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10 years of India's electricity demand in 10 charts

Insights from CEA General Review Reports FY2012-22

Aditya Chuneekar, Abhiram Sahasrbudhe, Shweta Kulkarni



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10 years of India's electricity demand in 10 charts



Introduction

Total electricity consumption in India crossed 1300 billion units by FY2022, at a 5.3% CAGR over the preceeding decade from FY2012. We have tried to bring out the variation/patterns in the electricity consumption across various states and consumer categories over the years through the analysis presented here.

The dashboards are interactive, and will show additional information on hovering the mouse over the plots. Hovering on axes in certain plots shows a button to change the state sorting.

The first 8 interactive dashboards have state-wise analysis of the decadal change in electricity consumption. Later 2 dashboards are exploratory in nature. The state explorer allows users to select a state and view trends and details of electricity consumption within the selected state. The category explorer allows the user to select a category, and view states' shares in the decadal change in the selected category.

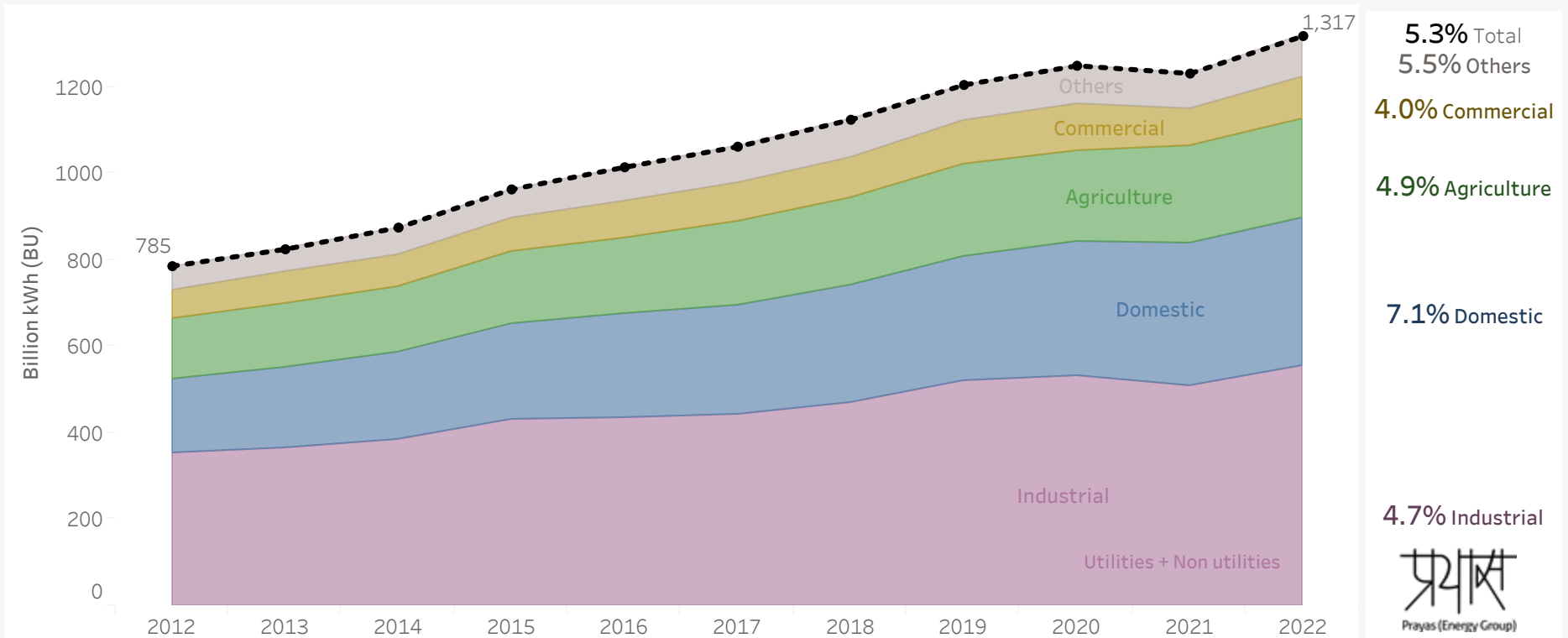
Data compilation

- The Central Electricity Authority annually publishes All India Electricity Statistics - General Review reports containing state-wise, categorywise data regarding electricity generation, sales and so on. We have compiled data from the General review reports from 2013 to 2023 (that contain data for FY2012 to 2022).
- We have exercised precautions while digitizing the data from the CEA General review reports, but some errors might have creapt in. Please report such errors to us at abhiram@prayaspune.org

