

Project Report Template

1.INTRODUCTION

1.1 Overview

Plugging Into Future: An Exploration Of Electricity Consumption Patterns.

Project description:

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.

1.2 Purpose

From this project we understand the electricity consumption patterns on various states of India. Knowledge about the production and usage of electricity is gained and new ideas about the consumption patterns were developed.

Production by various sectors were discussed and the distribution of electricity to various sectors of India is discussed and wide information about the data and analysis of electricity consumption patterns in India is gained . The change in electricity consumption patterns in future maybe achieved from this project.

2. Problem Definition and Design Thinking.

2.1 Empathy map

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Build empathy

The information you add here should be representative of the observations and research you've done about your users.

Says

What have we heard them say?
What can we imagine them saying?

I'm interested in exploring the trends and patterns of electricity consumption in the future.

I want to understand how environmental concerns will impact the way we use electricity.

I want to understand how technology, societal changes.

To discussions about the potential of new technologies to revolutionize the way we consume electricity.

I'm worried that if we don't change our electricity consumption habits, we will continue to harm the environment and deplete natural resources.

I hope that electricity is given to all sectors.

Thinks

What are their wants, needs, hopes, and dreams? What other thoughts might influence their behavior?

I'm also curious to see how new technologies like renewable energy and smart grids will change the way we consume electricity.

I think that electricity generation through nuclear power plants will increase.

Reads articles and reports about energy consumption trends and technology advancements.

Engages in online forums to discuss the topic.

Engages with others on social media.

May also attend conferences or webinars to learn more about the latest developments in the field.

Curious

Interested

Hopefull

Worried

Does

What behavior have we observed?
What can we imagine them doing?

Feels

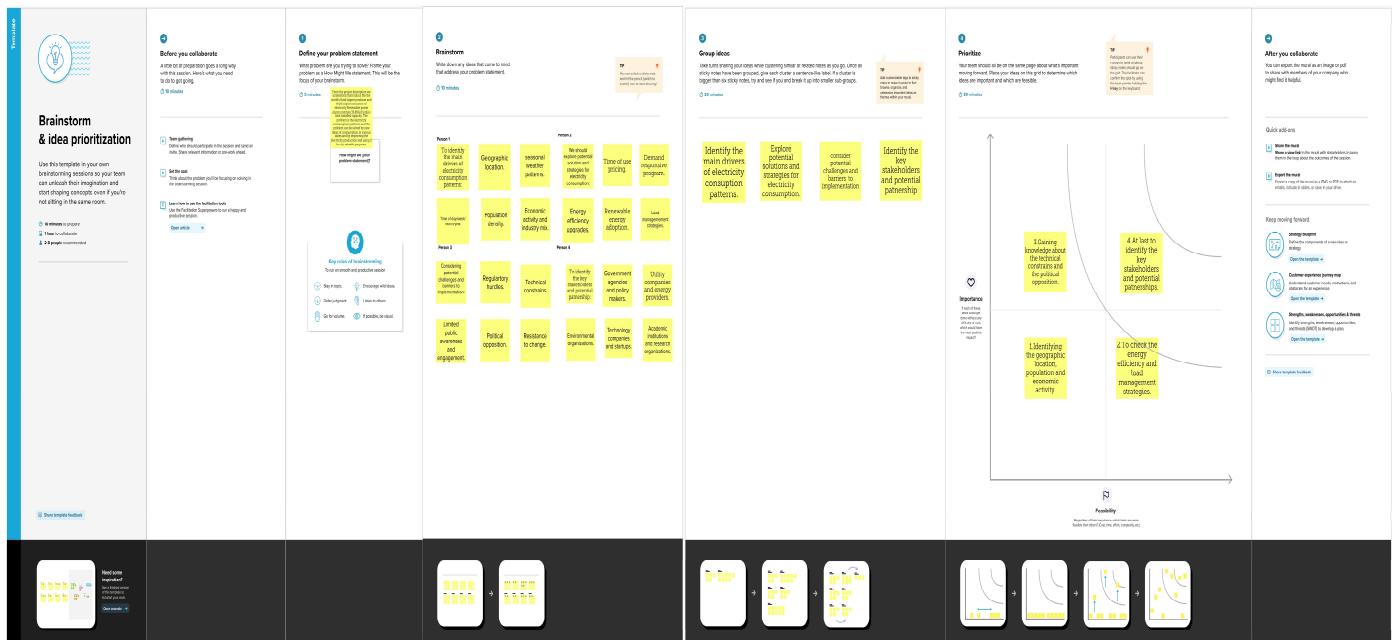
What are their fears, frustrations, and anxieties? What other feelings might influence their behavior?



