

# Tech Saksham

## Case Study Report

### Data Analytics with Power BI

# **“Analysis of commercial electricity consumption in Indian state”**

## **“APC Mahalaxmi college for women”**

NM ID	NAME
2B569AF0FBC0B81AEA5416BC80A4E023	G. Bhuvana

Trainer Name: R. UMAMAHESWARI

Master Trainer Name: R. UMAMAHESWARI

# ABSTRACT

The demand for energy has been increasing over the years in India, which may be the result of its rapid economic growth trajectory. In this context, this study examines the direction of the Granger-causal relationship between electricity consumption and economic growth at the state and sectoral levels in India. In doing so, the panel cointegration tests with the structural break, the heterogeneous panel causality test, and the panel VAR based impulse-response model are employed. The study covers overall economic growth and growth in agricultural and industrial sectors for eighteen major Indian states for the period 1960–61 to 2014–15. The results provide evidence in support of a long-term relationship between economic growth and electricity consumption only in the agriculture sector.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Problem Statement

Electricity consumption in India has become increasingly dependent on weather patterns, which have the potential to disrupt power supply, according to a recent report. An SBICAPS report on the Power Sector - "Balancing green goals and energy security through reforms" - has highlighted the need for strategic planning and proactive measures to address challenges posed by changing weather conditions.

#### 1.2 Proposed Solution,

It addresses demand-side flexibility, power plant flexibility, storage (pumped-storage hydro and batteries) and grid flexibility, as well as policy, market and regulatory solutions for the short to medium term. It adds to existing research by focusing on renewable integration in individual states, rather than at the national level, as the power system flexibility challenges, solutions and priorities are different in each state.

#### 1.3 Feature

- **Real-Time Analysis:** The dashboard will provide real-time analysis of customer data.
- **Customer Segmentation:**  
Mixed-methods research can generate more holistic customer segments and raise their relevance.
- **Trend Analysis:** The dashboard will identify and display trends in customer behavior.
- **Predictive Analysis:** It will use historical data to predict future customer behavior.

#### 1.4 Advantages

Some of its advantages are the following: Versatility: Electricity can be easily transformed into other forms of energy, such as light, heat or motion, making it highly versatile and suitable for a wide range of applications in homes, industry, transport and more.

#### 1.5 Scope

Based on recent data from the Central Electricity Authority (CEA), the peak power demand is expected to reach 230 GW by 2035.

## CHAPTER-2

# SERVICES AND TOOLS REQUIRED

**2.1 Services used** India's electricity sector is dominated by [fossil fuels](#), in particular coal, which produced about three-quarters of the country's electricity.<sup>[10][11]</sup> The government declared its efforts to increase investment in [renewable energy](#). Under the government's 2023-2027 National Electricity Plan, India will not build any new [fossil fuel](#) power plants in the utility sector, aside from those currently under construction.<sup>[12][13]</sup> It is expected that non-fossil fuel generation contribution is likely to reach around 44.7% of the total gross electricity generation by 2029–30.<sup>[14]</sup>

## Services Used

## 2.2 Tools and Software used

### Tools:

[The Power Meter](#) is the best meter in the market designed to easily monitor your energy consumption and help assess the efficiency of your appliances. This model measures energy consumption in Kilowatt hours, the same way as the utility companies do, as well as: Volts, Amps, Watts and Hz

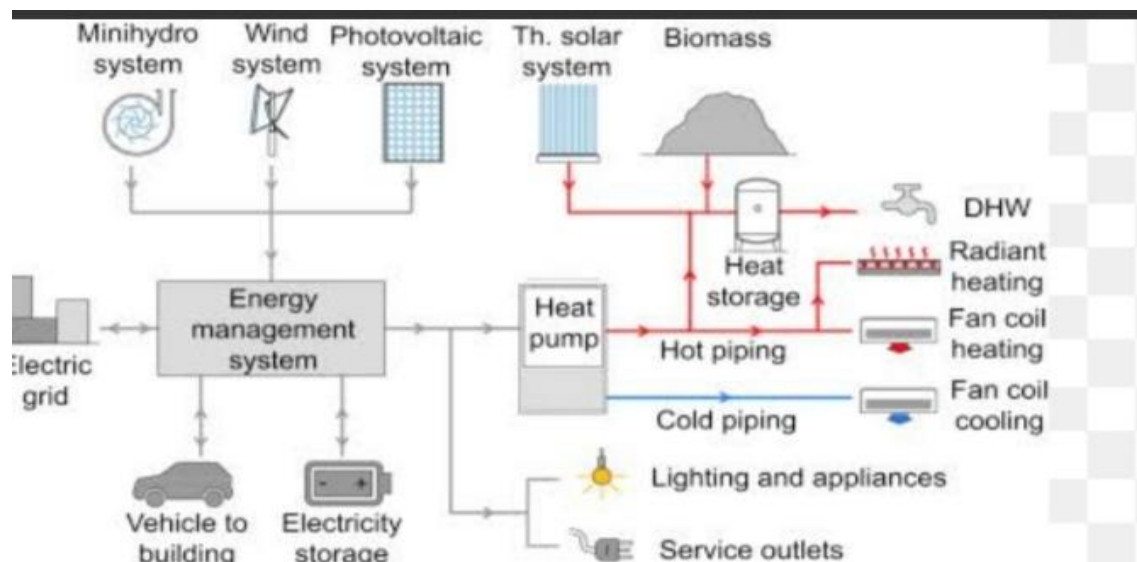
### .Software Requirements:

