



CS595 DATA VISUALISATION

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SUBMITTED TO – DR ASHISH ANAND

About Dataset

- 1. INSTALLED POWER CAPACITY STATEWISE(IN Megawatts)
- ❖ Three Year data(2019,2020,2021) is been provided with each year, month wise installed capacity of each power generation method .

	id	month	region	state	coal	gas	diesel	thermal_total	nuclear	hydro	res	grand_total
0	1	Jan-2019	Northern	Chandigarh	0.0	0.00	0.0	0.00	0.0	0.00	32.40	32.40
1	2	Jan-2019	Northern	Delhi	135.0	2208.40	0.0	2343.40	0.0	0.00	176.21	2519.61
2	3	Jan-2019	Northern	Haryana	5540.0	431.59	0.0	5971.59	0.0	0.00	411.99	6383.58
3	4	Jan-2019	Northern	Himachal Pradesh	0.0	0.00	0.0	0.00	0.0	9809.02	864.50	10673.52
4	5	Jan-2019	Northern	Jammu and Kashmir	0.0	175.00	0.0	175.00	0.0	3449.00	188.88	3812.88

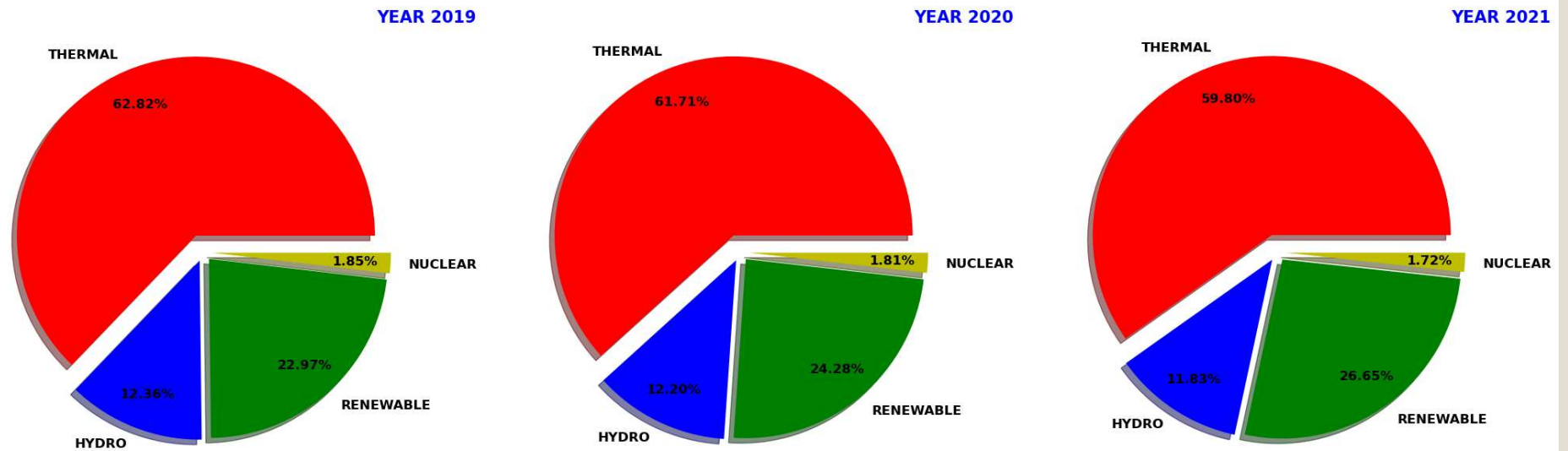
2 . POWER GENERATION

- ❖ Three Year data(2017,2018,2019) of power generation region wise is been provided.
- ❖ The data give the daily power generation by thermal, hydro and nuclear power generation methods
- ❖ The data also give the Actual power generation and the Estimated power generation by different method on daily basis.

index		Date	Region	Thermal Generation Actual (in MU)	Thermal Generation Estimated (in MU)	Nuclear Generation Actual (in MU)	Nuclear Generation Estimated (in MU)	Hydro Generation Actual (in MU)	Hydro Generation Estimated (in MU)
0	0	2017-09-01	Northern	624.23	484.21	30.36	35.57	273.27	320.81
1	1	2017-09-01	Western	1,106.89	1,024.33	25.17	3.81	72.00	21.53
2	2	2017-09-01	Southern	576.66	578.55	62.73	49.80	111.57	64.78
3	3	2017-09-01	Eastern	441.02	429.39	NaN	NaN	85.94	69.36
4	4	2017-09-01	NorthEastern	29.11	15.91	NaN	NaN	24.64	21.21

Understanding The Power Generation Scenario in India

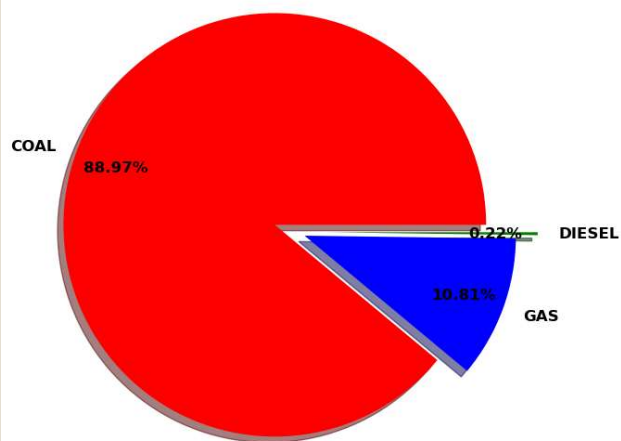
POWER GENERATION SCENARIO IN INDIA



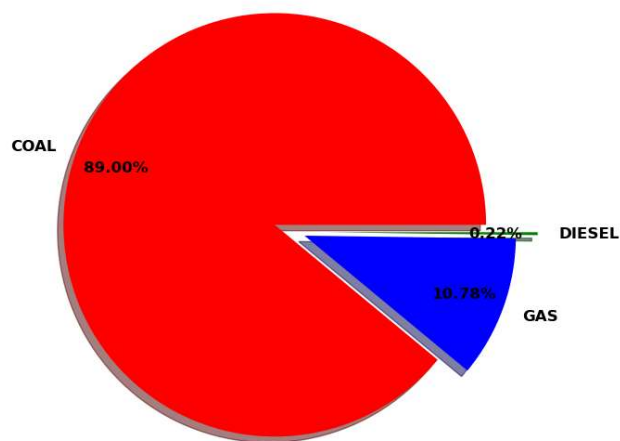
Understanding Thermal Power Generation Scenario in India