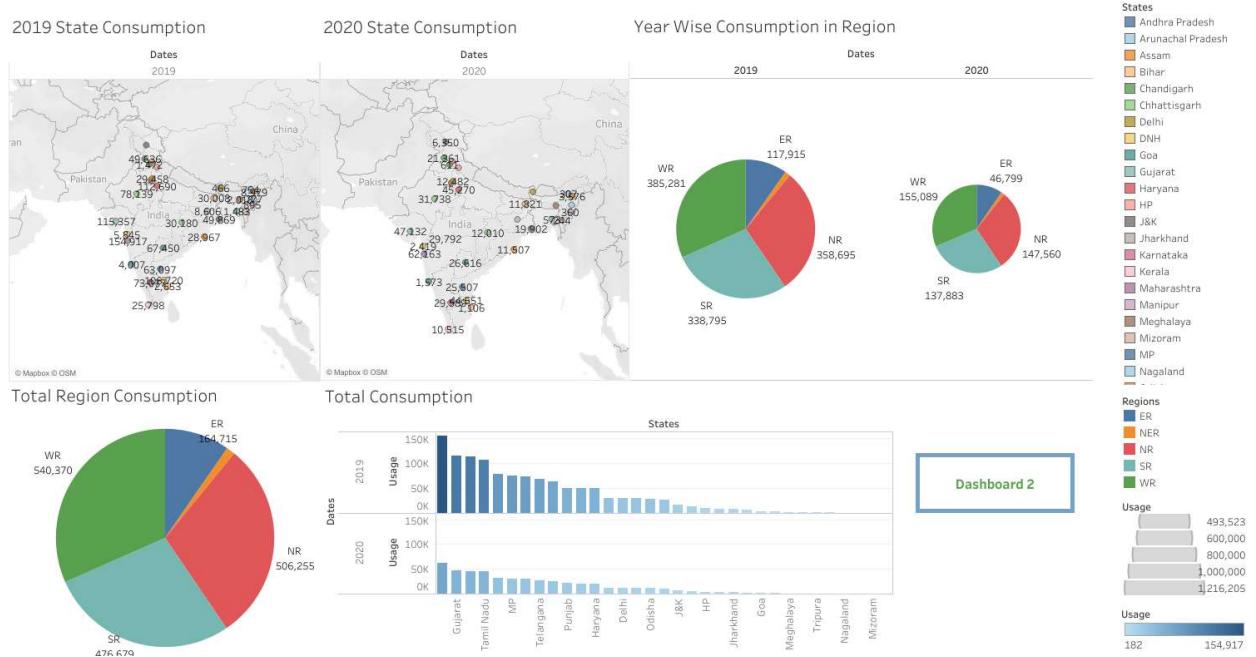
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2.2 Ideation and Brainstorming Map.

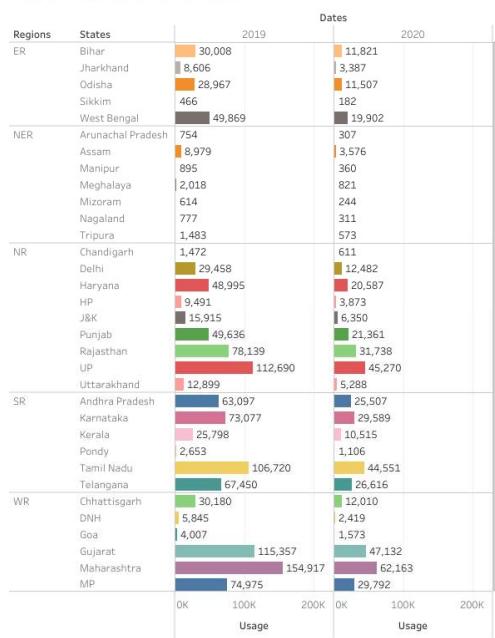


3.Result

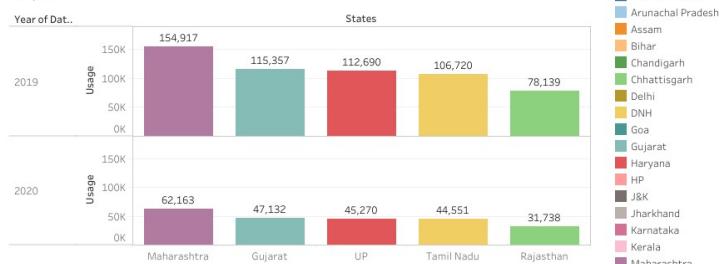


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Regionwise State consumption



