,715
NER
21,710
NR
506,255
SR
476,679
WR
540,370
Regions
ER
NER
NR
SR
WR
SUM(Usage)
1,709,728
Data Source
2020 State Consumption
Total consumption
Usage by Region
Top N
Bottom N
2019 Monthwise Consumption
2020 Monthwise Consumption
Total Region Consumption
5 marks
1 row by 1 column
SUM(Usage): 1,709,728
Jaya Varsha
Type here to search
29°C
8:17 AM
4/22/2023


Usage Before And During Lockdown
Dates
Q1
Q2
Usage
80K
70K
60K
50K
40K
30K
20K
10K
0K
40,783.8
40,612.8
40,730.4
40,808.8
40,737.6
40,941.8
40,160.5
March
April
May
June
YEAR(Dates)
2019
2020
Columns
QUARTER(Dates)
MONTH(Dates)
Rows
SUM(Usage)
Filters
MONTH(Dates)
Marks
Bar
Color
Size
Label
Detail
Tooltip
YEAR(Dates)
Data
Analytics
Tables
Dates
Regions
States
Measure Names
Latitude
Longitude
Usage
consumption (Count)
Latitude (generated)
Longitude (generated)
Measure Values
Parameters
Bottom N
Top N
Data Source
Top N
Bottom N
2019 Monthwise Consumption
2020 Monthwise Consumption
Total Region Consumption
Usage Before And During Lock...
Monthwise Top N Consumption
7 marks
1 row by 4 columns
SUM(Usage): 284,775.7
Jaya Varsha
Type here to search
29°C
8:17 AM
4/22/2023