THERMAL POWER GENERATION SCENARIO IN INDIA

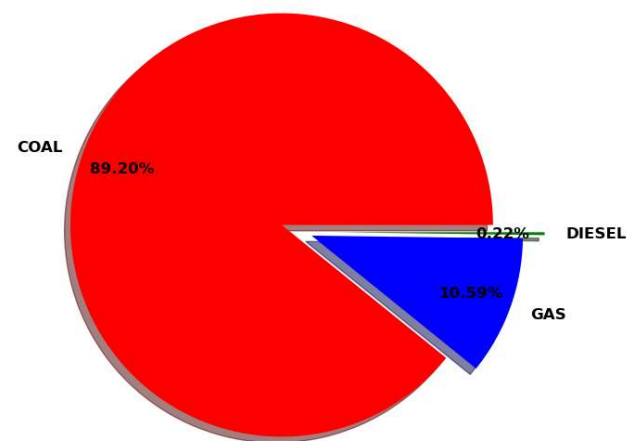
YEAR 2019



YEAR 2020



YEAR 2021



Some Questions

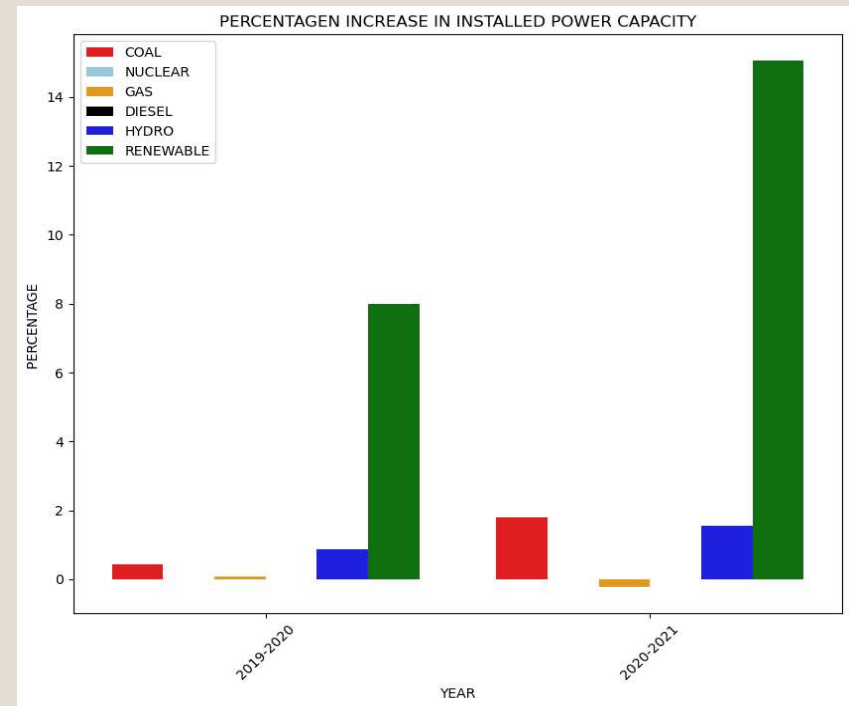
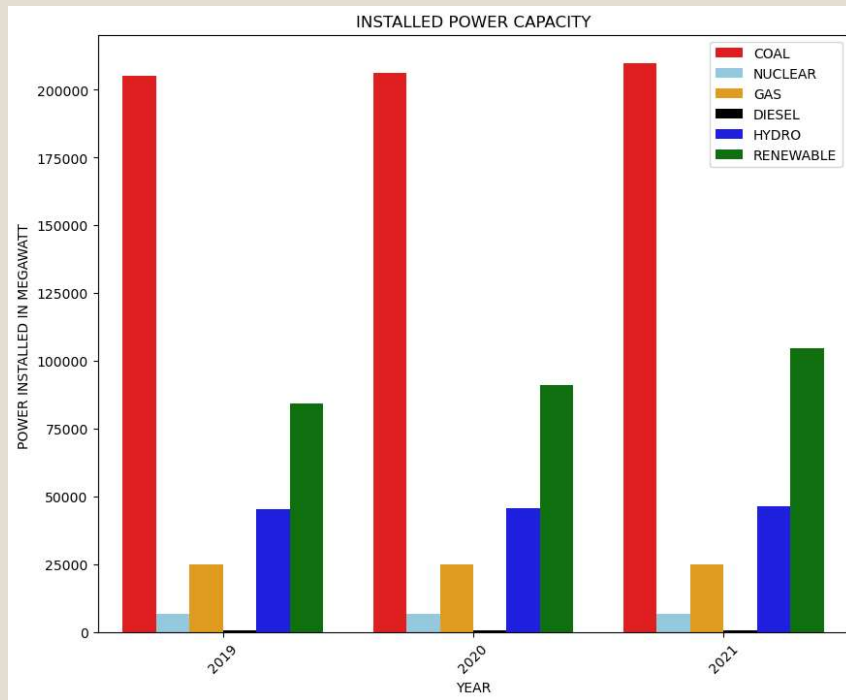
1. WHY THERMAL CONTRIBUTE MORE THAN HALF OF THE ENERGY SUPPLY?

- India, being second-largest coal-producing country in the world , with the production of 767 million tonnes in 2021 and is at 5th place in the countries in term of proven coal reserve.
- Power plant are driven by fuel and coal in India is among the cheapest and abundantly available energy source makes it the economic alternative to go with.

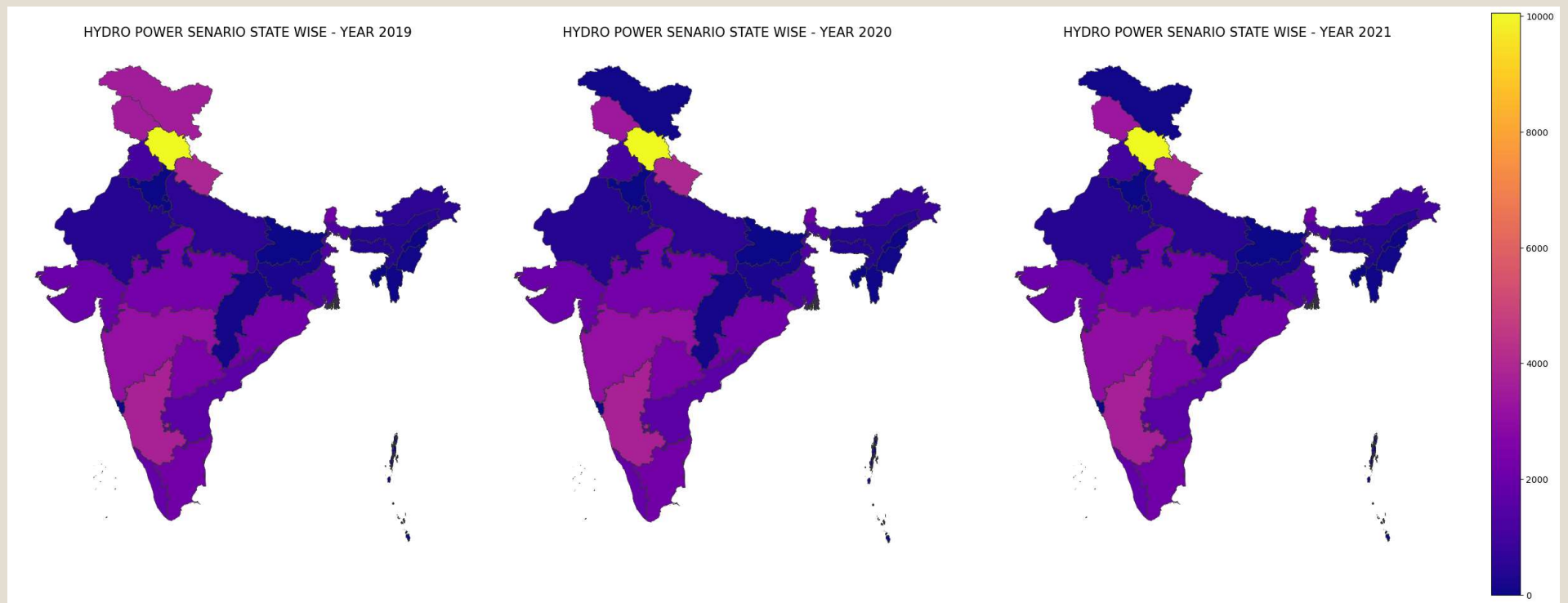
2. WHY NUCLEAR CONTRIBUTION IS SO SMALL?

- Nuclear fuel is very expensive to procure, and the risk associated with the nuclear power plants is also very high which makes it less attractive compared to other power sources.
- Proven fuel reserve in India 129,000 tonnes.