Notes

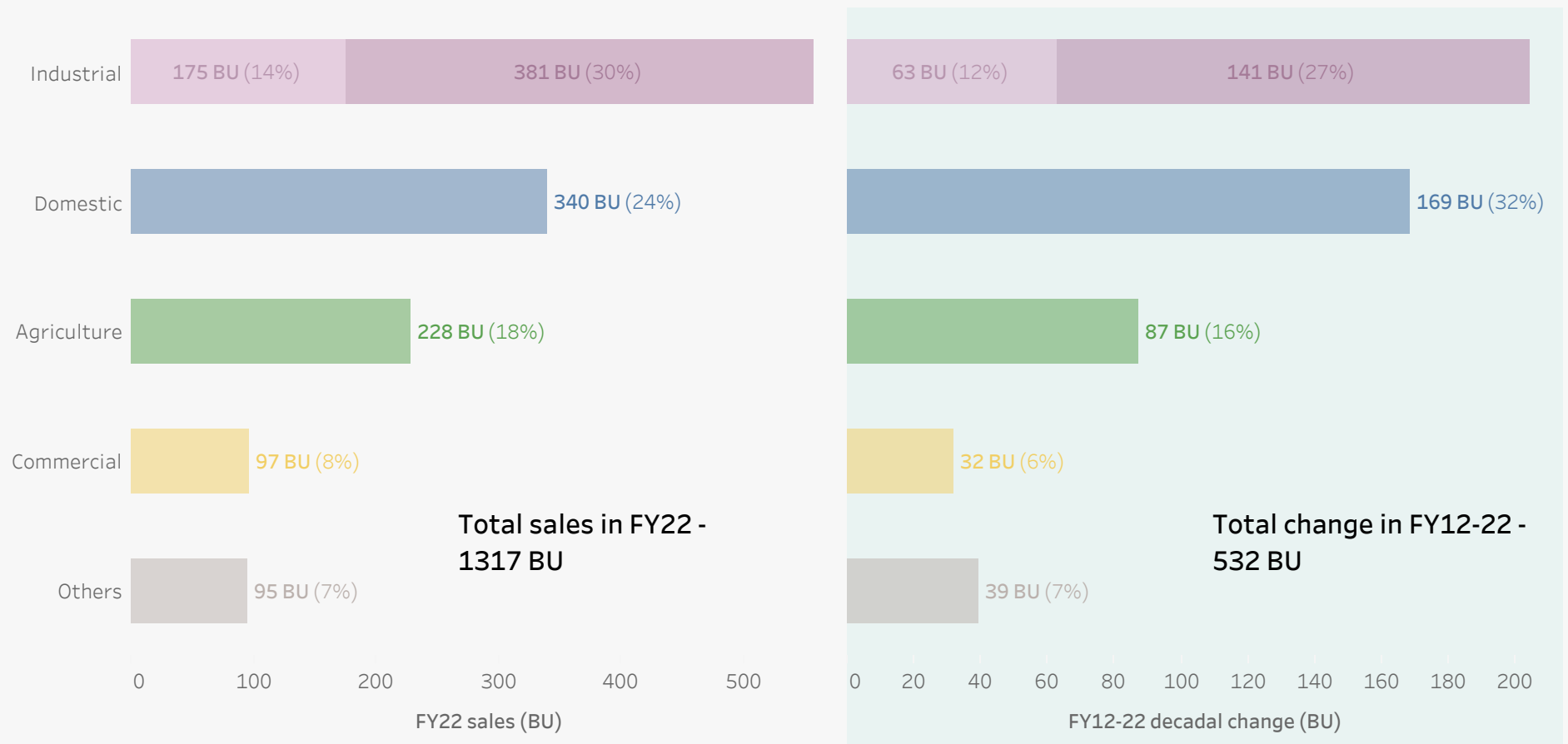
- CEA reports the data in terms of electricity sales which we have considered as electricity consumption. The actual consumption figures may vary slightly from sales due to issues in metering and reporting.
- Industrial consumption includes 'non-utilities' consumption recorded by the CEA which is the total self-consumption of the industries with captive power plants of size more than 1 MW till FY2020-21. In FY2022, CEA revised the benchmark to 500 Kw. It is not clear whether consumption under 'Open Access' has been recorded by the CEA.
- Separate data for Andhra Pradesh and Telangana has been reported since 2015. We have used share of the two states in the consumer-category wise consumption in FY2017 to estimate consumer category wise consumption for both the states in FY2012, FY2013, and FY2014.

Total electricity consumption in India FY12-22



- India's electricity consumption grew at a CAGR of 5.3%
- Demand for the **domestic** sector grew the highest (7.1%) followed by **Agriculture** (4.9%) and **Industry** (4.7%).
- Consumer category wise share in the total electricity consumption has remained more or less constant over the last 10 years.
- Electricity consumption in FY2022 grew at 7.7% over FY2021, indicating a recovery from COVID-19 induced demand suppression.

Consumer category-wise sales

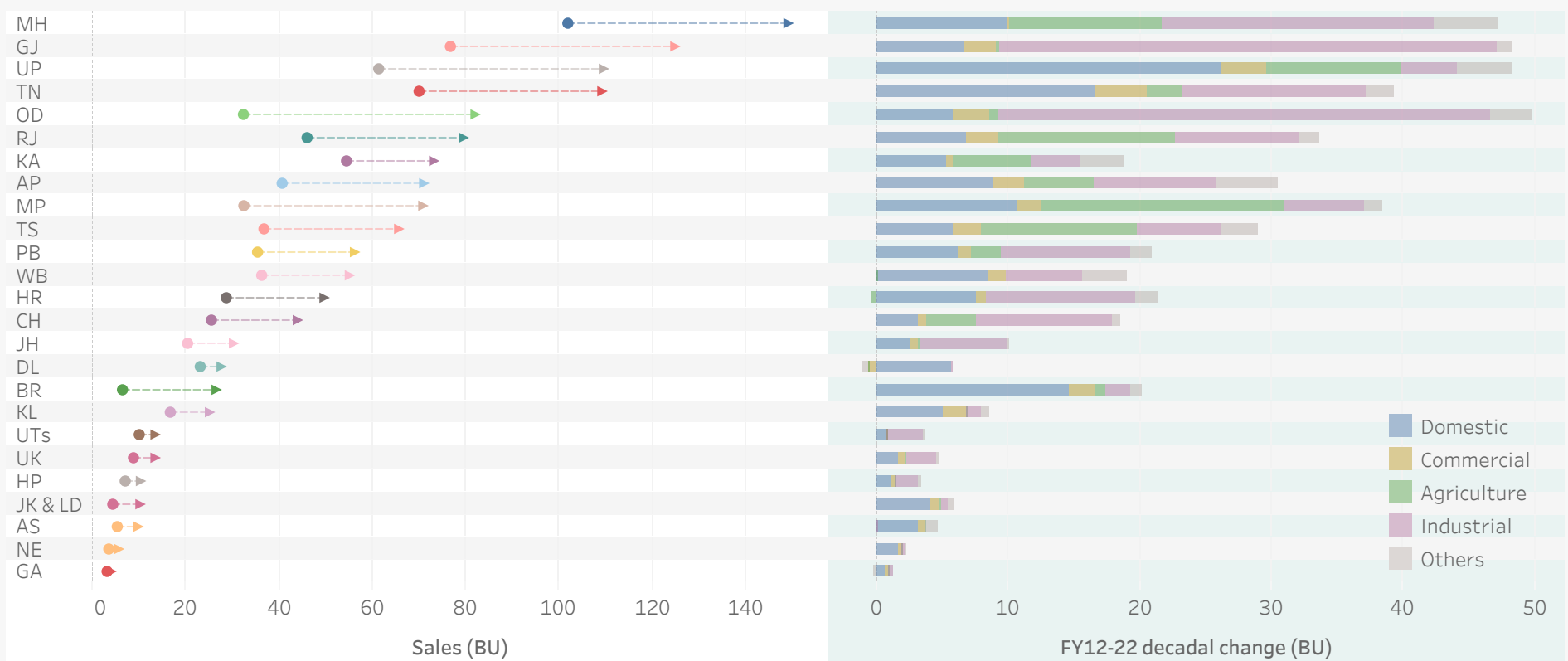


- In FY2021-22, **Industry** contributed to **44%** of the total electricity consumption followed by the **Domestic category (24%)** and **Agriculture (18%)**.

