Analysis of household consumption expenditure: NSSO Consumer Expenditure Survey 2022-23

Residential energy demand forecast

- To create policy pathways towards net-zero emissions future in India, it is imperative to understand the residential energy demand and expenditure patterns of households.
- It will help us in satisfying future energy demand and address affordability concerns as well.
- However, direct measurement of household energy demand and income/expenditure levels is a tough task due to absence of credible source of unit-level database.
- Household Consumption Expenditure Survey (2022-23) dataset published by Ministry of Statistics and Programme Implementation (MoPSI) provides us an alternative way of measuring household energy demand

Household Consumption Expenditure Survey (2022-23)

- The Household Consumption Expenditure Survey (HCES) is designed to collect information on consumption of goods and services by the households.
- The survey also collects some auxiliary information on household characteristics and demographic particulars of the households.
- Information collected in HCES is useful for understanding the consumption and expenditure pattern, standard of living and well-being of the households.

Methodology

- We pre-process and clean the dataset as per the methodology prescribed in
  https://github.com/s7u512/NSSO_HCES_2022-23/tree/main
- Afterwards we compute the monthly per capital expenditure (MPCE) values of households in both urban and rural areas for a particular state.
- Based on their expenditure (MPCE) quintiles[1], we analyse various consumption patterns of urban/rural households for each quintile in a state.

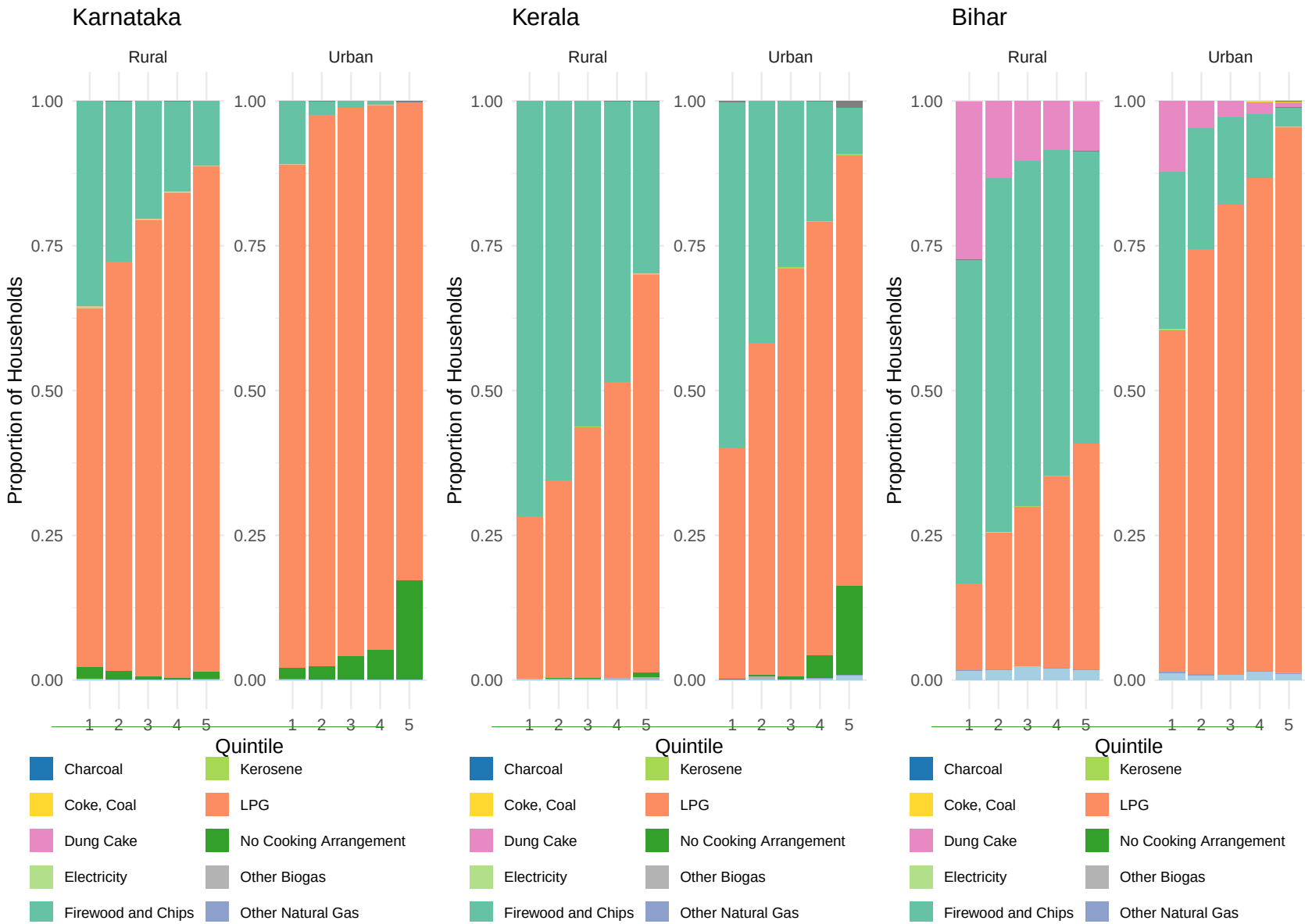
[1] Households were divided into quintiles based on their Monthly Per Capita Expenditure (MPCE), ensuring each quintile contains an equal proportion of the weighted population. This approach accounts for varying household sizes and weights, leading to different numbers of unweighted households and populations across quintiles.