Installed Power Capacity



State-wise Distribution Of Hydro Power

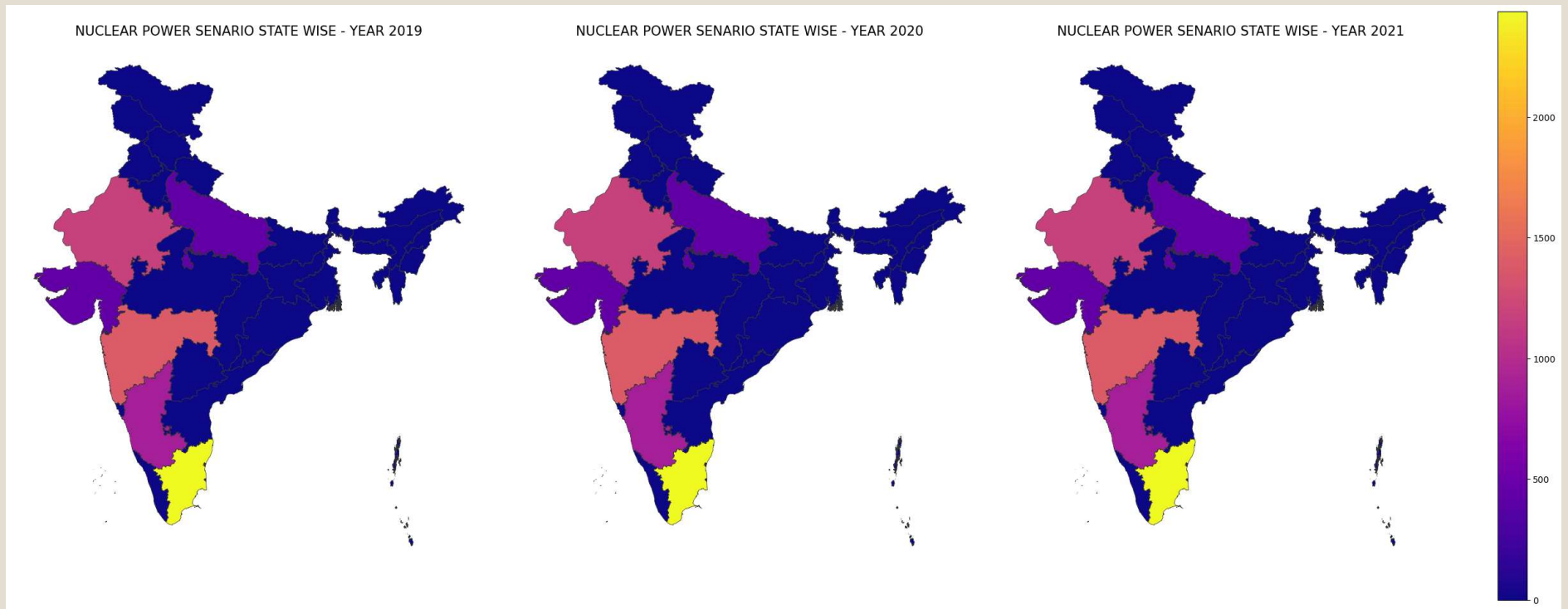


Some Questions

1. WHY HIMACHAL PRADESH IS VERY DOMINATING IN HYDRO POWER PRODUCTIONS?

- ❖ Himachal Pradesh has about twenty five percent of the national potential. About 27,436 MW of hydroelectric power
- ❖ Hydro Power Plants requires year around water supply to maintain sufficient water level in the reservoirs to run Hydel Turbines and in the state some of the major glaciers and frozen lakes provides the year around water supply to such plants
- ❖ Major Rivers like Chenab ,Ravi, Beas, Sutlej and Yamuna are some of the biggest glacial rivers in India

State-wise Distribution Of Nuclear Power

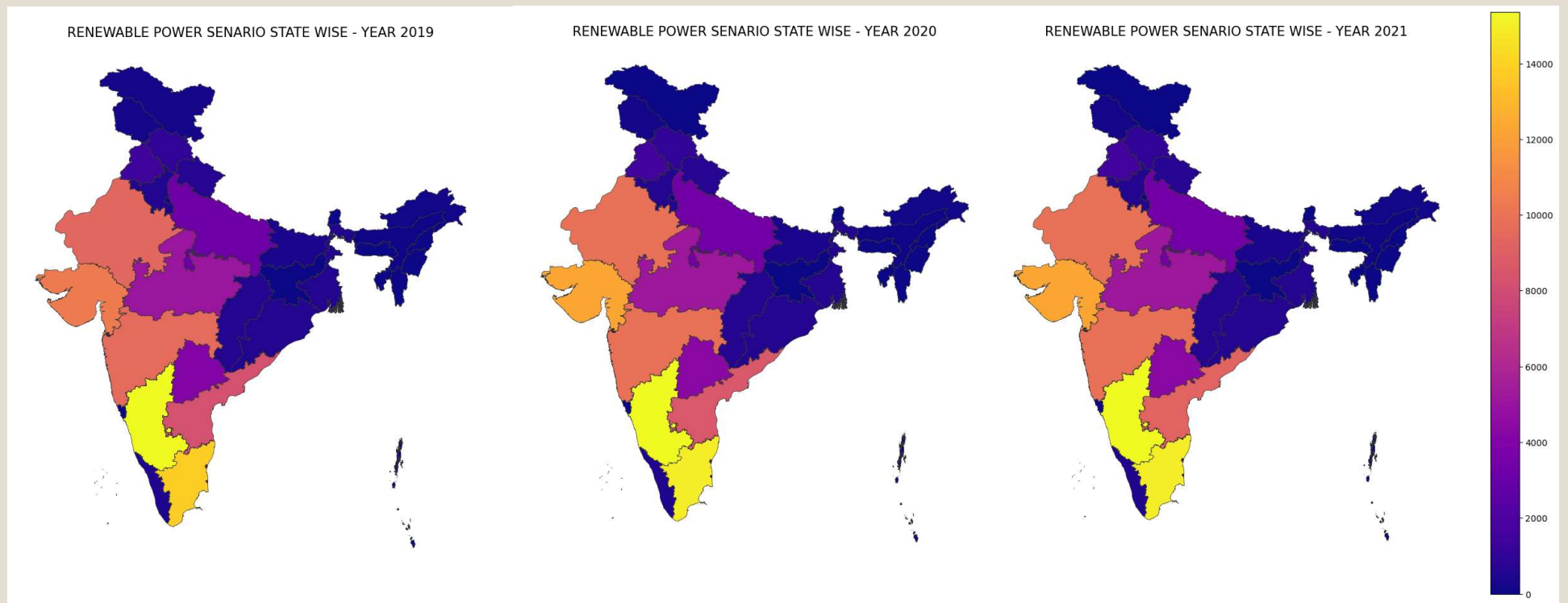


Some Questions

1. WHY TAMIL NADU CONTRIBUTES THE HIGHEST NUCLEAR POWER ?

- ❖ India has a total nuclear power capacity of 6800MW and out of this, Tamil Nadu alone has 2440MW
- ❖ **Kudankulam Nuclear Power Plant** (or Kudankulam NPP or KKNPP) is the largest nuclear power plant in India, situated in Tamil Nadu.
- ❖ Other States Like Rajasthan and UP also Contribute but the Location of Such Plants are Mainly driven by state government policies and availability of water and