-India’s total electricity consumption grew by 532 BU over the decade, with **Industry (39%)** contributing the highest followed by the **Domestic (32%)** and **Agriculture (16%)** categories



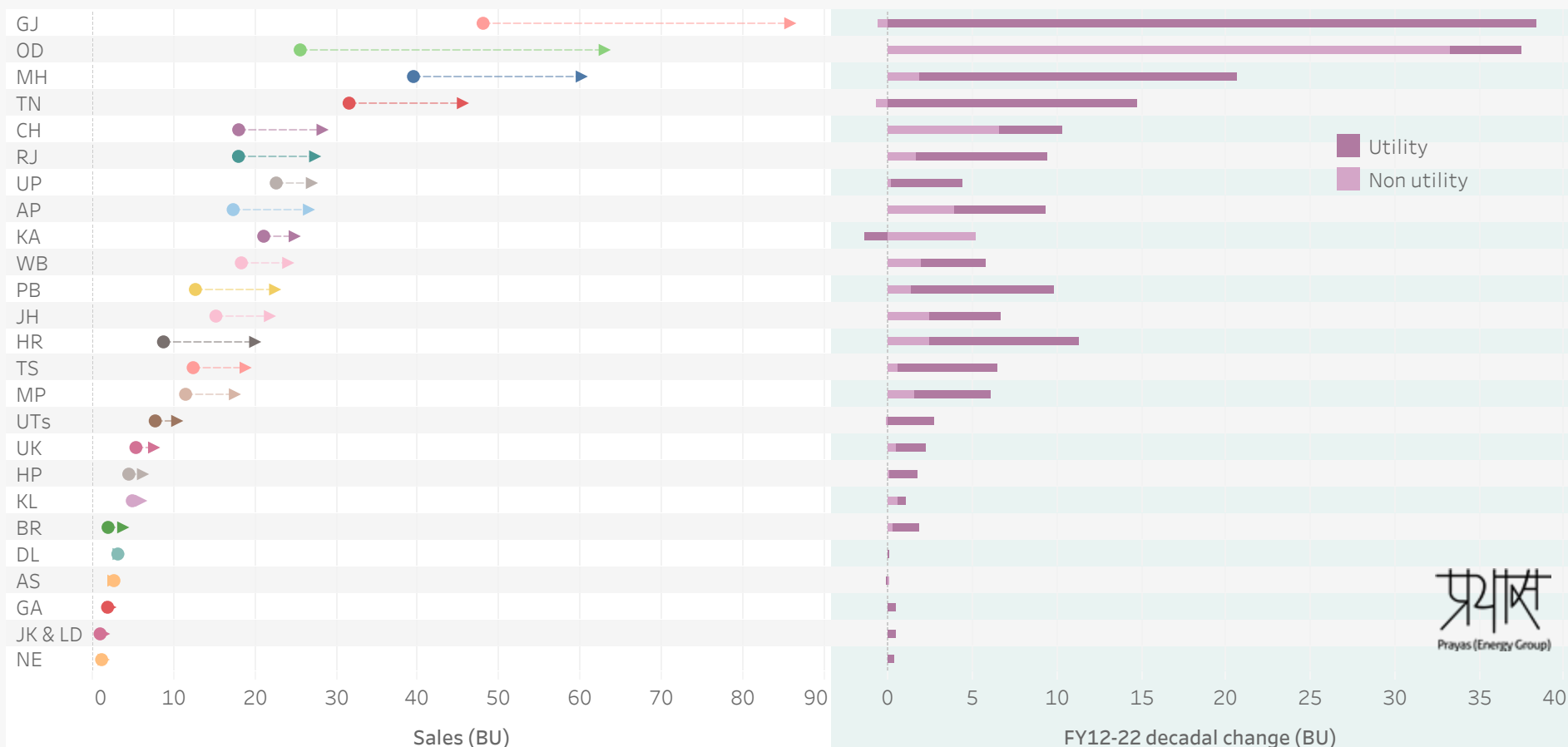
State-wise total electricity consumption FY12 ●-----► FY22



- **Maharashtra**, **Gujarat**, **Uttar Pradesh**, **Tamil Nadu**, and **Odisha** are the top 5 states with high electricity consumption accounting for 44% of the total electricity consumption in FY2022. These states accounted for 43% of India's total increase in electricity consumption in the last decade FY2012-22. Odisha's contribution was highest at 9.4%.
- Among the top 15 states ranked as per their total electricity consumption in FY2022, **Odisha** saw the highest increase in consumption (**2.5 times** in FY2022 compared to FY2012), followed by **Madhya Pradesh (more than doubled)**, and that in **Telangana**, **Uttar Pradesh** and **Andhra Pradesh** almost doubled .
- Industry was the largest contributor to the decadal growth in states like **Gujarat (78%)**, **Odisha (75%)**, **Jharkhand (67%)**, **Chhattisgarh (56%)**, and **Haryana (54%)**. In Domestic was the largest contributor to the decadal growth in states like **Bihar (72%)**, **Assam (70%)**, **Jammu & Kashmir and Ladakh (67%)**, **Kerala (58%)**, and **Delhi (122%)** where other sectors in Delhi have shown reduction in consumption making actual growth lesser than that in the domestic category.
- Agriculture was the largest contributor to the decadal growth in states like **Madhya Pradesh (48%)**, **Telangana (41%)**, **Rajasthan (40%)**, **Karnataka (32%)**, and **Maharashtra (24%)**.



