

PROJECT DOCUMENTATION

PLUGGING INTO FUTURE : AN EXPLORATION OF THE ELECTRICITY CONSUMPTION PATTERNS

INTRODUCTION:

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 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.

Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants.

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 Statewise, Regionwise and Overall Electricity consumption in India.

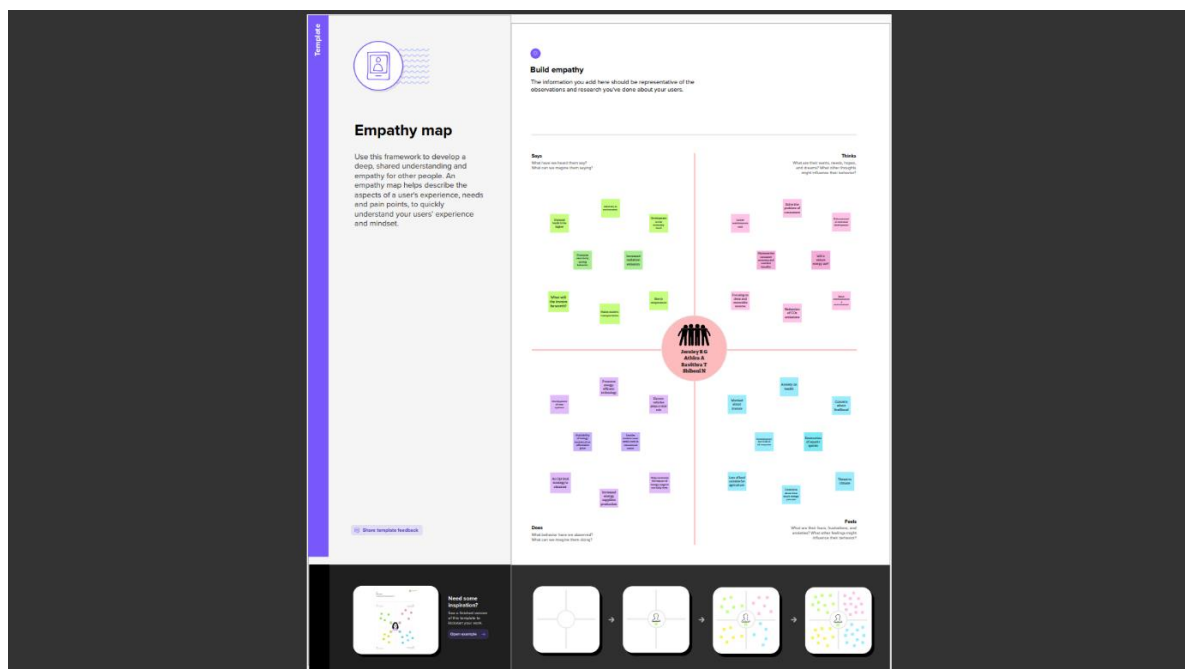
PURPOSE:

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

PROBLEM DEFINITION & DESIGN THINKING:

EMPATHY MAP:

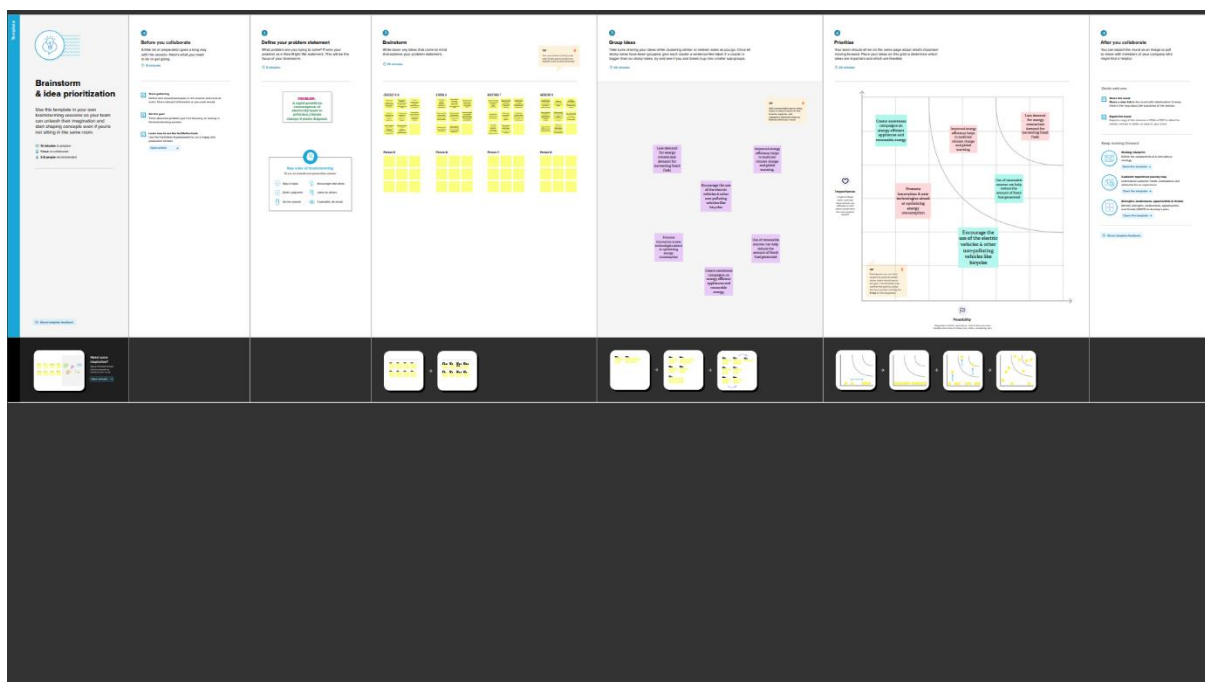
An empathy map is a template that organizes a user's behaviours and feelings to create a sense of empathy between the user and the team. The empathy map represents a principal user and helps teams better understand their motivations, concerns, and user experience.