State-wise Distribution Of Renewable Power

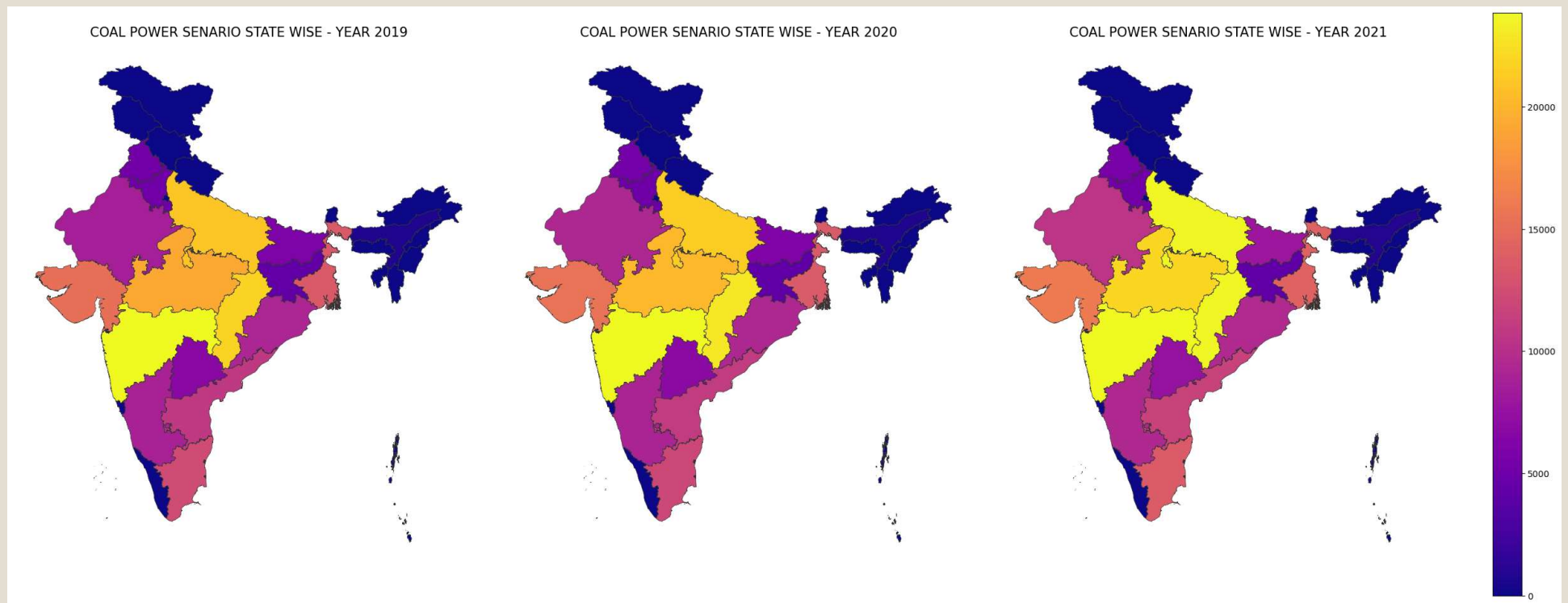


Some Questions

1. WHY THE NORTHERN PART IS CONTRIBUTING VERY LESS AS COMPARED TO SOUTHERN PART IN RENEWABLE POWER?

- ❖ Renewable Source are majorly contributed by Solar And Wind Power Plants
- ❖ Solar Power plants require sunlight to generate electricity, and regions closer to the equator generally receive more sunlight throughout the year. Therefore, southern states and central India region can be suitable locations for installing solar power plants.

State-wise Distribution Of Thermal Power

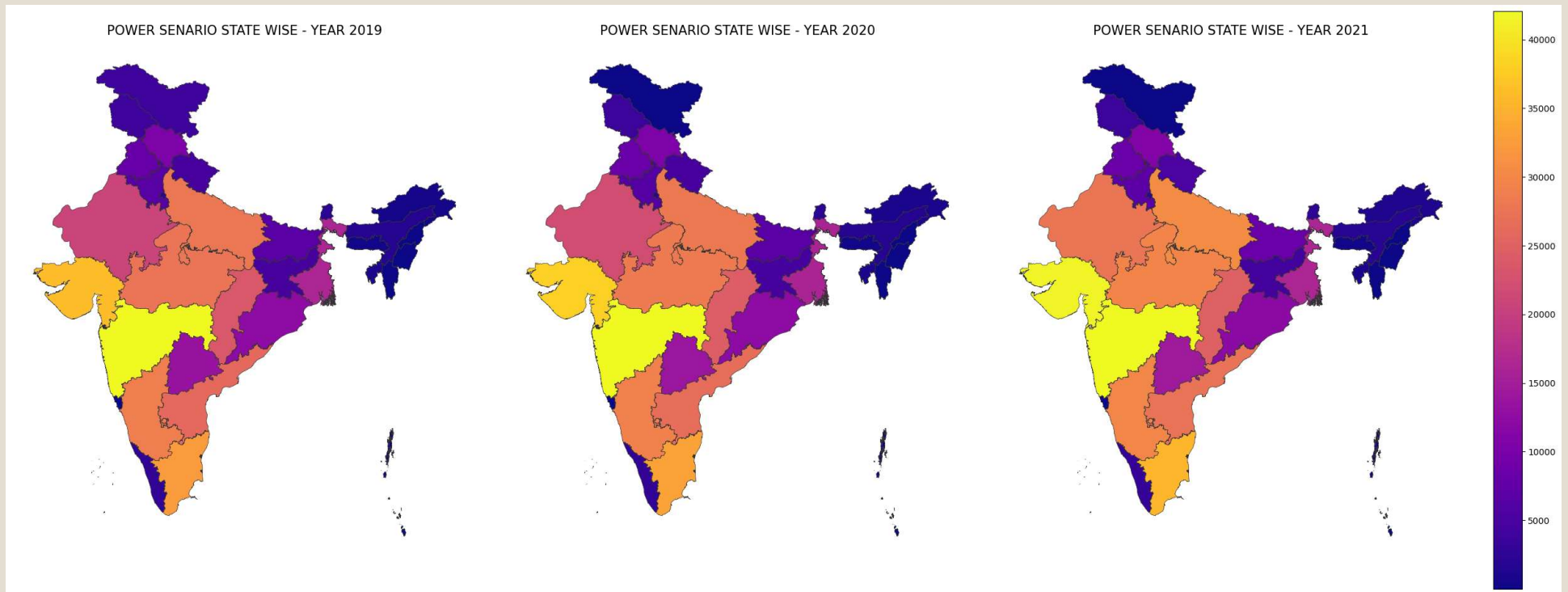


Some Questions

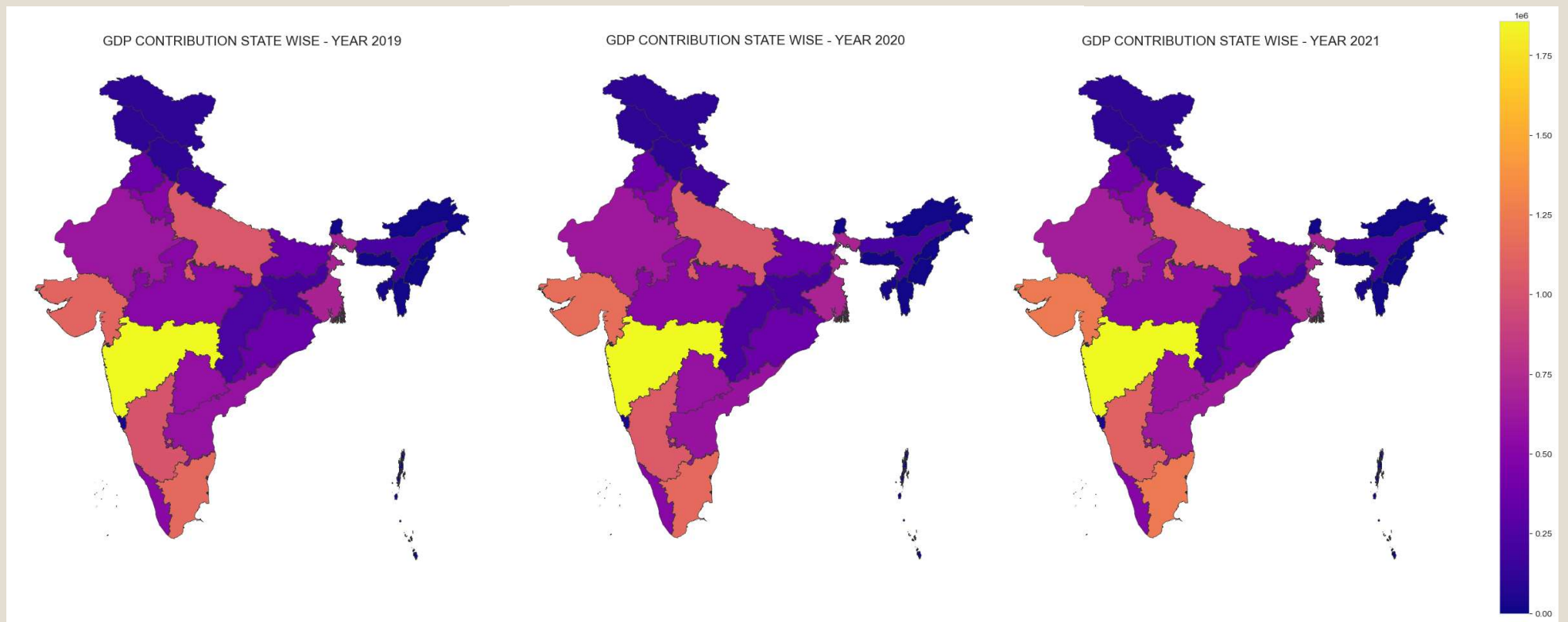
1. WHY THE CENTRAL REGIONS CONTRIBUTES MORE COMPARED TO OTHER STATES?