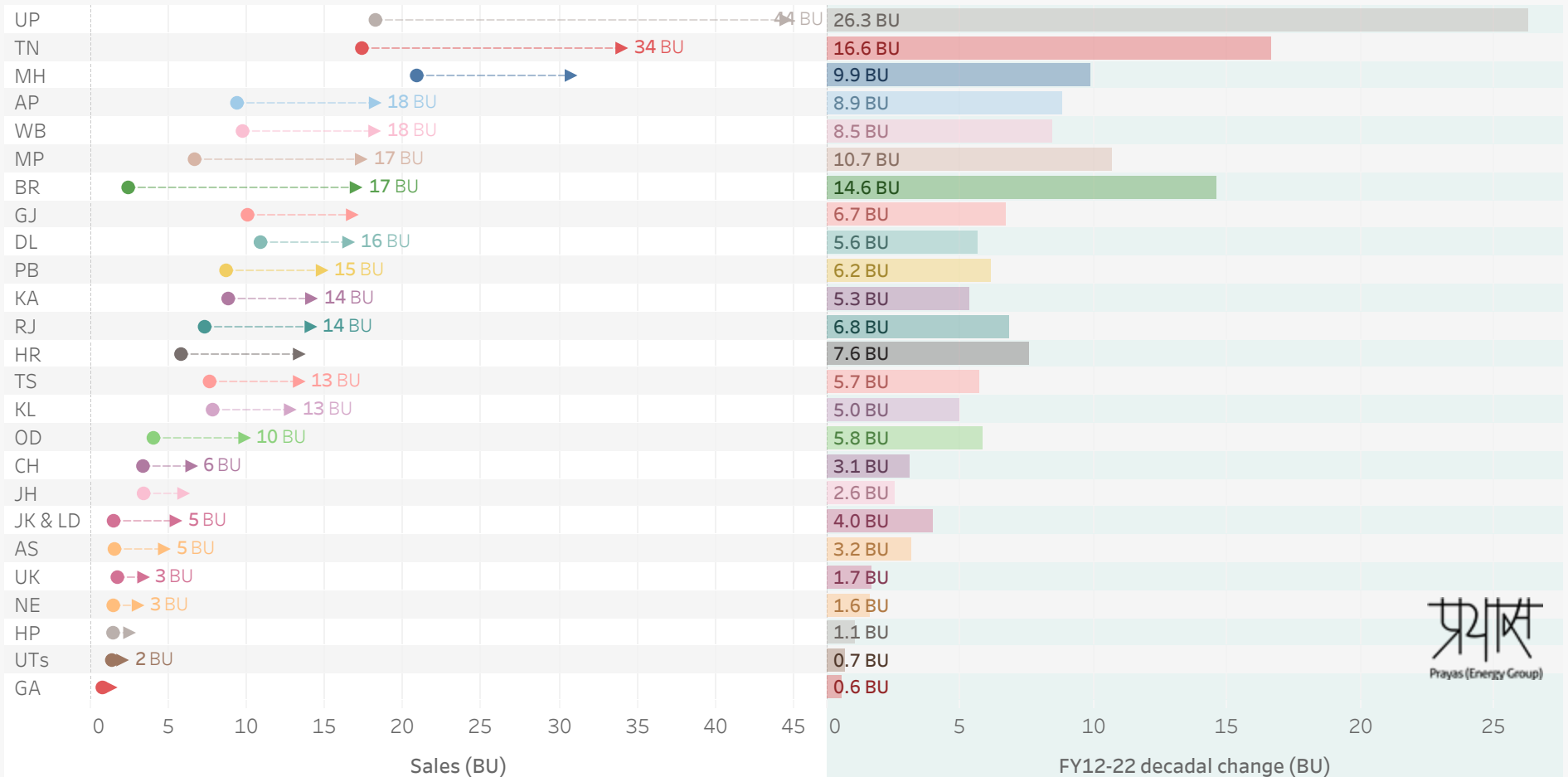
State-wise Industrial consumption FY12 ●-----► FY22



- Gujarat (15%), Odisha (11%), Maharashtra (11%), Tamil Nadu (8%), and Chhattisgarh (5%) contributed to 51% of India's total electricity consumption in FY2022.
- Gujarat (19%), Odisha (18%), Maharashtra (10%), Tamil Nadu (7%), and Haryana (6%) contributed to 59% of the total growth in India's electricity consumption.
- Among the top 15 states ranked as per their total industrial electricity consumption in FY2022, Odisha saw the highest increase in consumption (2.5 times), followed by Haryana (more than doubled), Gujarat and Punjab (almost doubled 78%), and Chhattisgarh (58% growth).
- CEA also records consumption from captive (own) generation of Industrial consumers. In FY2022, consumption from captive generation accounted for 31.5% of India's total industrial electricity consumption, a slight decrease from its 31.9% share in FY2012.
- Odisha (53%), Chhattisgarh (10%), Karnataka (8%), Andhra Pradesh (6%) and Haryana (4%) were the top 5 states contributing to 82% of India's total Industrial electricity consumption from captive generation in FY2022.