Top N



Bottom N



Dashboard 1

Dashboard 3

States

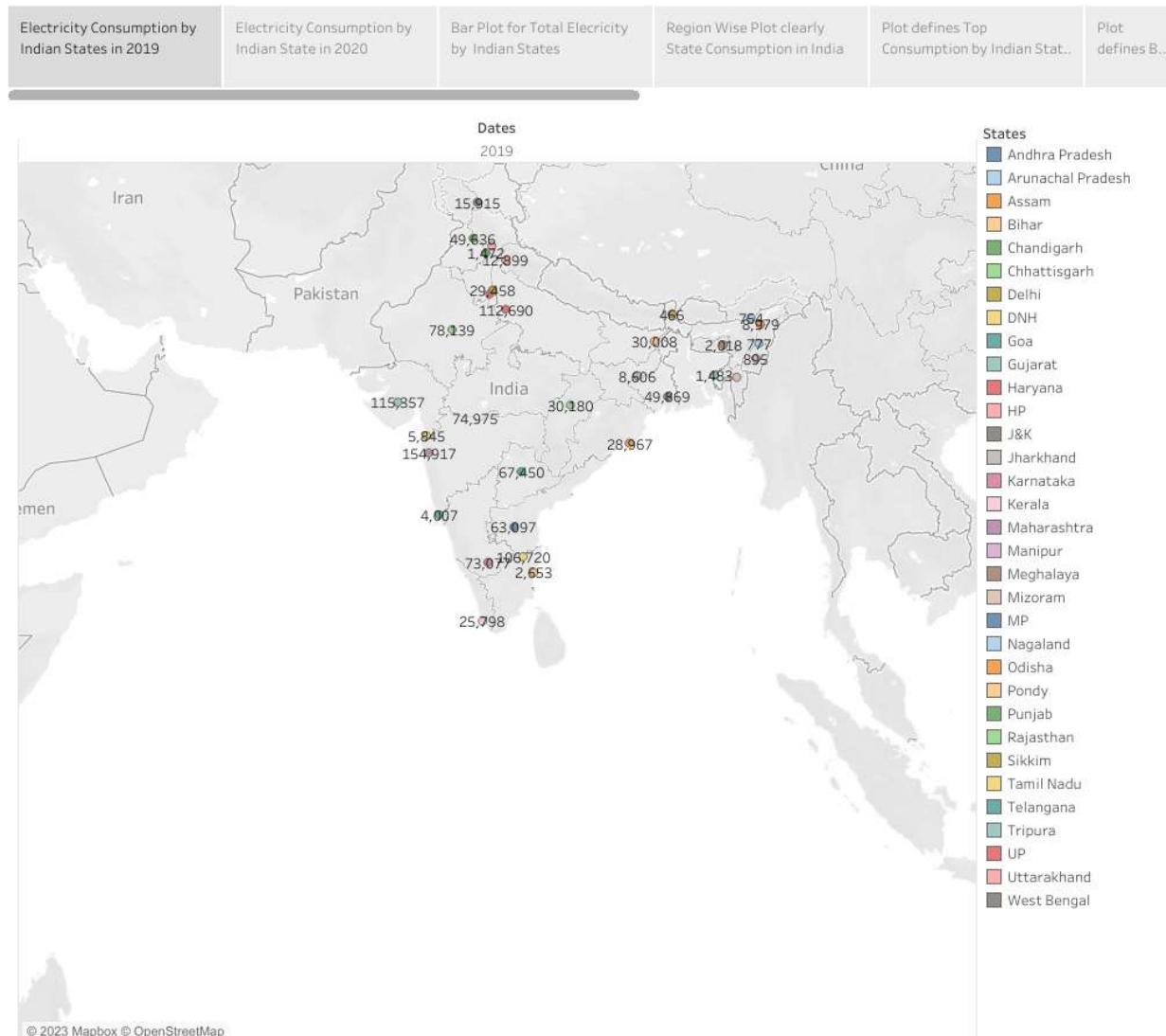
- Andhra Pradesh
- Arunachal Pradesh
- Assam
- Bihar
- Chandigarh
- Chhattisgarh
- Delhi
- DNH
- Goa
- Gujarat
- Haryana
- HP
- J&K
- Jharkhand
- Karnataka
- Kerala
- Maharashtra
- Manipur
- Meghalaya
- Mizoram
- MP
- Nagaland
- Odisha
- Pondy
- Punjab
- Rajasthan
- Sikkim
- Tamil Nadu
- Tripura
- UP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