- ❖ Thermal Power Plants are mainly coal power plants.
- ❖ Coal Power Plants are situated mainly near the regions closer to coal mines and availability of water resources
- ❖ The five largest coal mines in India Gevra Mine(Chhattisgarh), Bhubaneswari Mine(Odisha), Dipka Project(Chhattisgarh), Kasmunda Mine(Chhattisgarh), and Urtan North(Madhya Pradesh)

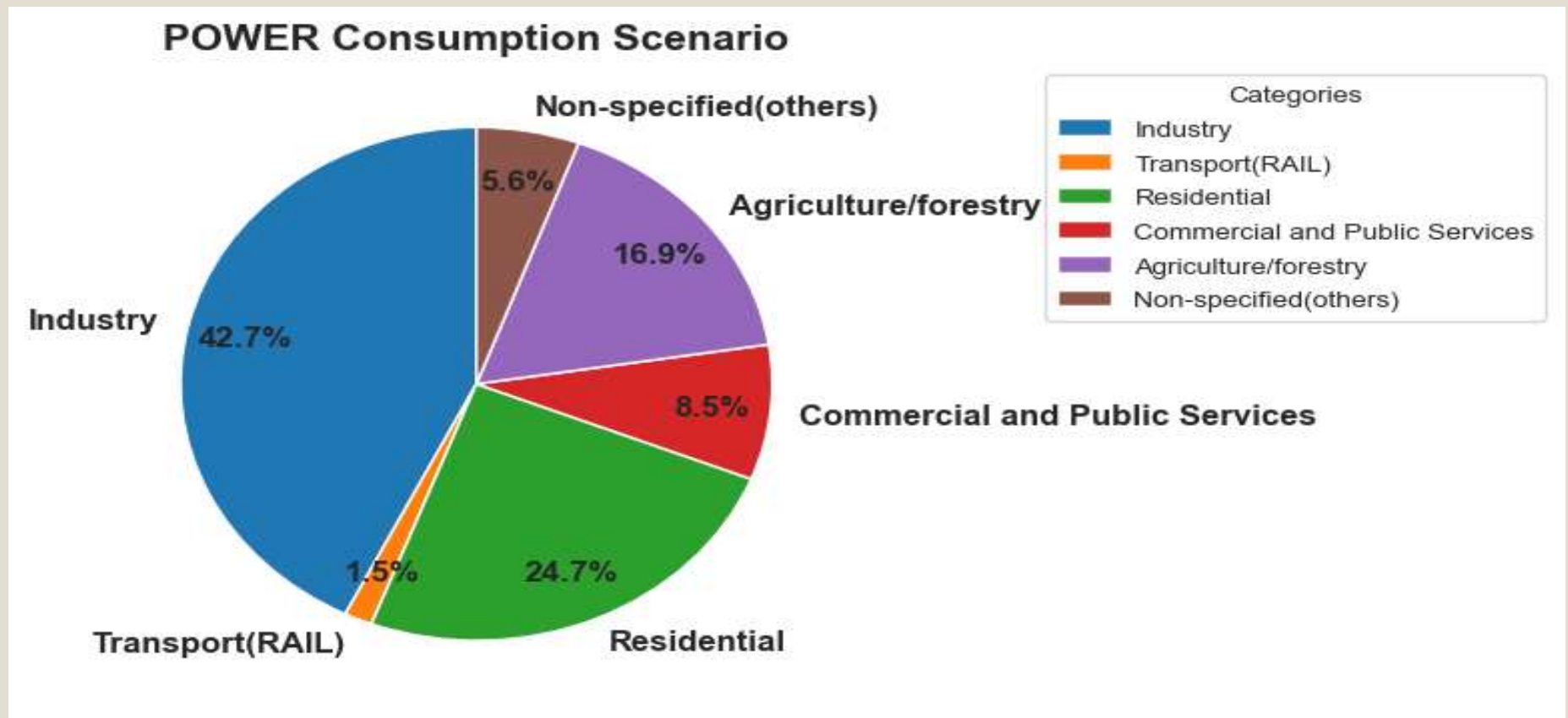
State-wise Distribution Of Total Power Installed



State-wise Distribution of GDP



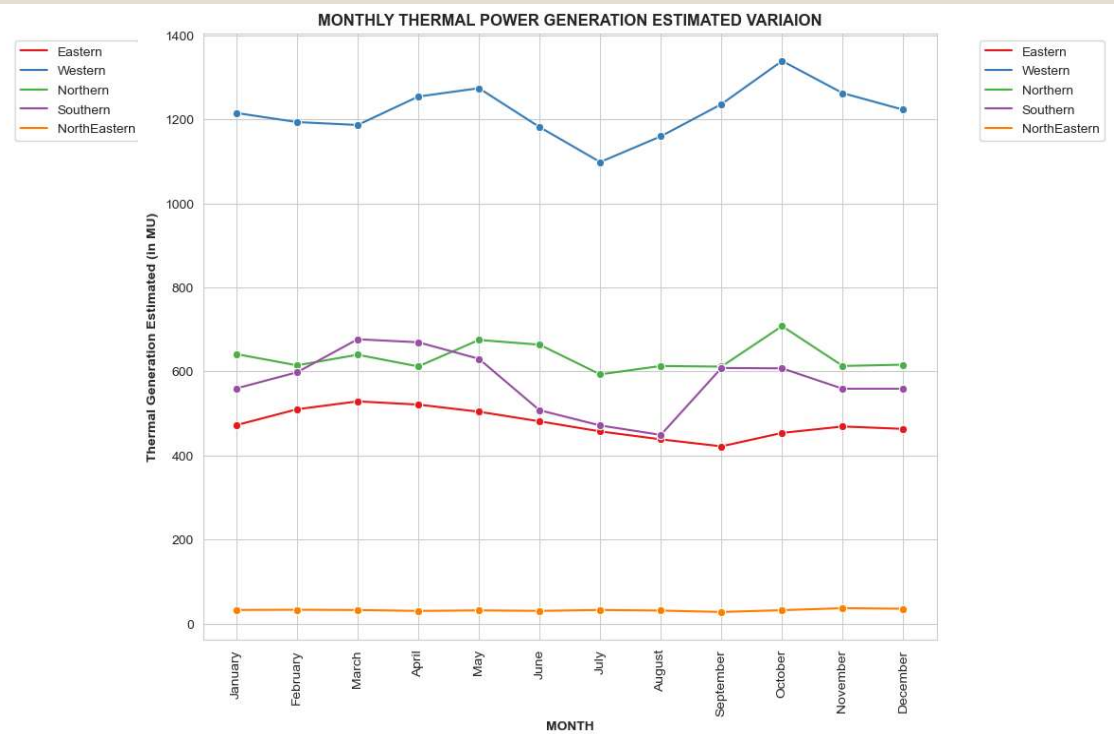
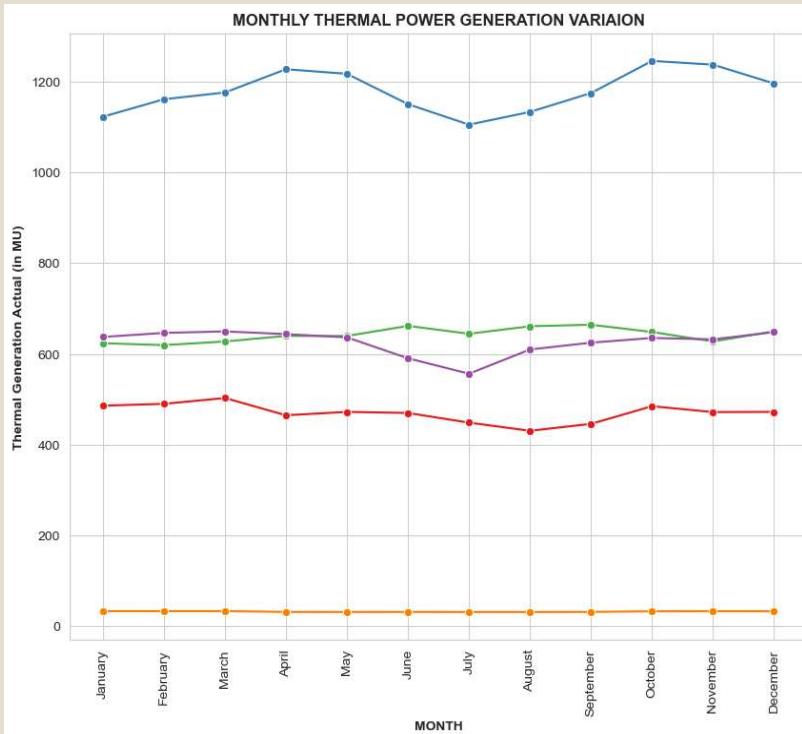
Power Consumption Scenario in India