State-wise Domestic consumption FY12 ●-----► FY22

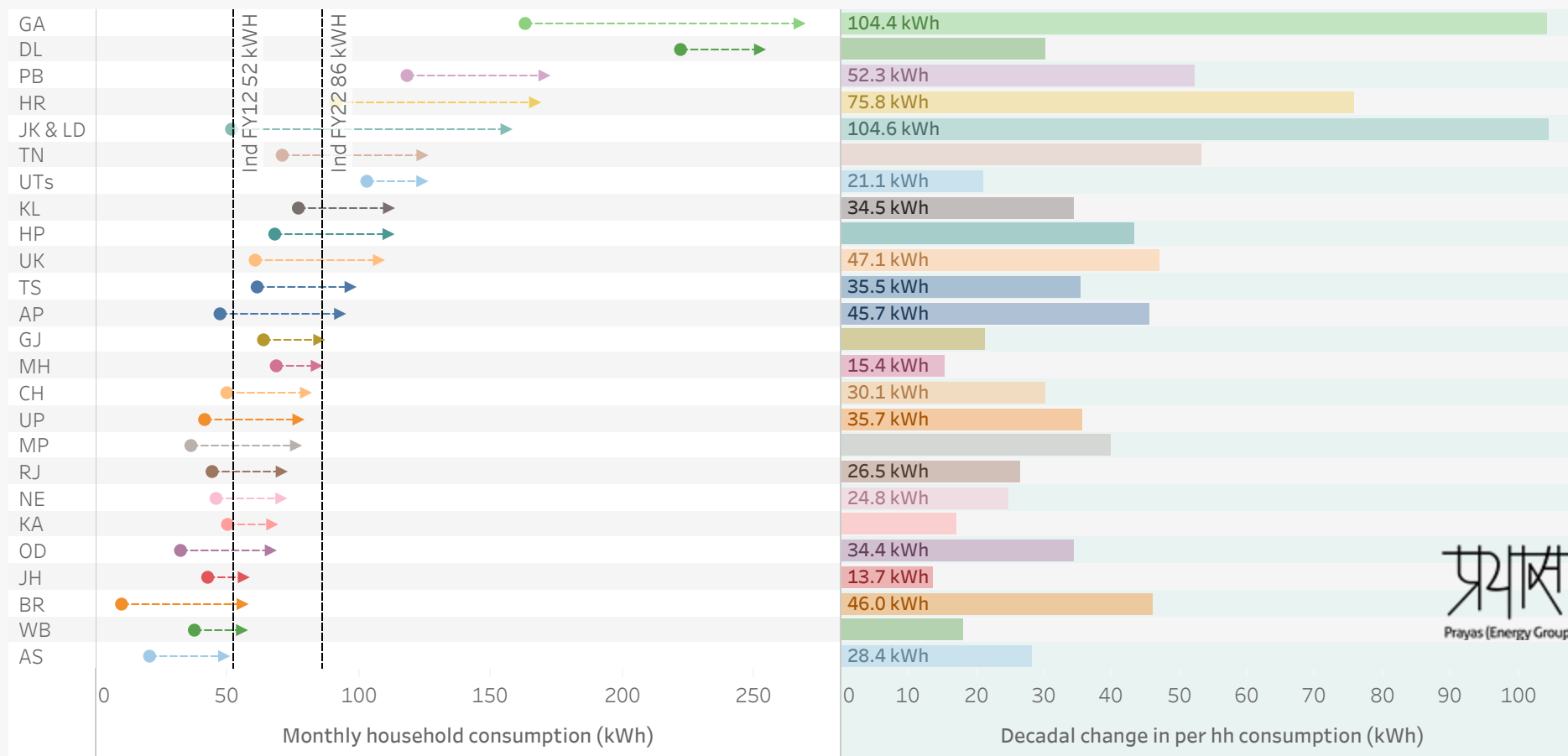


- Uttar Pradesh (13%), Tamil Nadu (10%), Maharashtra (9%), Andhra Pradesh, and West Bengal (both 5%) contributed to 43% of India's domestic electricity consumption in FY2022.

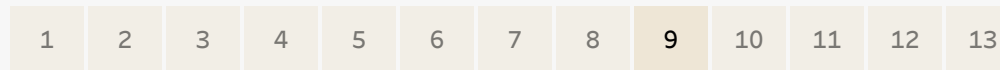
-Uttar Pradesh (15.6%), Tamil Nadu (9.9%), Bihar (8.7%), Madhya Pradesh (6.3%), and Maharashtra (5.9%) contributed 46% of the total growth in India's domestic electricity consumption in the decade FY2012-22.

-Among the top 15 states ranked as per their total domestic electricity consumption in FY2022, Bihar saw the highest increase in consumption (7 times), followed by Madhya Pradesh, Uttar Pradesh, Haryana (more than double), and Tamil Nadu (almost doubled).

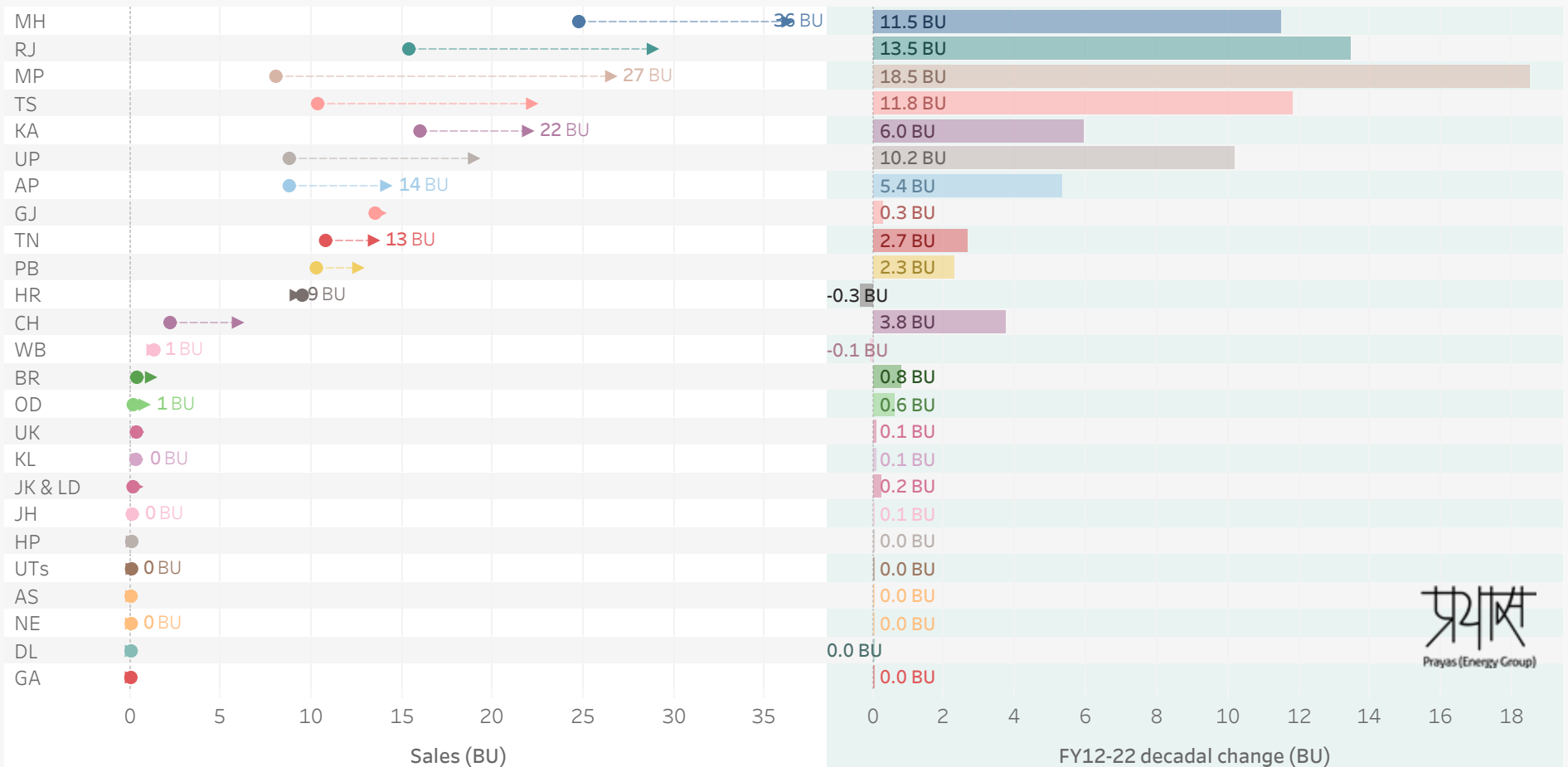
State-wise monthly household consumption FY12 ●-----> FY22