Top N
5

Bottom N
5

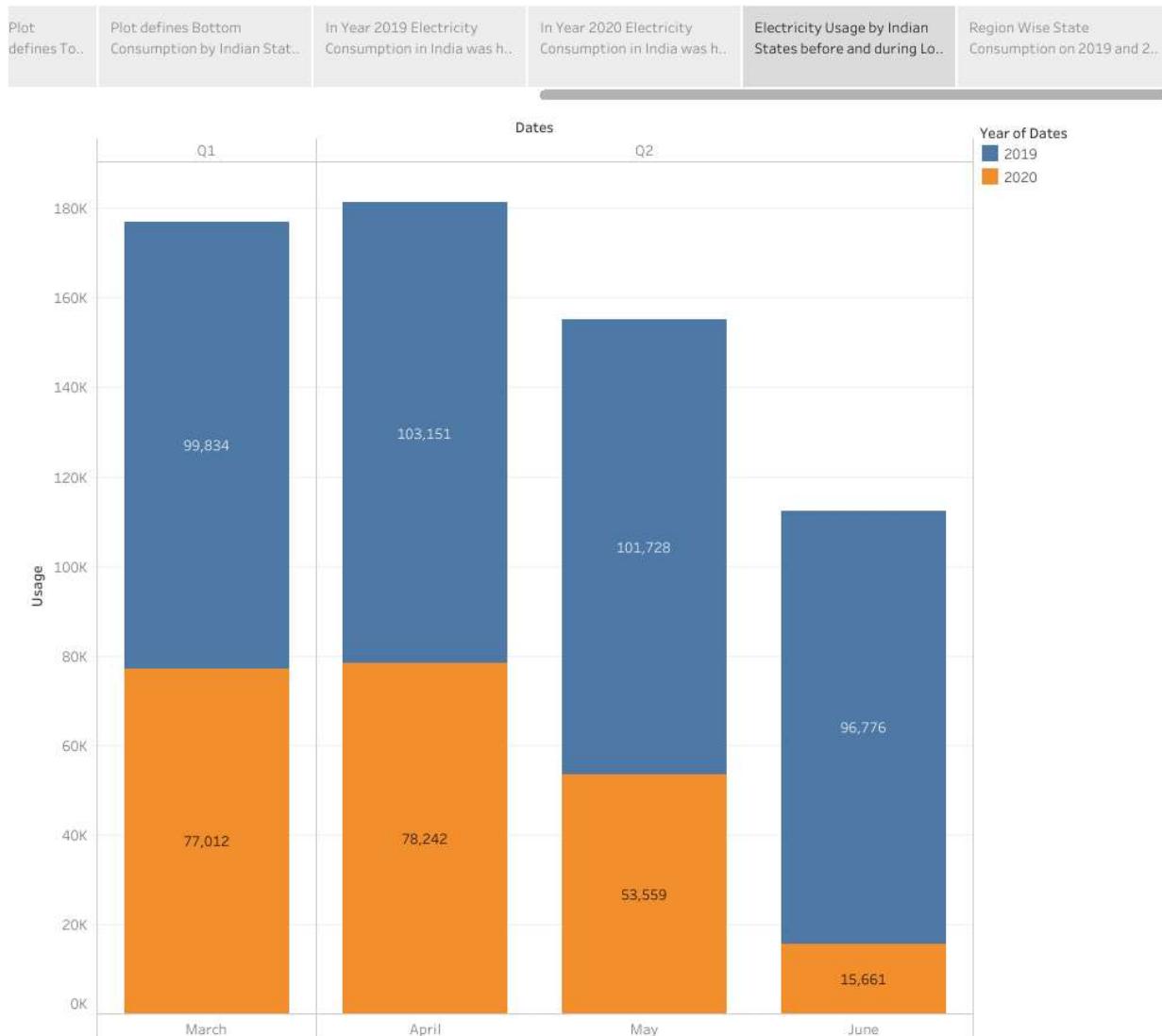
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Story on Electricity Consumption in India



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Story on Electricity Consumption in India



