PLUGGING INTO THE FUTURE: AN EXPLORATION OF ELECTRICITY CONSUMPTION PATTERNS

1 INTRODUCTION

1.1 OVERVIEW:

India is the world's third largest producer and the 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. 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 ever sector in appositive or negative way.

Global electricity consumption gas continued to go rapidly at a rate faster than electricity consumption. Between 1980 and 2013, the world's annual electricity consumption rose from 7300 TWh to 22,100 TWh. Since the 21st century, global electricity consumption has been even faster growth, as evidenced by an average annual increase of 3.4%, 1.2% points higher than average annual growth of energy consumption. Electricity has been generated in power station since 1882. The invention of the steam turbine in 1884 to drive the electric generator led to an increase in worldwide electricity consumption.

Electricity accounted for 19.7% of worldwide final energy consumption in 2019, while oil was 40.4%, coal was 19.5%, and natural gas was 16.4%, bio fuels and waste10.4% and other sources (i.e., heat, solar thermal and geothermal) were 3.6%. Total final electricity consumption in 2019 was split unevenly between the following sectors: industry (10.4%), residential (26.6%), commercial and public services (21.2%), transport (1.8%), and other (8.5%, i.e., agriculture and fishing).

1.2 PURPOSE:

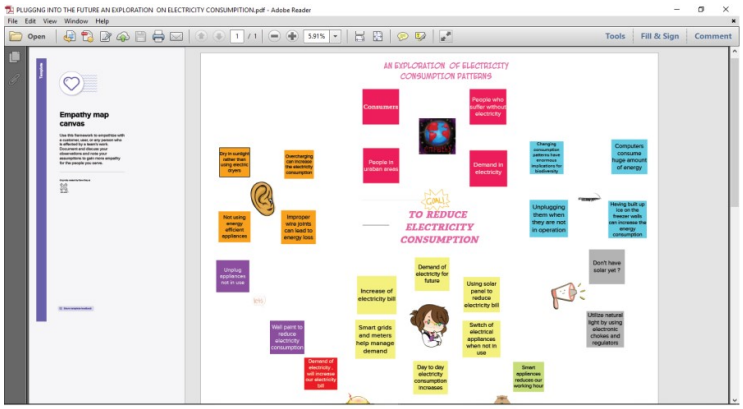
Annual electricity consumption per capita serves as an important measure of country's electric power development. Generally speaking, electricity consumption grows faster when the industrialisation processes develops quickly and goes down rapidly when industrialisation is completed or neat completion.

Electricity energy consumption is the actual demand made on existing electricity supply for transport on, residential, industrial, commercial and other miscellaneous purposes.

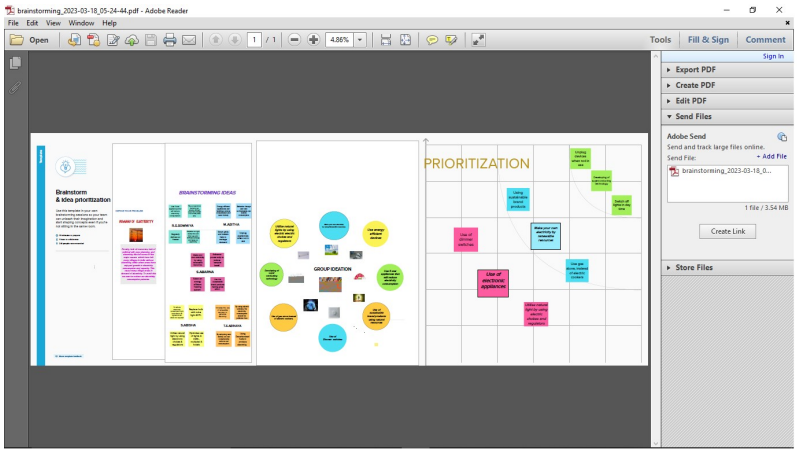
Reducing energy use in your home saves you money increases the pollution that is emitted from non-renewable sources of energy. Energy conservation can be achieved through efficient energy use, which has a number of advantages including a reduction in greenhouse gas emissions and a smaller carbon footprint, as well cost, water, and energy saving. Energy conservation is an essential factor in building design and construction.