- India's average monthly household electricity consumption has increased from **52 kWh** in FY2012 to **86 kWh** in 2022. State-wise number of households have been estimated as per population and household size projections based on National Commission on Population (2020) and NSSO rounds 69 (2012) & 76 (2018) respectively.
- **Goa (263 kWh)** has the highest average monthly electricity consumption per Household, more than 3 times the national average, followed by **Delhi (252 kWh)**, **Punjab (170 kWh)**, **Haryana (167kWh)**, and **Jammu & Kashmir and Ladakh (156 kWh)**.
- Among the top 15 states ranked as per their total domestic electricity consumption in FY2022, **Delhi (252 kWh)** has the highest average monthly household consumption followed by **Punjab (170 kWh)**, **Haryana (167kWh)**, **Tamil Nadu (124 kWh)**, and **Kerala (111 kWh)**. In the top 15 states, the highest jump in average monthly household consumption was observed in **Bihar (more than 5 times)** followed by **Madhya Pradesh (more than doubled)**, **Andhra Pradesh (doubled)**, **Uttar Pradesh**, and **Haryana (almost doubled)**.



State-wise Agriculture consumption FY12 ●-----> FY22



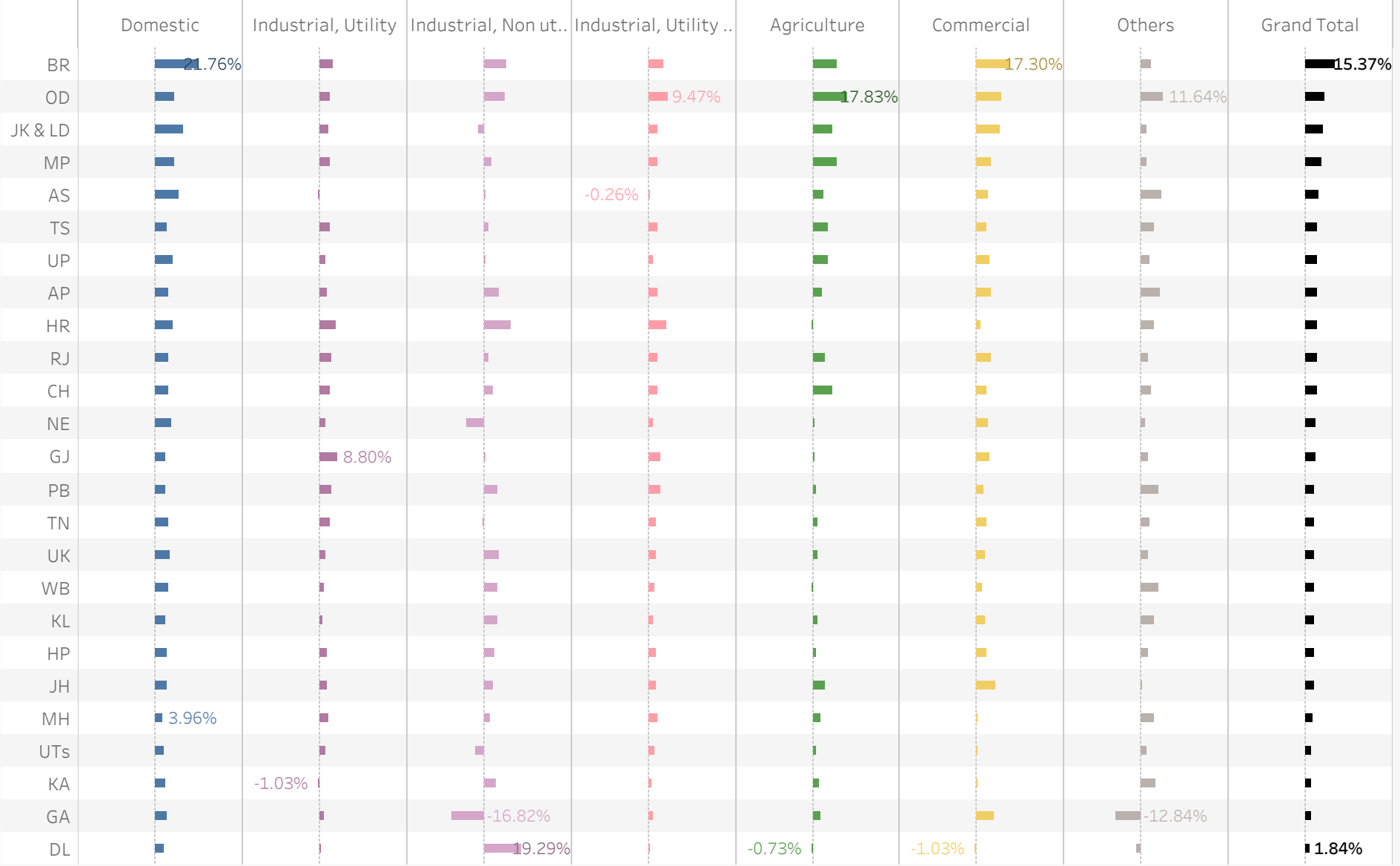
Prayas (Energy Group)

- Maharashtra (16%), Rajasthan(13%), Madhya Pradesh (12%), Telangana (10%) and Karnataka (10%) were the top 5 states contributing to **59%** of India's total agricultural electricity consumption in FY2022.

- Madhya Pradesh (21%), Rajasthan (15%), Telangana (14%), Maharashtra (13%), and Uttar Pradesh (12%) contributed to **75%** of the total growth in India's agricultural electricity consumption in the decade FY2012-22.