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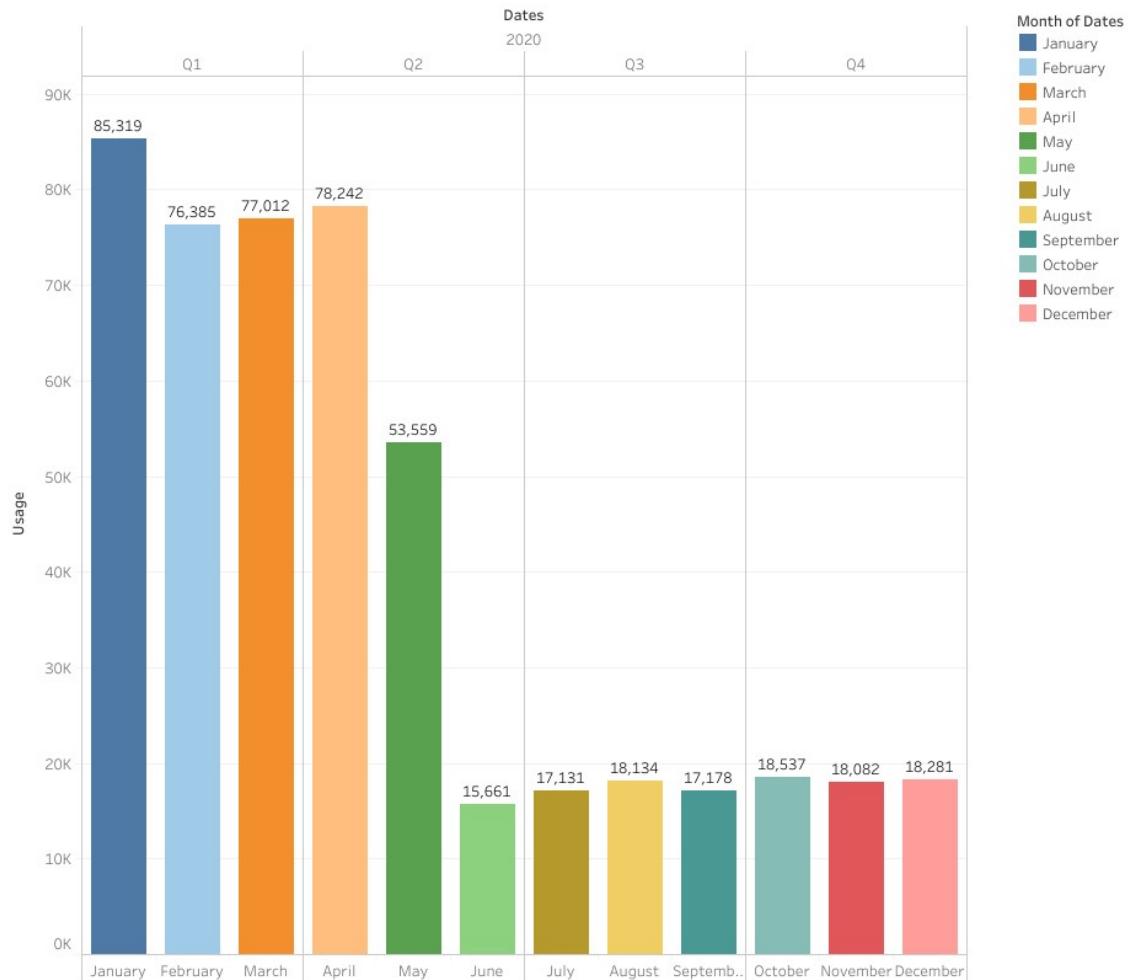
Story on Electricity Consumption in India