As an input into the production of goods and services, energy (specifically electricity) plays a major role in determining economic growth and the development of a nation (Asafu-Adjaye, 2000; Shiu and Lam, 2004; IAEA, 2009). As India is the fastest growing economy in the world, its dependence on energy resources has been huge and continues to mount. Since 2000, India has been responsible for around 10% of the increase in the global demand for energy (Mahalik and Mallick, 2014). Between 2000 and 2013, India's share in the global energy demand almost doubled. In the coming decade, India is expected to become the primary source of energy demand growth in Asia.

## CHAPTER 3

### PROJECT ARCHITECTURE

#### 3.1 Architecture



- There are only a few efforts made to get data that illustrates energy use in energy intensive sectors like commercial and residential buildings, industries and municipalities. Energy efficiency policy measures need to begin with quantifying energy consumption. Also, if the energy service company (ESCO) market needs to be tapped, steps need to be taken to understand energy performance in these sectors and respective segments.
- The administrative and technical roles relating to ECBC need to be separated for better implementation and adoption. Energy auditors, engineers, architects, consultants could look at technical features, whereas central and state bureaucrats should look at the administrative aspects. Specific

committees involving the chief secretary and principal secretaries of respective state departments need to be constituted to fast-track ECBC adoption.

- Every state needs to create a systemic evaluation process to track the progress of ECBC adoption and implementation. All states should release an annual report providing data including quantified energy savings, success stories (technical and administrative) and best practices.