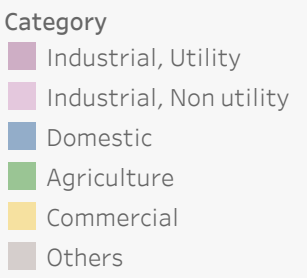
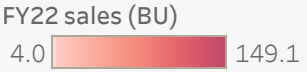
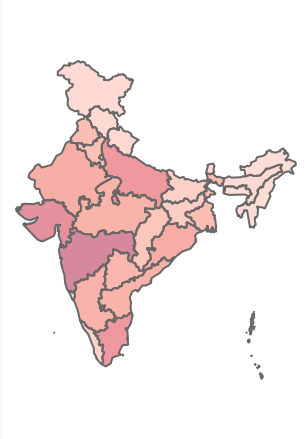
- Among the top 15 states ranked as per their total agricultural electricity consumption in FY2022, Odisha saw the highest increase in consumption (**more than 5 times**), followed by Madhya Pradesh, Bihar (**more than tripled**), Chhattisgarh, and Uttar Pradesh (more than doubled).

Categorywise CAGR of sales FY12-22

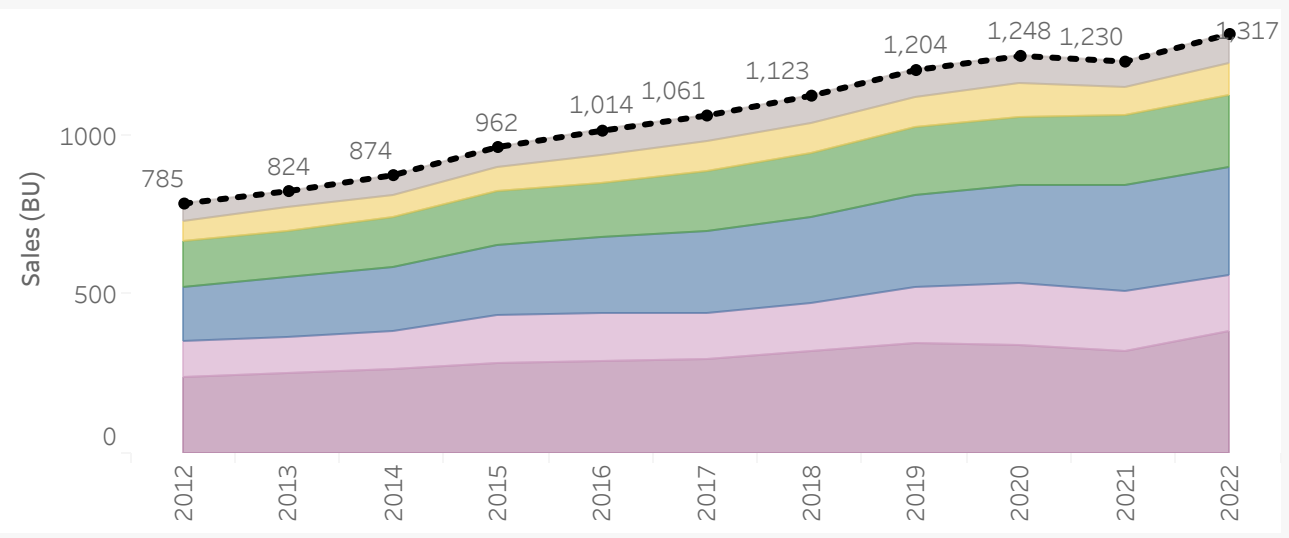


This dashboard aims to provide information on consumer category-wise CAGR of electricity consumption within a state.