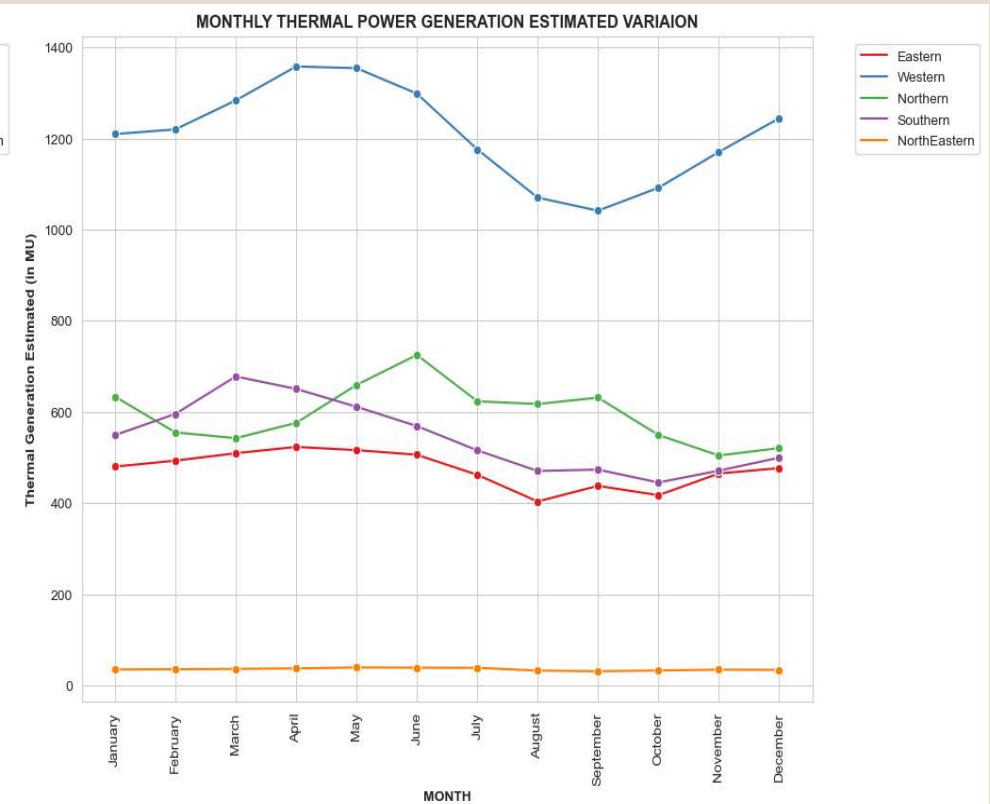
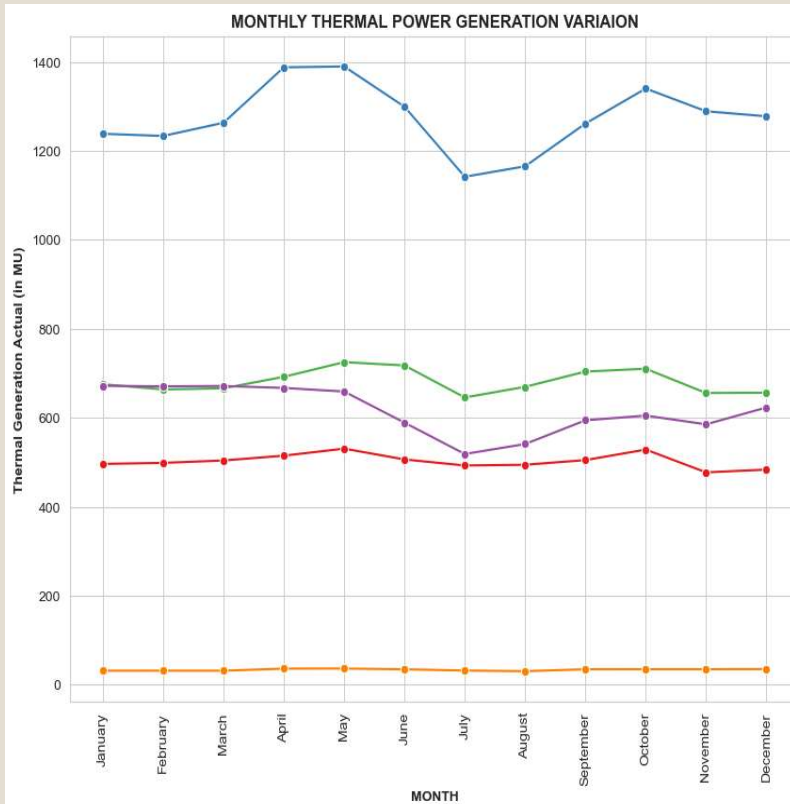
Some Questions

- **WHY THE GDP AND POWER INSTALLED SHOW SIMILAR STATEWISE DISTRIBUTIONS?**
- ❖ 42.7% of Power is been consumed by Industries and 16.9% is consumed by Agriculture which are the two major economic contributor to the GDP.
- ❖ So the More The Power Requirement more is the Installed Power Capacity to Meet the Demand and more is the Economic outcome of the State

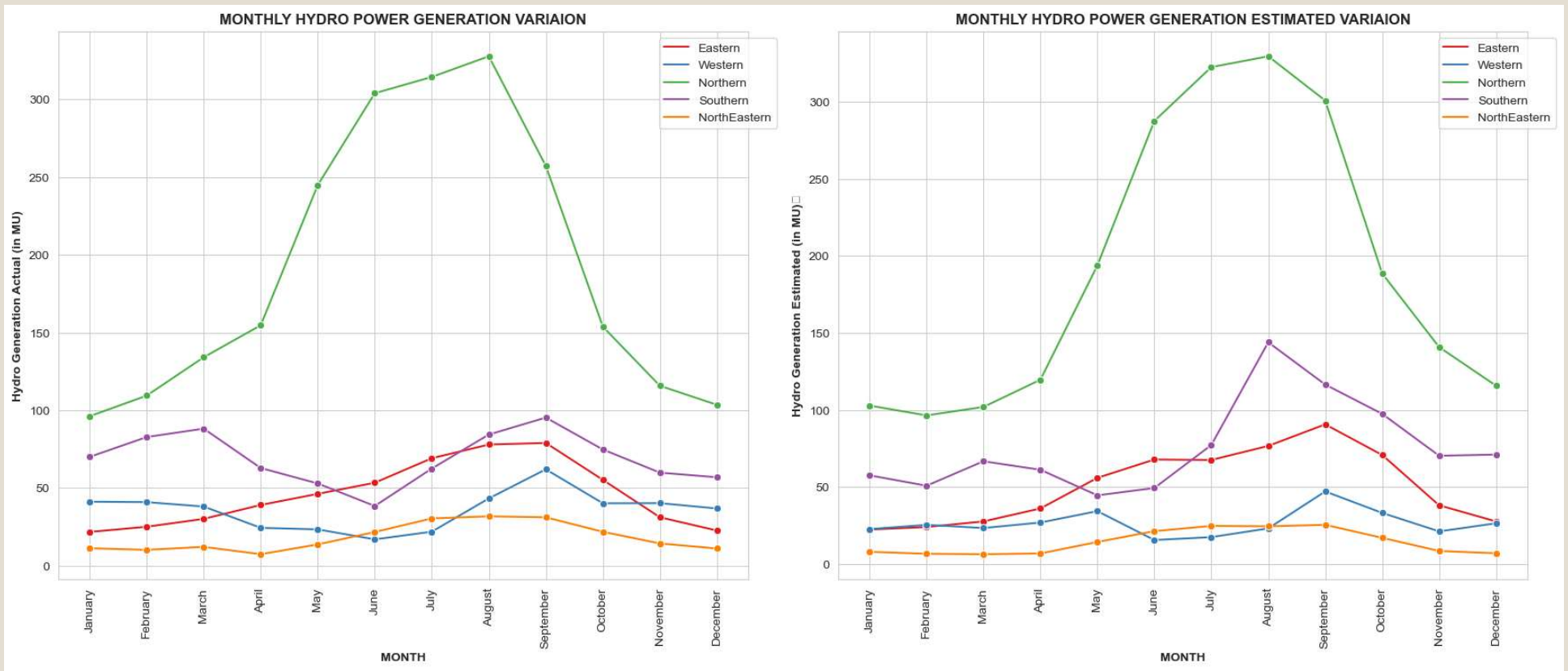
Monthly Trends of Thermal Power Generation Year-2018