Variables of Interest

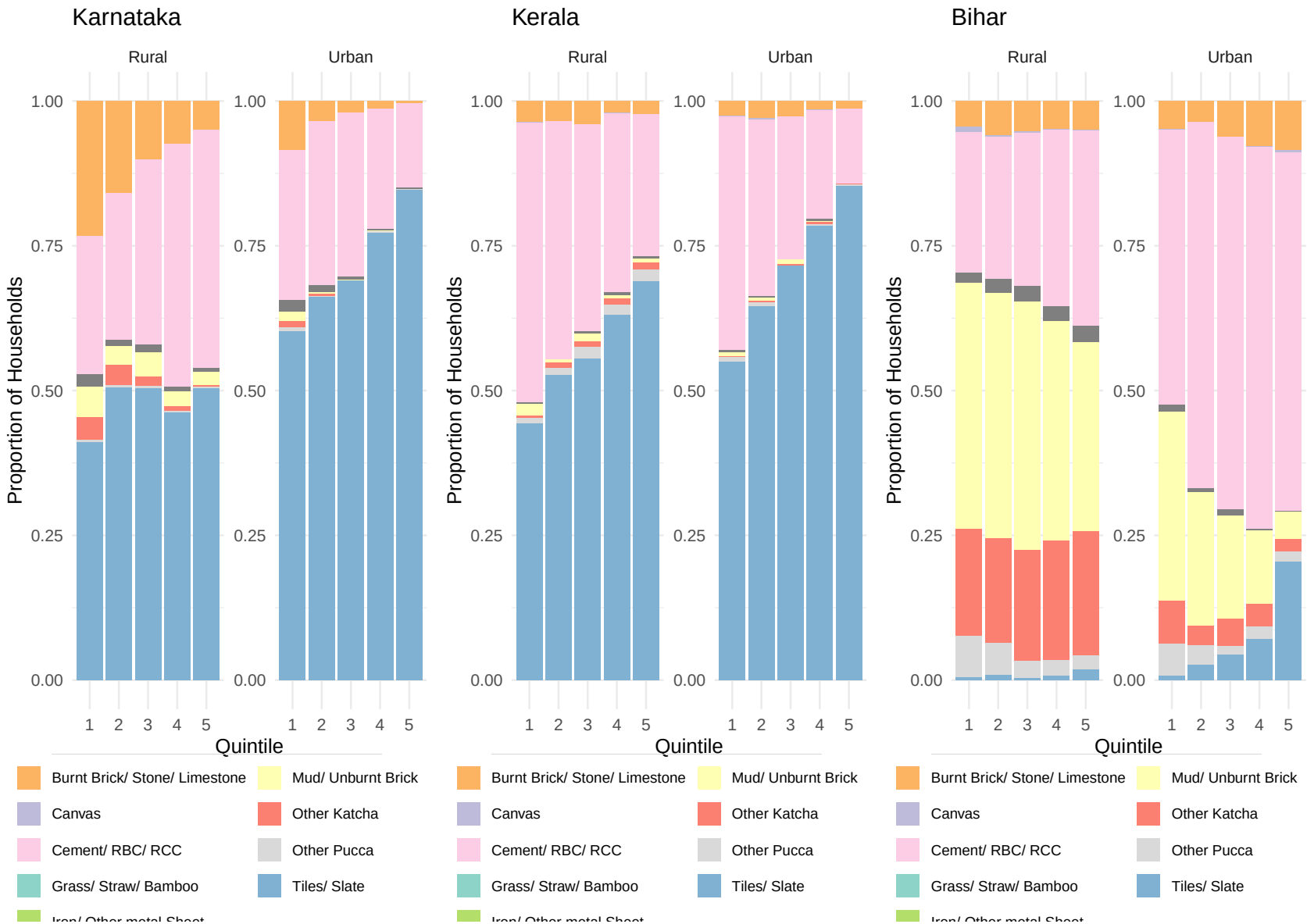
The variables of interest have been categorised into 3 major blocks

- Characterstics of the dwelling unit of households (building materials used, source of energy for cooking and lighting, source of drinking water)
- Consumer goods ownership - Whether households possesed TV, mobiles, PC, Laptop, bikes, cars, trucks, washing machine, AC, cooler, etc.
- Appliances and transport equipment purchases - Number of first hand and second hand purchases, cost of purchases, cost of repair and maintenance, etc for goods identified above.