2 PROBLEM DEFINITON & DESIGN THINKING

2.1 EMPATHY MAP

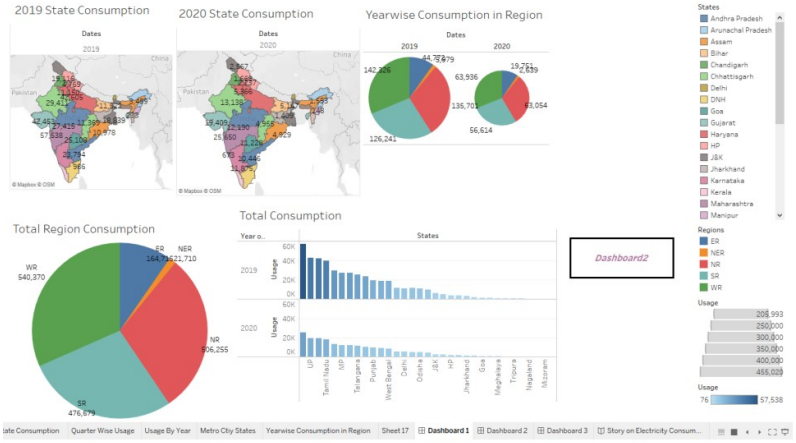


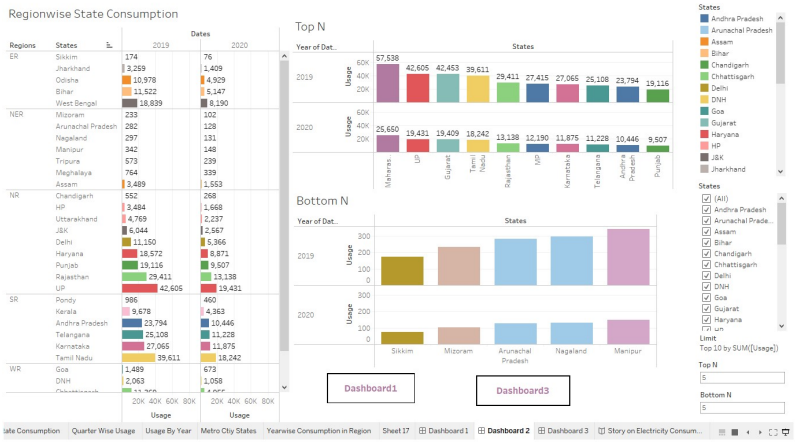
2.2 IDEATION & BRAINSTORMING

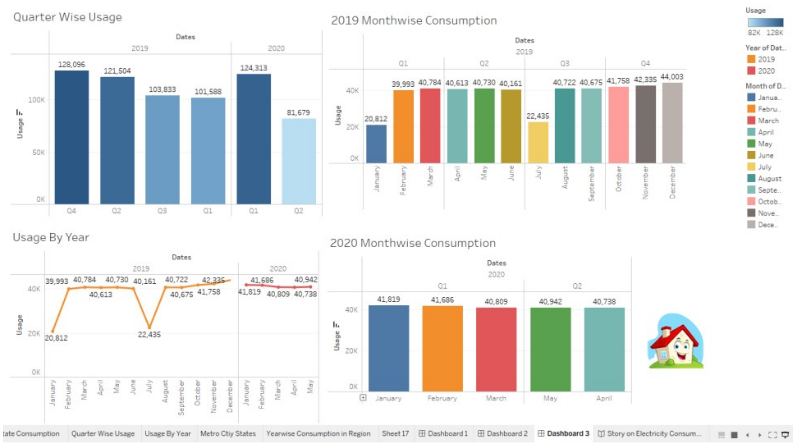


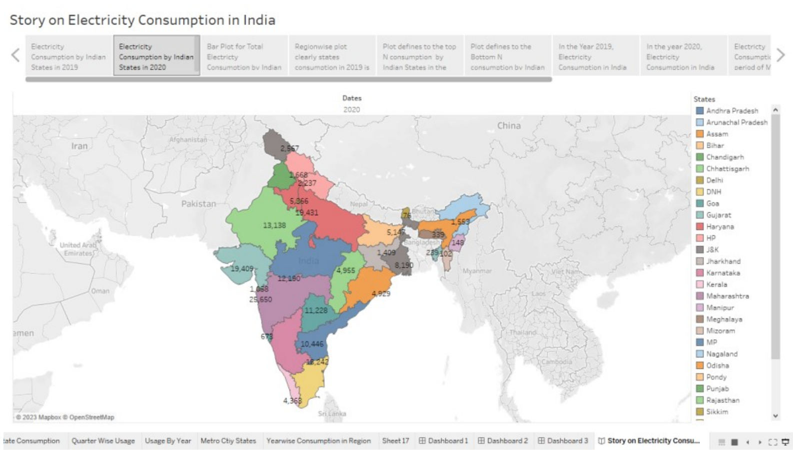
Here we placed our empathy map and brainstorming screenshots.

3. RESULTS






Quarter Wise Usage
Dates
2019
2020
128,096
121,504
103,833
101,588
124,313
81,679
Q4
Q2
Q3
Q1
Q1
Q2
2019 Monthwise Consumption
Q1
Q2
Q3
Q4
20,812
39,993
40,784
40,613
40,730
40,161
22,435
40,722
40,675
41,758
42,335
44,003
Usage By Year
2020 Monthwise Consumption
41,819
41,686
40,809
40,942
40,738
January
February
March
May
April
Year of Dat..
2019
2020
Month of D..