Plot defines To..	Plot defines Bottom Consumption by Indian Stat...	In Year 2019 Electricity Consumption in India was h...	In Year 2020 Electricity Consumption in India was h...	Electricity Usage by Indian States before and during Lo...	Region Wise State Consumption on 2019 and 2020	
Regions	States			Dates		States
		2019		2020		
ER	Bihar	30,008		11,821		Andhra Pradesh
	Jharkhand	8,606		3,387		Arunachal Pradesh
	Odisha	28,967		11,507		Assam
	Sikkim	466		182		Bihar
	West Bengal	49,869		19,902		Chandigarh
NER	Arunachal Pradesh	754		307		Chhattisgarh
	Assam	8,979		3,576		Delhi
	Manipur	895		360		DNH
	Meghalaya	2,018		821		Goa
	Mizoram	614		244		Gujarat
	Nagaland	777		311		Haryana
	Tripura	1,483		573		J&K
NR	Chandigarh	1,472		611		Jharkhand
	Delhi	29,458		12,482		Karnataka
	Haryana	48,995		20,587		Kerala
	HP	9,491		3,873		Maharashtra
	J&K	15,915		6,350		Manipur
	Punjab	49,636		21,361		Meghalaya
	Rajasthan	78,139		31,738		Mizoram
	UP	112,690		45,270		MP
	Uttarakhand	12,899		5,288		Nagaland
						Odisha
SR	Andhra Pradesh	63,097		25,507		Pondy
	Karnataka	73,077		29,589		Punjab
	Kerala	25,798		10,515		Rajasthan
	Pondy	2,653		1,106		Delhi
	Tamil Nadu	106,720		44,551		DNH
	Telangana	67,450		26,616		Goa
WR	Chhattisgarh	30,180		12,010		Gujarat
	DNH	5,845		2,419		Haryana
	Goa	4,007		1,573		J&K
	Gujarat	115,357		47,132		Jharkhand
	Maharashtra		154,917	62,163		Karnataka
	MP	74,975		29,792		Kerala
						Maharashtra
		0K	50K	100K	150K	
		Usage		Usage		

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Story on Electricity Consumption in India