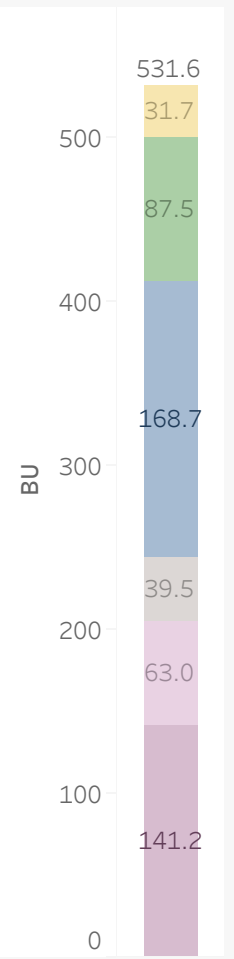
Select a state ↓



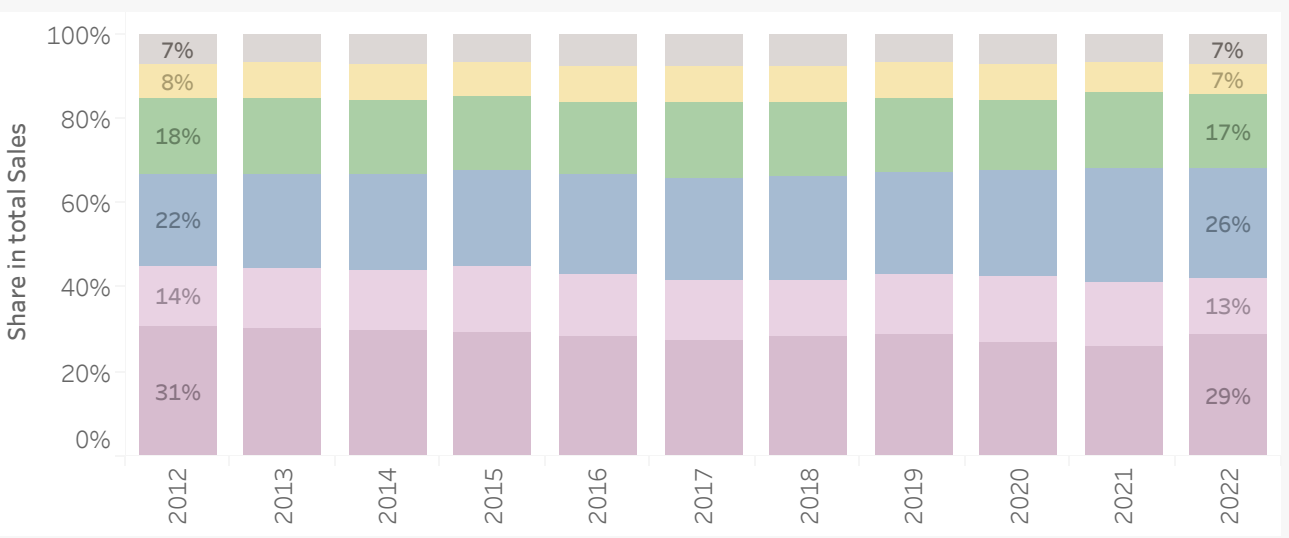
Category-wise breakup - India



Decadal
change
FY12-22
Non utility &
Utility sales in
India



Category-wise share - India

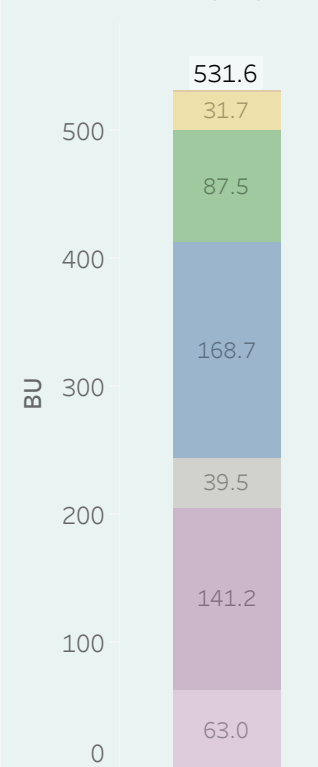


This dashboard is aimed at exploring the trends of electricity consumption within a state. Please **select a state** from the map on top left of the dashboard **to view details** of that state across years and consumer categories.

Share of categories

in dacadal change FY12-22,
Non utility & Utility sales

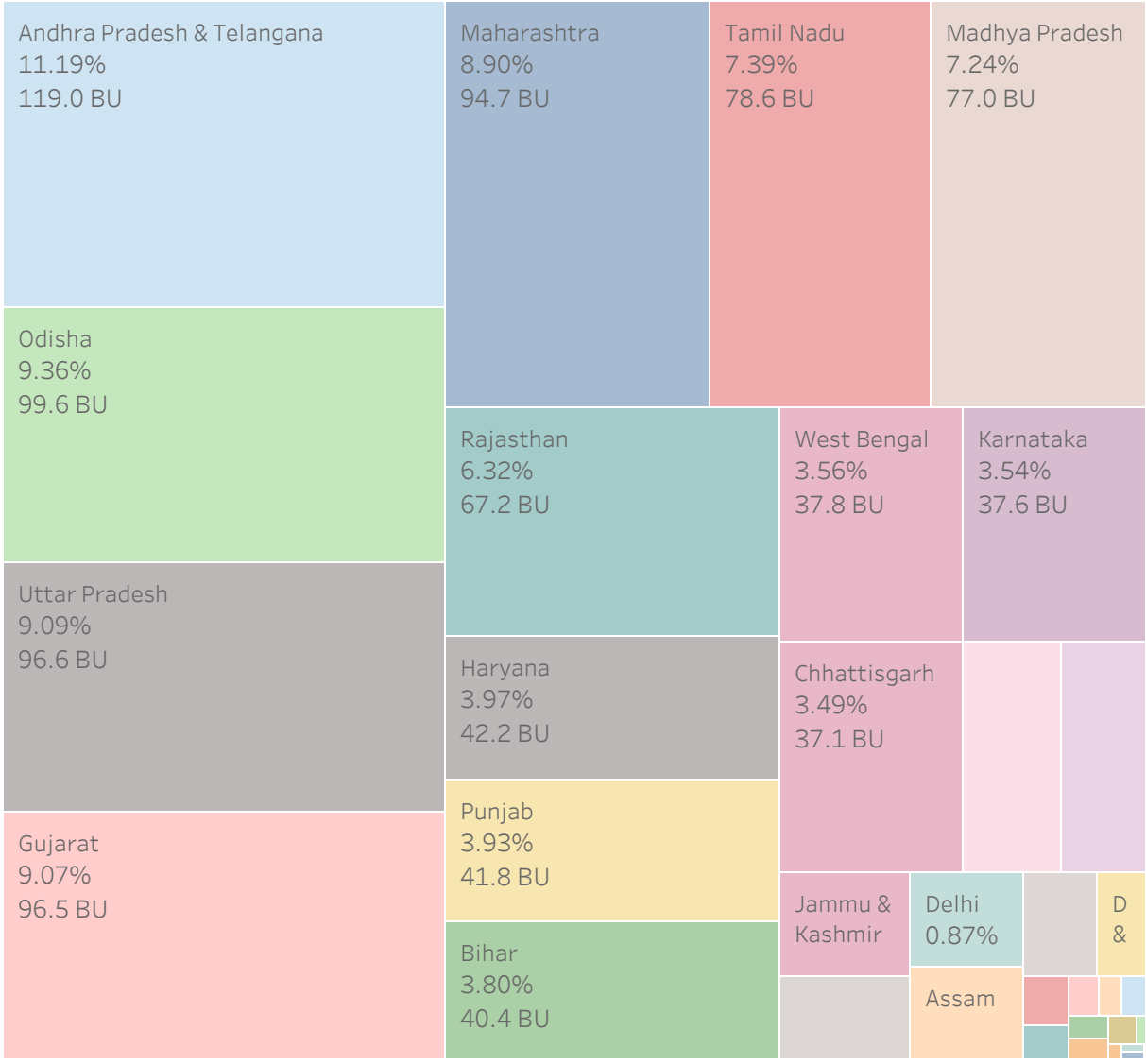
Select a category ↓



- Category
- Hide
 - Commercial
 - Agriculture
 - Domestic
 - Others
 - Industrial, Utility
 - Industrial, Non utility

Share of states

in dacadal change FY12-22, **Total** sales



- Chandigarh
 - Lakshadweep
 - Arunachal Pradesh
 - A & N Island
 - Sikkim
 - Mizoram
 - Meghalaya
 - Manipur
 - Nagaland
 - Tripura
 - Daman & Diu
 - Puducherry
 - D & N Haveli
 - Goa
 - Himachal Pradesh
 - Assam
 - Uttarakhand
 - Delhi
 - Jammu & Kashmir & L..
 - Kerala
 - Jharkhand
 - West Bengal
 - Bihar
 - Punjab
 - Haryana
 - Karnataka
 - Tamil Nadu
 - Delhi
- Prayas (Energy Group)

This dashboard provides data to explore the growth of electricity consumption during the decade FY2012-22, within a consumer category across states. Please **select a consumer category** from the **Share of categories** graph on top left of the dashboard to view **details** of that consumer category.

Acknowledgements

The authors wish to thank Manasi Singh and Mohul Kundu for their data compilation efforts, along with our colleagues Ajit Pilane, Sharmila Ghodake, and Shreya Dhanawte.

Disclaimer

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