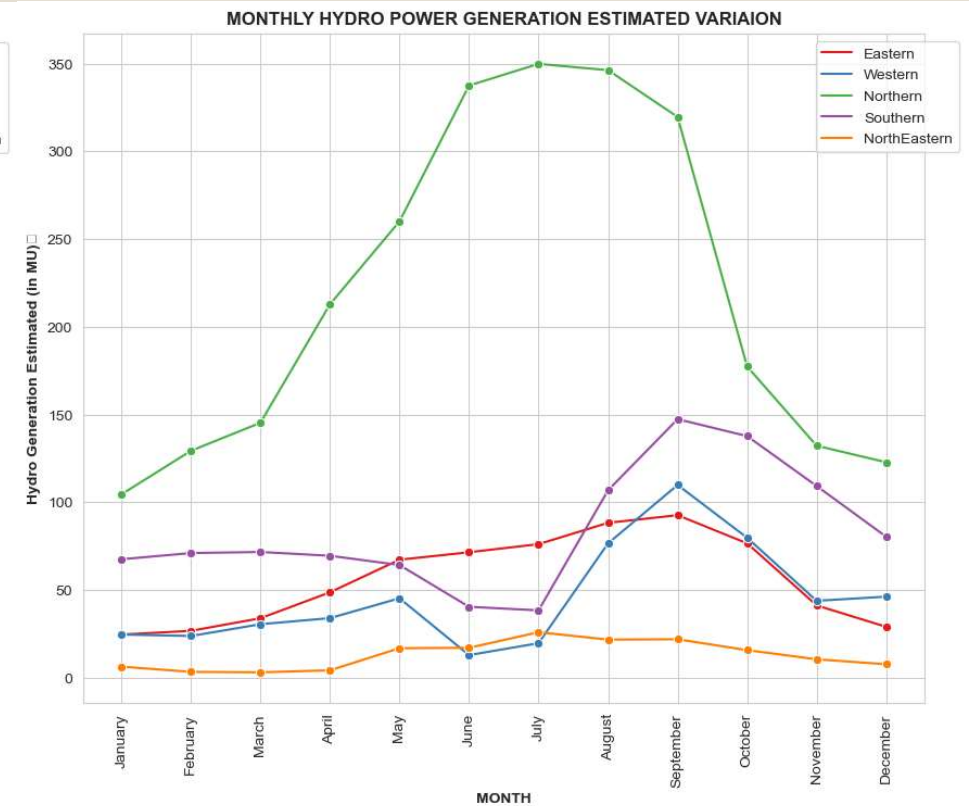
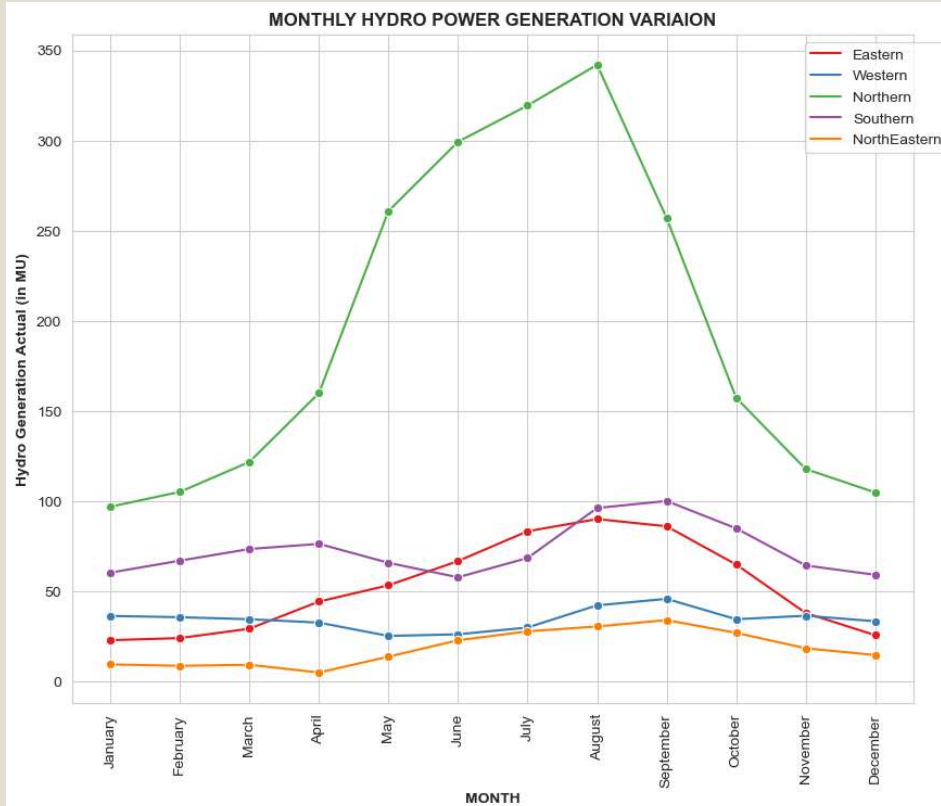
Monthly Trends of Thermal Power Generation Year-2019