Story on Electricity Consum..


Story on Electricity Consumption in India
Electricity Consumption by Indian States in 2019
Electricity Consumption by Indian States in 2020
Bar Plot for Total Electricity Consumption by Indian
Regionwise plot clearly states consumption in 2019 is
Plot defines to the top N consumption by Indian States in the
Plot defines to the Bottom N consumption by Indian
In the Year 2019, Electricity Consumption in India
In the year 2020, Electricity Consumption in India
Dates
2020
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
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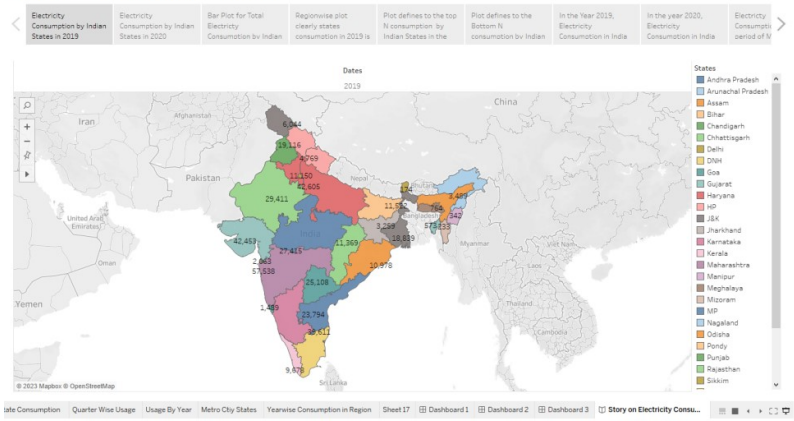
Story on Electricity Consumption in India