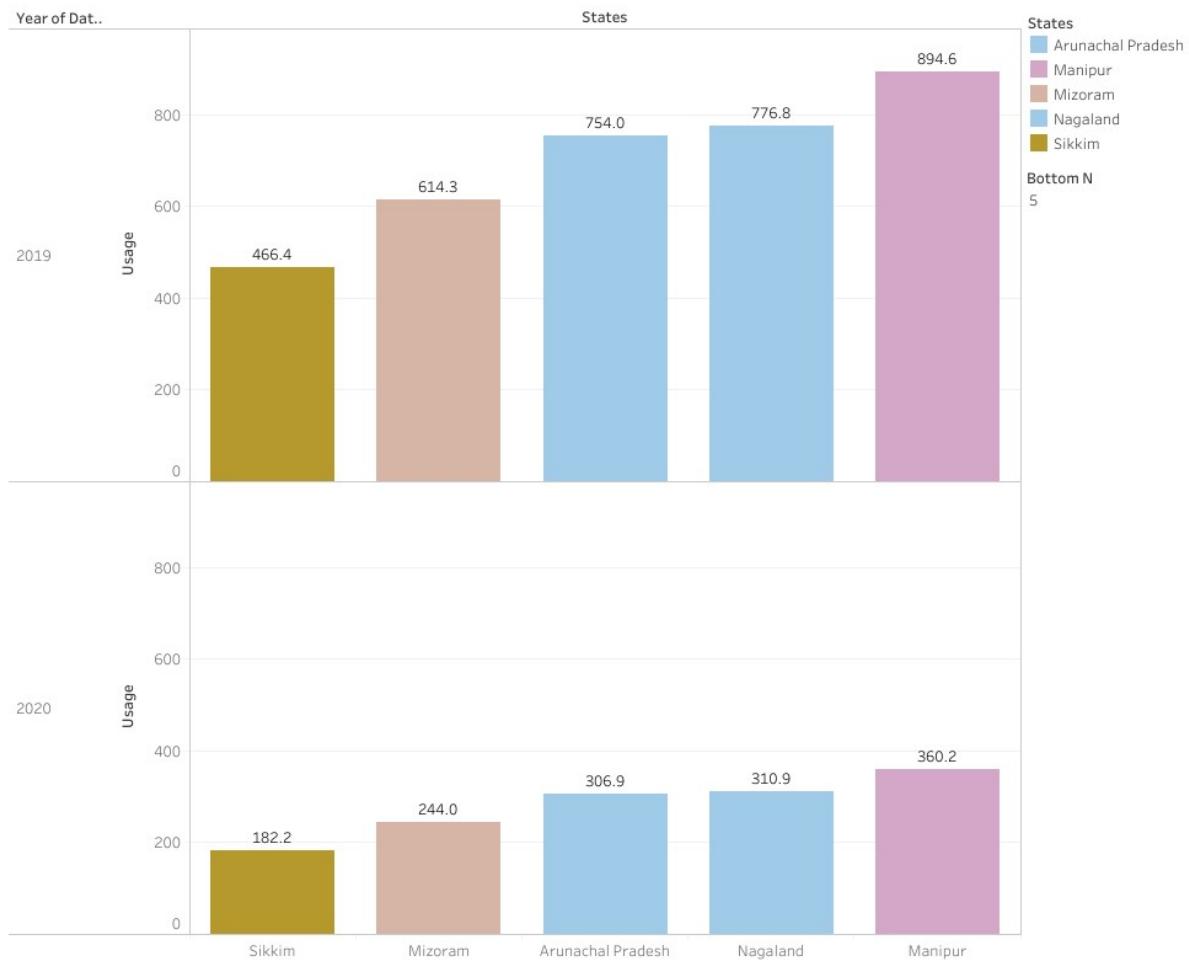
Plot defines To..	Plot defines Bottom Consumption by Indian Stat..	In Year 2019 Electricity Consumption in India was h..	In Year 2020 Electricity Consumption in India was h..	Electricity Usage by Indian States before and during Lo..	Region Wise State Consumption on 2019 and 2..
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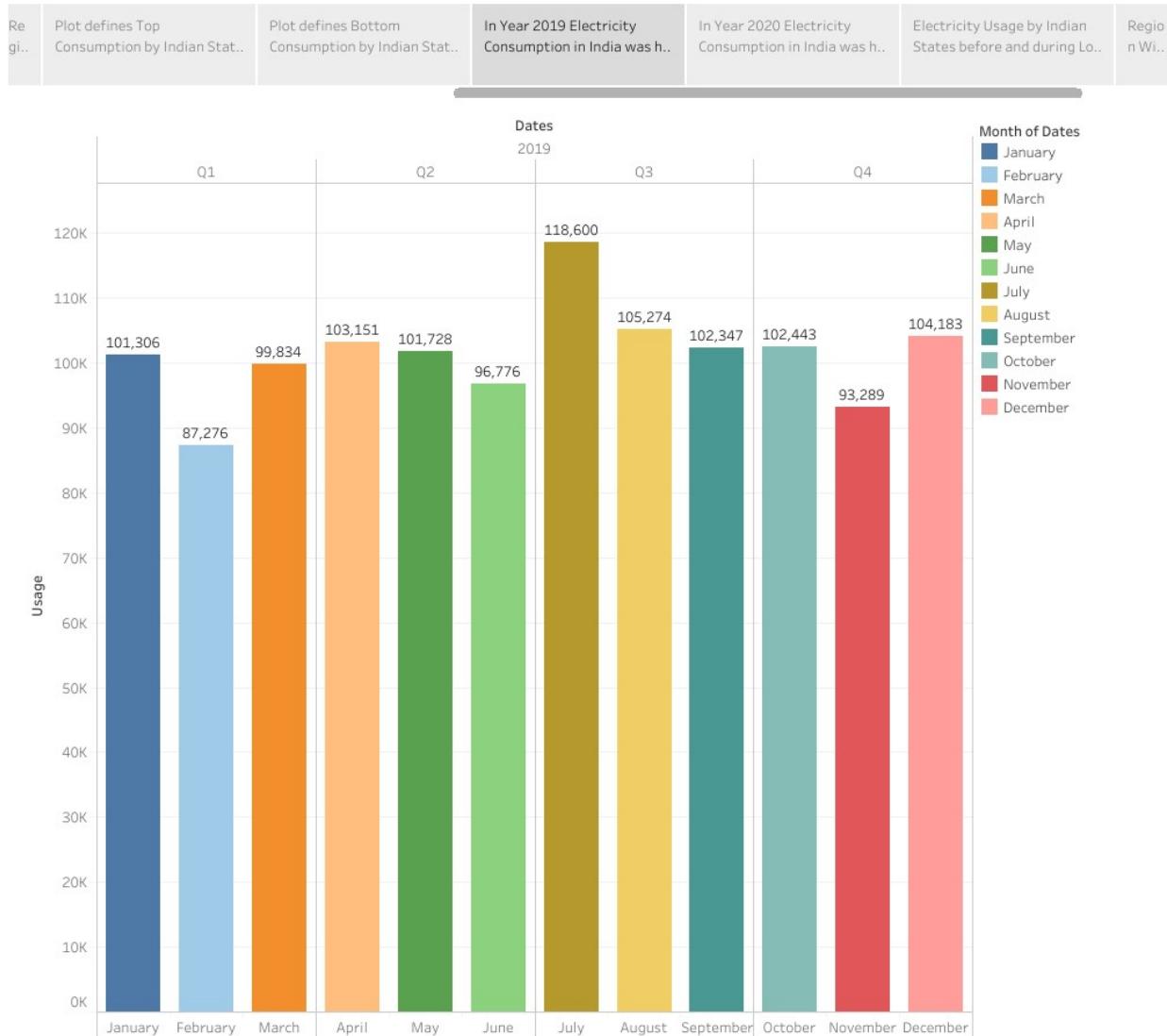
Story on Electricity Consumption in India