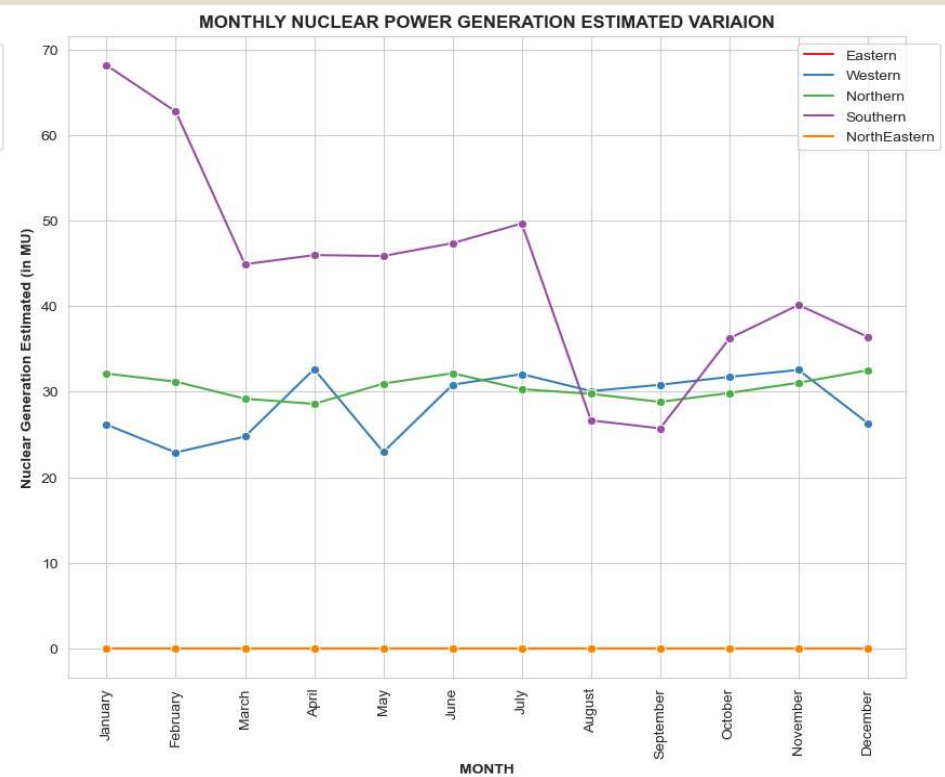
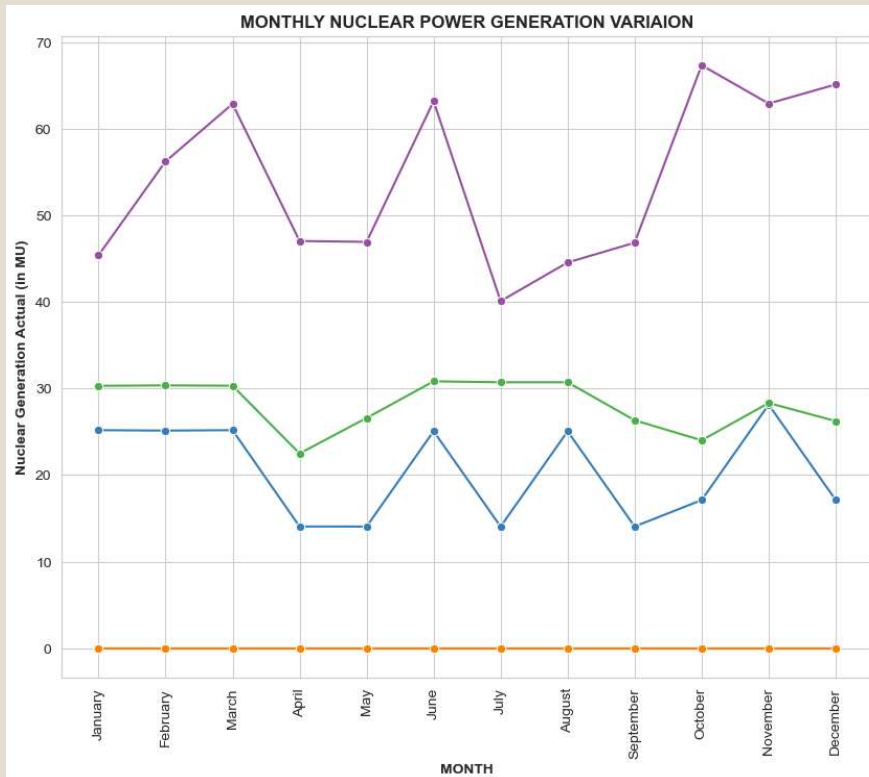
Monthly Trends of Hydro Power Generation Year-2018



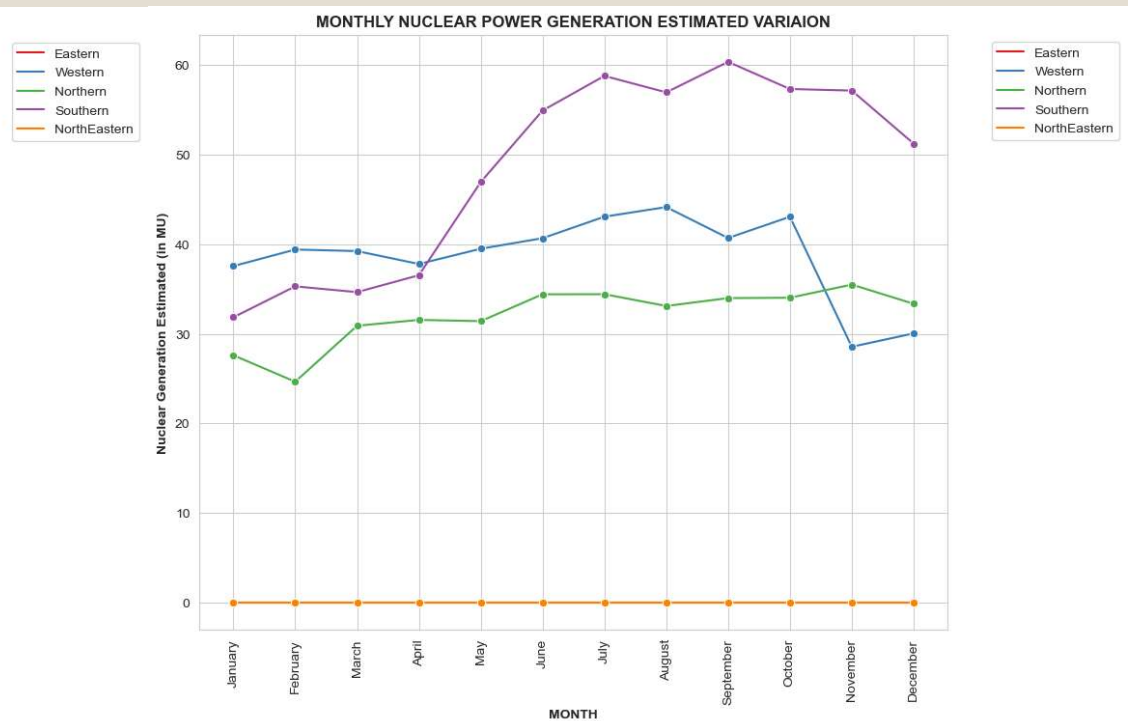
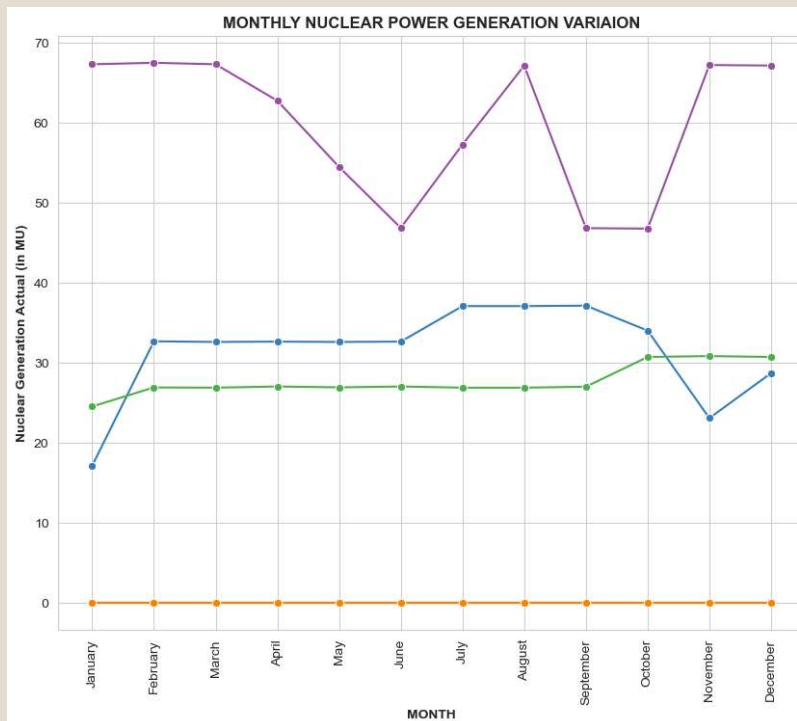
Monthly Trends of Hydro Power Generation Year-2019



Monthly Trends of Nuclear Power Generation Year-2018



Monthly Trends of Nuclear Power Generation Year-2019



Correlation Among Different Power Sources