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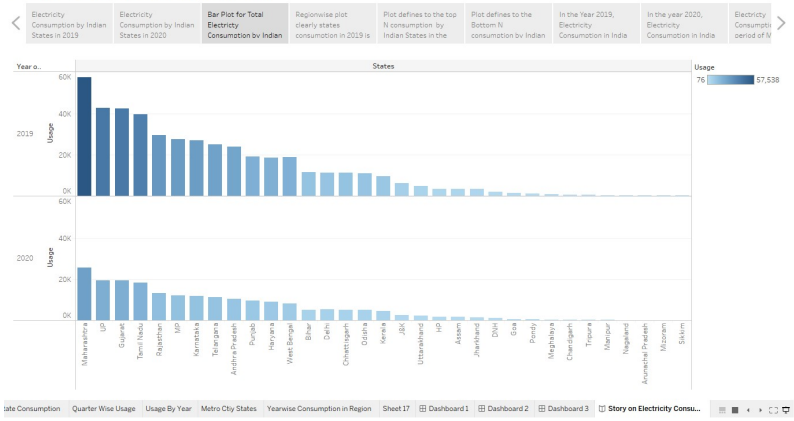
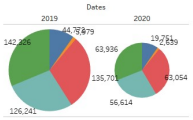
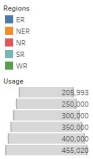


Story on Electricity Consumption in India

Electricity Consumption by Indian States in 2019 | Electricity Consumption by Indian States in 2020 | Bar Plot for Total Electricty Consumption by Indian | Regionwise plot clearly states consumption in 2019 is | Plot defines to the top N consumption by Indian States in the | Plot defines to the Bottom N consumption by Indian | In the Year 2019, Electricity Consumption in India | In the year 2020, Electricity Consumption in India | Electricty Consumption of M

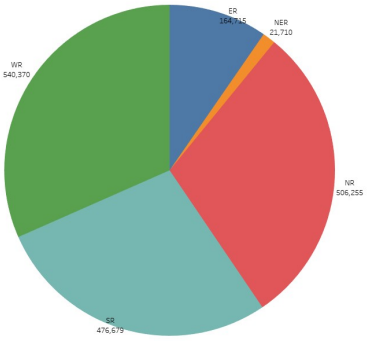


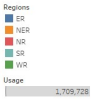


late Consumption | Quarter Wise Usage | Usage By Year | Metro Ctiy States | Yearwise Consumption in Region | Sheet 17 | Dashboard 1 | Dashboard 2 | Dashboard 3 | Story on Electricity Consu...

Story on Electricity Consumption in India

plot ... in 2019 is | Plot defines to the top N consumption by Indian States in the | Plot defines to the Bottom N consumption by Indian | In the Year 2019, Electricity Consumption in India | In the year 2020, Electricity Consumption in India | Electricty Consumption for period of March to | The most Electricty Consumption is higher in the Western Region | Maharashtra has highest usage of Electricty in both the | In the year 2020 the Electricity Consumption was