IDEATION & BRAINSTORMING MAP :

Brainstorming is a group problem-solving method that involves the spontaneous contribution of creative ideas and solutions. This technique requires intensive, freewheeling discussion in which every member of the group is encouraged to think aloud and suggest as many ideas as possible based on their diverse knowledge.

The focus of our brainstorm was how to solve the environmental issues caused by high electricity consumption.



RESULT:

OUTPUT OF THE PROJECT:

The final findings of the project are as follows:

- In 2019, electricity consumption in India was highest in July followed by August & December.
- In 2020, electricity consumption in India was highest in January.
- Electricity consumption for period of March to June was less in 2020 as compared to 2019 because of lockdown.
- The most electricity consumption is highest in Western Region(WR) whereas North Eastern Region(NER) has less consumption.
- Maharashtra has the highest usage of electricity in both 2019 & 2020.
- In the year 2019, the electricity consumption was more as compared to 2020 in India.

The following screenshots clearly shows the output of the project:

ADVANTAGES & DISADVANTAGES OF THE PROPOSED SOLUTIONS:

ADVANTAGES:

- New technologies aims at optimising energy consumption.
- Increased use of the electric vehicles
- Reduced green house gas emissions.
- Increased use of renewable sources instead of fossil fuels
- Energy efficiency helps to maintain climate change and global warming .
- Reduces carbon foot prints.

DISADVANTAGES:

- Renewable energy technologies would lack the ability to generate any electricity.
- Lack of sufficient knowledge on how to effectively harness these forms of energy makes the installation and maintenance cost for such facilities quite high.
- If renewables are not given a political priority, then the industry tends to falter, and innovation is reduced in favour of non-renewable options.
- Renewable energy may be a better option for emission than fossil fuels, but they are not completely free from pollution.

APPLICATIONS:

- Renewable energy is often used for electricity generation, heating and cooling. Renewable energy projects are typically

large-scale, but they are also suited to rural and remote areas and developing countries, where energy is often crucial in human development.

- Rise in job creation in renewable power industries such as solar and wind.
- Recent advances in capture and storage, along with the global drive towards Net Zero, has created an expansion in renewable and green energy production.
- These advances range from small-scale production, such as placing of solar panels on a home, to large-scale facilities like offshore wind farms.

CONCLUSION:

The project was on the topic “**PLUGGING INTO FUTURE : AN EXPLORATION OF THE ELECTRICITY CONSUMPTION PATTERNS**”. The main objective of the project was to explore the electricity consumption in India. At first the ideas & solutions for the problem was shared by the team in the Empathy map and Brainstorming & Idea Prioritization. Collecting the database & storing it in the Microsoft SQL is the process done next. Using tableau desktop, we made number of visualizations based on the datas given. Created dashboard to show a comprehensive overview of data from different sources. Story has been created as a sequence of visualizations that work together to convey information. Aggregated information to create a web integration of the dashboard & story created in tableau using embedded link in the html. Finally video demonstration was made with respect to our project end to end solutions.

FUTURE SCOPE:

- Renewable energy looks set to be large part of the future energy mix along with other clean sources as nuclear power.
- Drives towards a greener future for electricity production.
- Rise in job creation in renewable power industries such as solar, wind etc.
- This trend looks set to continue as governments strive to reach net zero.

DOCUMENTATION BY

JEROLEY R G

ATHIRA A

BAVITHRA T

SHIBONI N