Ba r ..	Region Wise Plot clearly State Consumption in India	Plot defines Top Consumption by Indian Stat...	Plot defines Bottom Consumption by Indian Stat...	In Year 2019 Electricity Consumption in India was h...	In Year 2020 Electricity Consumption in India was h..	Electr icity ..
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Story on Electricity Consumption in India



4. ADVANTAGE AND DISADVANTAGE.

ADVANTAGE:

1. Energy conservation: Efficient electricity consumption helps conserve energy resources so unnecessary wastage of electricity can be reduced.
2. Cost savings: Efficient electricity consumption patterns can result in significant cost savings for individual, businesses, and the government.
3. Reduced environmental impact :By consuming electricity more efficiently, the overall demand for electricity can be reduced ,leading to lower need of fossile fuel based power generation.so pollution is decreased.

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4. Rural Electrification, Industrial Development, Economic Growth, etc.,

DISADVANTAGE:

1. Insufficient infrastructure: India's electricity infrastructure faces various challenges, including transmission and distribution losses, outdated equipment, and insufficient capacity. These issues lead to frequent power outages, voltage fluctuations, and grid failures, affecting industries, businesses, and daily life activities.

2. Unequal distribution: There is a significant disparity in electricity consumption patterns between urban and rural areas in India.

3. High transmission and distribution losses: India experiences substantial transmission and distribution losses due to technical inefficiencies, theft, and illegal connections. These losses result in wastage of electricity, financial losses for power distribution companies, and increased electricity prices.

4. Affordability challenges: Electricity tariffs in India can be high, particularly for certain consumer categories. This poses challenges for low-income households and marginalized communities, who may struggle to afford electricity bills. Ensuring affordable and inclusive access to electricity is crucial for social and economic development.

5. APPLICATIONS:

1. Energy Planning and Policy: Understanding electricity consumption patterns helps policymakers in formulating energy planning and policy decisions. It provides insights into peak demand periods, load growth projections, and energy consumption trends.

2. Infrastructure Development: Electricity consumption patterns play a crucial role in infrastructure development projects. It assists in determining the energy requirements of new infrastructure projects, such as urban planning, transportation systems, and industrial zones.

3. Load Forecasting and Demand Management: Electricity consumption patterns help utilities in load forecasting, which is crucial for managing power generation and distribution.

4. Renewable Energy Integration: Electricity consumption patterns are crucial for integrating renewable energy sources into the grid effectively.

5. Demand-Side Management: Electricity consumption patterns facilitate demand-side management strategies, which aim to shift or reduce electricity demand during peak periods.

6. Billing and Tariff Design: Electricity consumption patterns are crucial for accurate billing and tariff design. Utilities use consumption patterns to calculate electricity bills for consumers based on their usage.

6. CONCLUSION:

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Electricity consumption patterns in India have significant implications across various sectors. While electricity is crucial for economic development and improving quality of life, there are certain disadvantages associated with consumption patterns in the country. These include unequal distribution, insufficient infrastructure, dependence on fossil fuels, high transmission and distribution losses, affordability challenges, energy-intensive industries, and lack of awareness and conservation practices.

However, understanding and analyzing electricity consumption patterns also offer numerous opportunities for improvement and optimization. The applications of these patterns include energy planning and policy formulation, infrastructure development, load forecasting and demand management, energy efficiency and conservation, renewable energy integration, demand-side management, and billing and tariff design.

Addressing the challenges associated with electricity consumption patterns in India requires a multi-faceted approach involving investments in infrastructure, renewable energy adoption, policy reforms, awareness campaigns, and energy-efficient practices. By doing so, India can achieve more sustainable and equitable electricity consumption patterns, ensuring reliable energy supply while minimizing environmental impact and promoting inclusive development.

7.FUTURE SCOPE(key aspects to consider):

1. Renewable Energy Expansion.
2. Growing population.
3. Renewable Energy Transition.
4. Energy Efficiency Measures.
5. Electrification of Transportation.
6. Digitalization and IoT.
7. Policy Initiatives.
8. Economic Growth.