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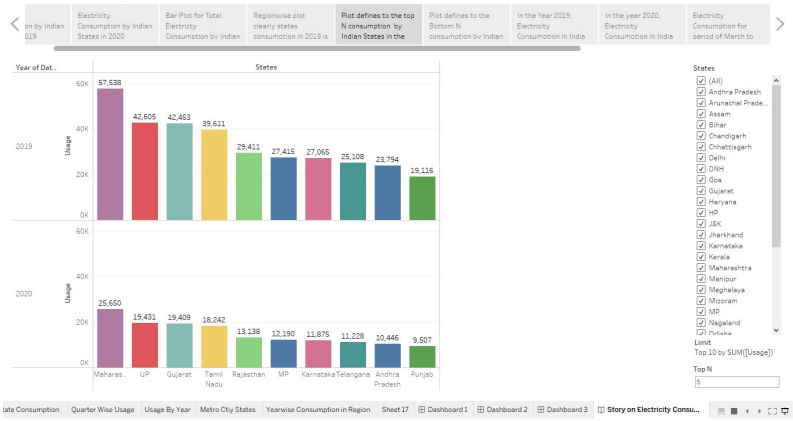
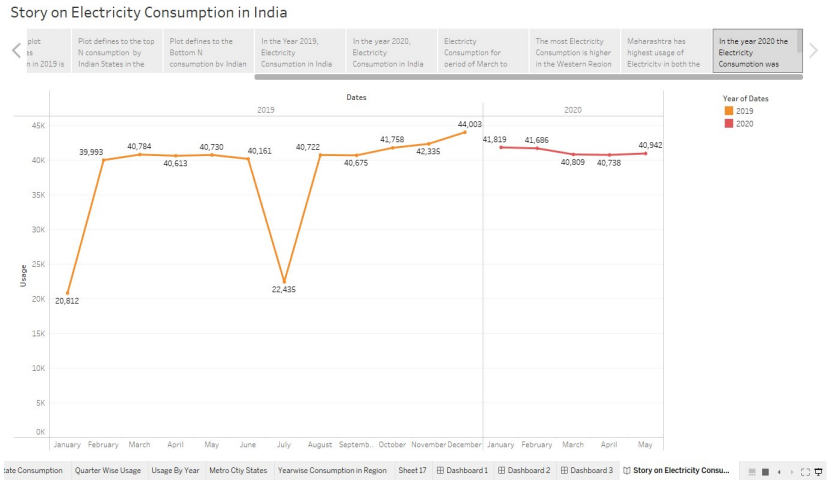


Story on Electricity Consumption in India



4 ADVANTAGES & DISADVANTAGES

ADVANTAGES

1. It s a clean, safe, cheap and convenient source of energy.
2. Lower maintenance cost.
3. More efficient.
4. No tailpipe emission.
5. It doesn’t require as many employees.
6. Reduces green gas emission.
7. Makes barely and pollution compare to other ways of creating or generating electricity.

8. Relatively low maintenance cost
9. Hydroelectricity produces no gas emissions or waste
10. A state can operate and run for long periods of time

DISADVANTAGES

1. More expensive than gasoline
2. Loss of fish species
3. Dependent on precipitation
4. Damming can cause loss of land suitable for agriculture as well as recreation
5. Cost for constructions
6. In electricity, there are a limited number of feasible sites for a large number of dams.

5 APPLICATIONS

Energy storage applications are used to meet peak power demands and high power switching in a short time.

Energy conservation can be as simple as turning off lights or appliances

It is inevitable to use energy storage applications within advanced systems.

Electricity can be used for running computers and some appliances home heating and even transportation.

Electricity is used by industry, households and business accounting for 18% of end use energy worldwide.

6 CONCLUSIONS

ELECTRICITY CONSUMPTION STATES:

Maharashtra is the highest electricity consumption user of India.

Gujarat is the second highest electricity consumption user of India.

Sikkim is the lowest electricity consumption user of India.

Electricity consumption before and during lockdown in India

Electricity consumption was more in 2019 in month of Month-June before the lockdown.

Electricity consumption was less in 2020 in month of March-June during the lockdown.

ELECTRICITY CONSUMPTION IN QUARTERS:

Electricity consumption in 2019 for Quarter 3 was Highest.

Electricity consumption in 2019 for Quarter 1 was lowest.

Electricity consumption in 2020 for Quarter 3 was lowest.

Electricity consumption in 2020 for Quarter 1 was Highest.

ELECTRICITY CONSUMPTION IN REGIONS:

Total electricity consumption in western region is Highest.

Total electricity consumption in north eastern region is Lowest.

Electricity consumption in 2020 for Quarter 3 was lowest.

Electricity consumption in 2020 for Quarter 1 was Highest.

7 FUTURE SCOPES

The energy transition is not only new ways of generating electricity. It is also about new ways of using it. Electricity will largely replace petrol and diesel as a fuel for road vehicles. I t will also replace the natural gas and oil we burn to heat our homes and run our industries. The over expanding industrialization and urbanization will primarily drive the energy demand that is forecasted to reach 405gigawatts of renewable energy capacity by 2030.