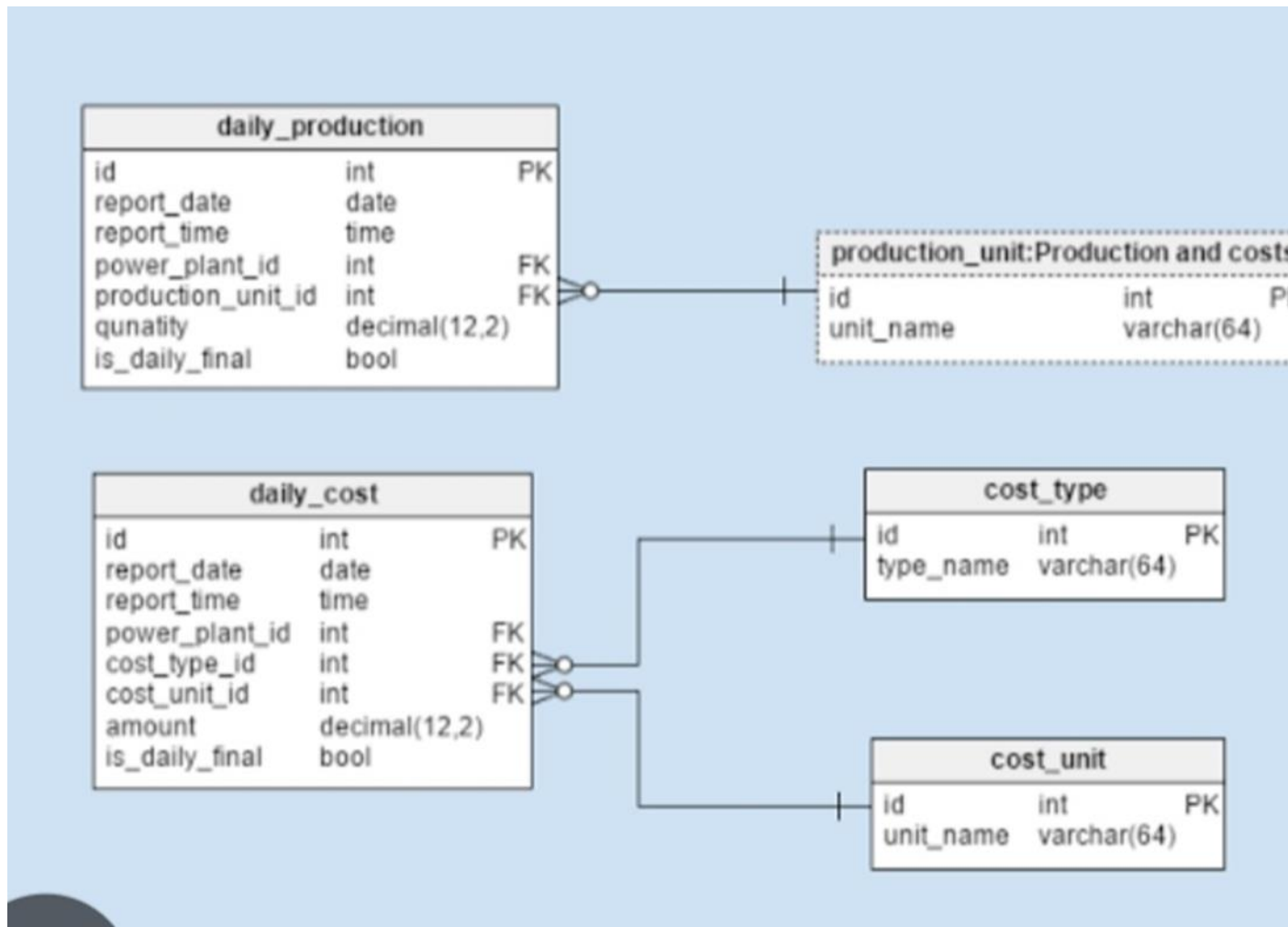
## CHAPTER 4

### MODELING AND RESULT

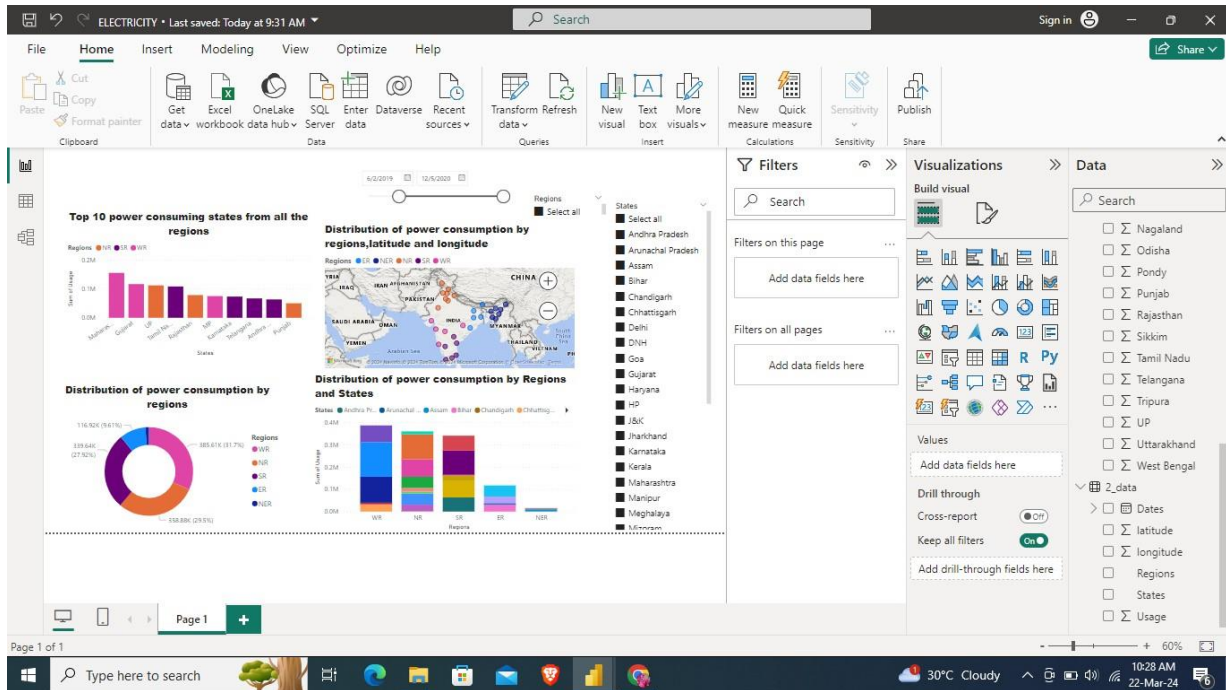
#### Manage relationship

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## Dashboard



## CONCLUSION

**This paper examined the long-term, Granger-causal and time-varying relationships between electricity consumption and economic growth at the aggregate output (state GDP) and disaggregated (agriculture and industry) output levels in eighteen Indian states over the time span 1960–2015. Although many studies have focused on the Granger-causal link between electricity consumption and economic growth in the Indian context, only one study examined the issue at the sub-national level.**

## **FUTURE SCOPE**

The present installed nuclear power capacity is 7480 MW which is projected to increase to 22800 MW by 2031-32. Share of non-fossil fuel-based generation capacity in the total installed capacity of the Country likely to increase from 43.81% as of Aug 2023 to more than 68.4% to reach 500 MW by 2031-32.

## **REFERENCES**

[https://www.investindia.gov.in/sector/thermal-power#:~:text=\(March%202023\),500%20MW%20by%202031%2D32.](https://www.investindia.gov.in/sector/thermal-power#:~:text=(March%202023),500%20MW%20by%202031%2D32.)