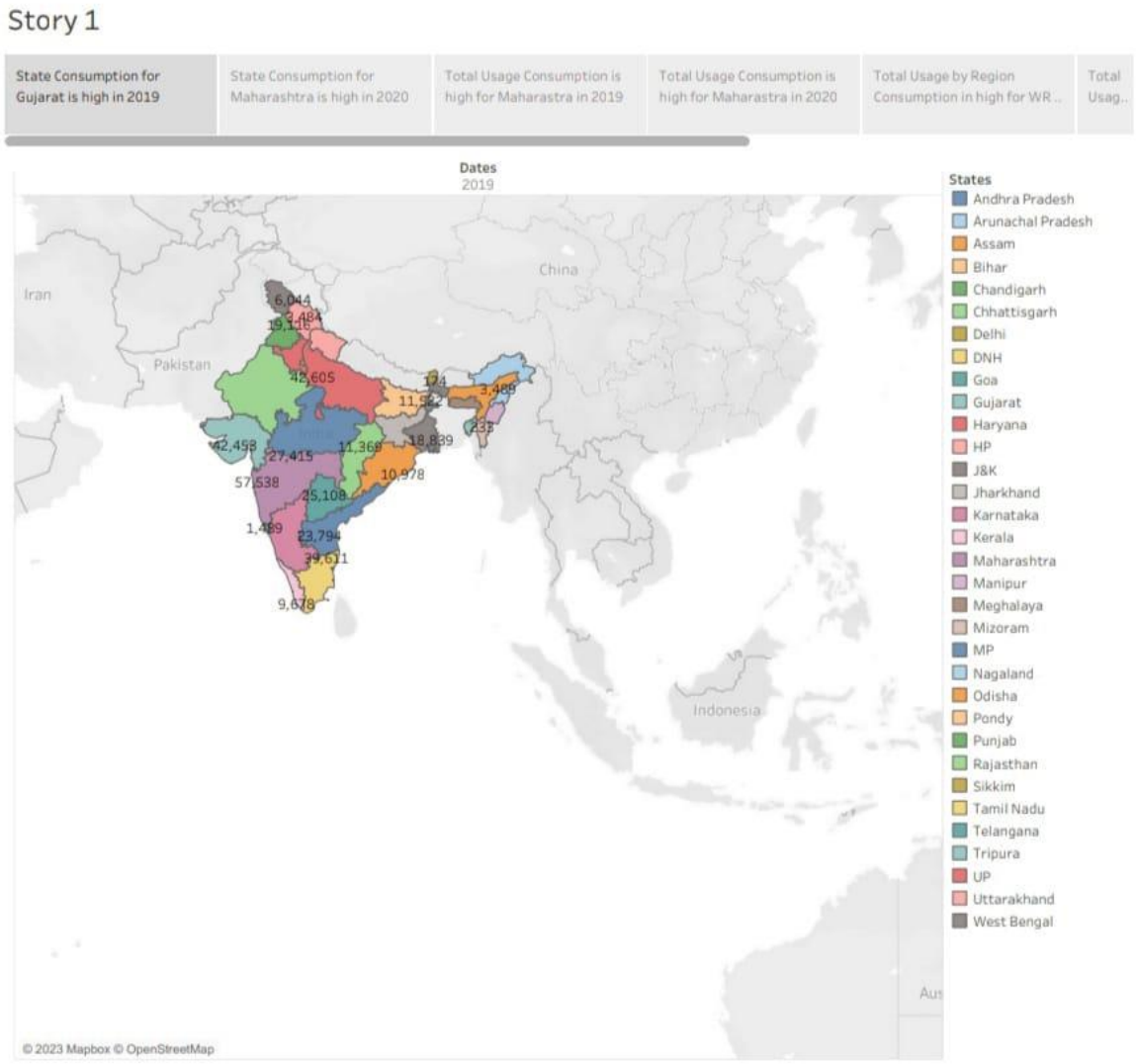
RESULT

Dashboard -1

Dashboard -2


2019 state consumption
Dates
2019
© 2023 Mapbox © OpenStreetMap
2020 State Consumption
Dates
2020
© 2023 Mapbox © OpenStreetMap
Regions
States
ER
SR
WR
Usage
1,709,720
76
133,892
Total Region Consumption
ER
WR
540,370
NR
506,255
SR
476,679
Total consumption
States
Dates
Null
2019
2020
Usage
100K
0K
Dashboard2

Story


Story 1
State Consumption for Gujarat is high in 2019
State Consumption for Maharashtra is high in 2020
Total Usage Consumption is high for Maharastra in 2019
Total Usage Consumption is high for Maharastra in 2020
Total Usage by Region Consumption in high for WR ..
Total Usag..
Dates
2019
China
Iran
Pakistan
Indonesia
6,044
2,484
19,118
42,605
174
11,582
3,489
232
42,458
27,415
11,368
18,839
10,978
57,538
25,108
1,489
23,794
39,611
9,678
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States
Andhra Pradesh
Arunachal Pradesh
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

ADVANTAGES AND DISADVANTAGES

Advantages:

- Electric Power is the measurement of Electric Energy flowing in the Electric circuit.
- As the unit of measurement of energy is Joules. Therefore the unit of measurement is Joules per second.
- This generators generate Electric power commercially and supply them for domestic and industrial use.
- Usage of electrical transmission lines to distribute the electric Power over the long distances then come in the picture.
- Then power grids distribute this geneted power

Disadvantages:

- In the conversational system to generate Electric power, coal is burnt to generate heat which boils the water to produce steam.
- The steam produced is used to run the turbine which in turn generate the electricity.
- This is a very old method to generate Electricity which produces too much air pollution as a by product
- Due to the burning of coal, carbon monoxide, carbon dioxide different oxides of sulphur and nitrogen are pumped into atmosphere which pollutes it badly.
- It causes more muscles contraction as it reduces skin resistance by stimulating sweating

Applications:

- Electricity consumption worldwide growth is faster than any other energy sources.
- From 2012-2040 the global electricity generation may raises by 1.9% per year on average.
- Electricity generation from nuclear power worldwide is expected to increase from 2.3 trillion kWh.
- By 2040 similar share of global electricity generation is expected from renewable natural gas and coal.

CONCLUSION

To conclude, Project Data Grid works like a component which can access all the databases and picks up different functions. It overcomes the many limitations incorporated in the attendance.

- Easy implementation environment
- Generate report flexibly

SCOPE FOR FUTURE DEVELOPMENT

The project has a very vast scope in future. The project can be implemented on intranet in future. Project can be updated in near future as and when requirement for the same arises, as it is very flexible in terms of expansion. With the proposed software of database Space Manager ready and fully functional the client is now able to manage and hence run the entire work in a much better, accurate and error free manner. The following are the future scope for the project.

- Discontinue of particular student eliminate potential attendance.
- Bar code Reader based attendance system
- Individual Attendance system with photo using Student login