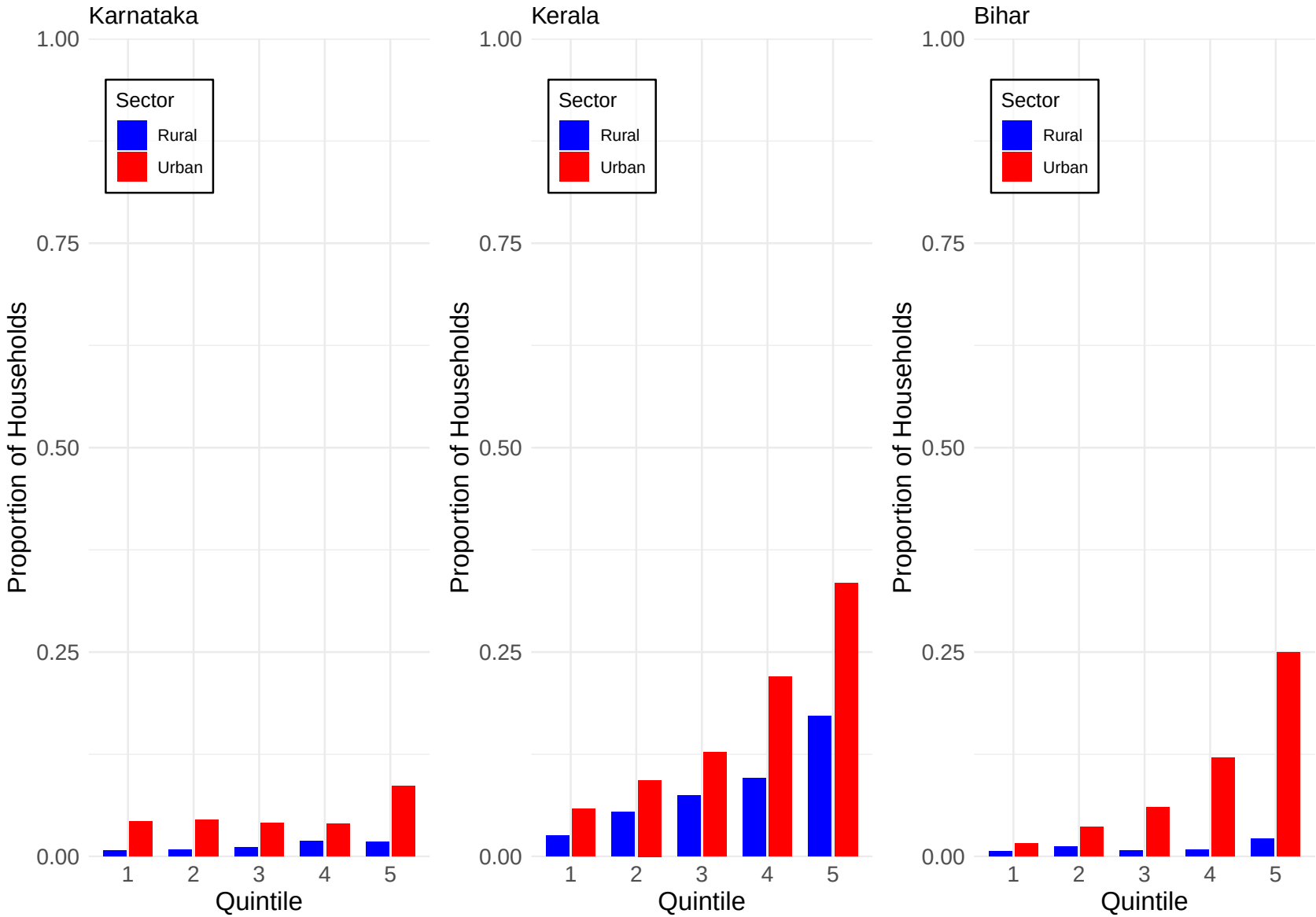
Sources of energy for cooking purposes


Karnataka
Kerala
Bihar
Rural
Urban
Proportion of Households
1.00
0.75
0.50
0.25
0.00
1
2
3
4
5
Quintile
Charcoal
Coke, Coal
Dung Cake
Electricity
Firewood and Chips
Kerosene
LPG
No Cooking Arrangement
Other Biogas
Other Natural Gas

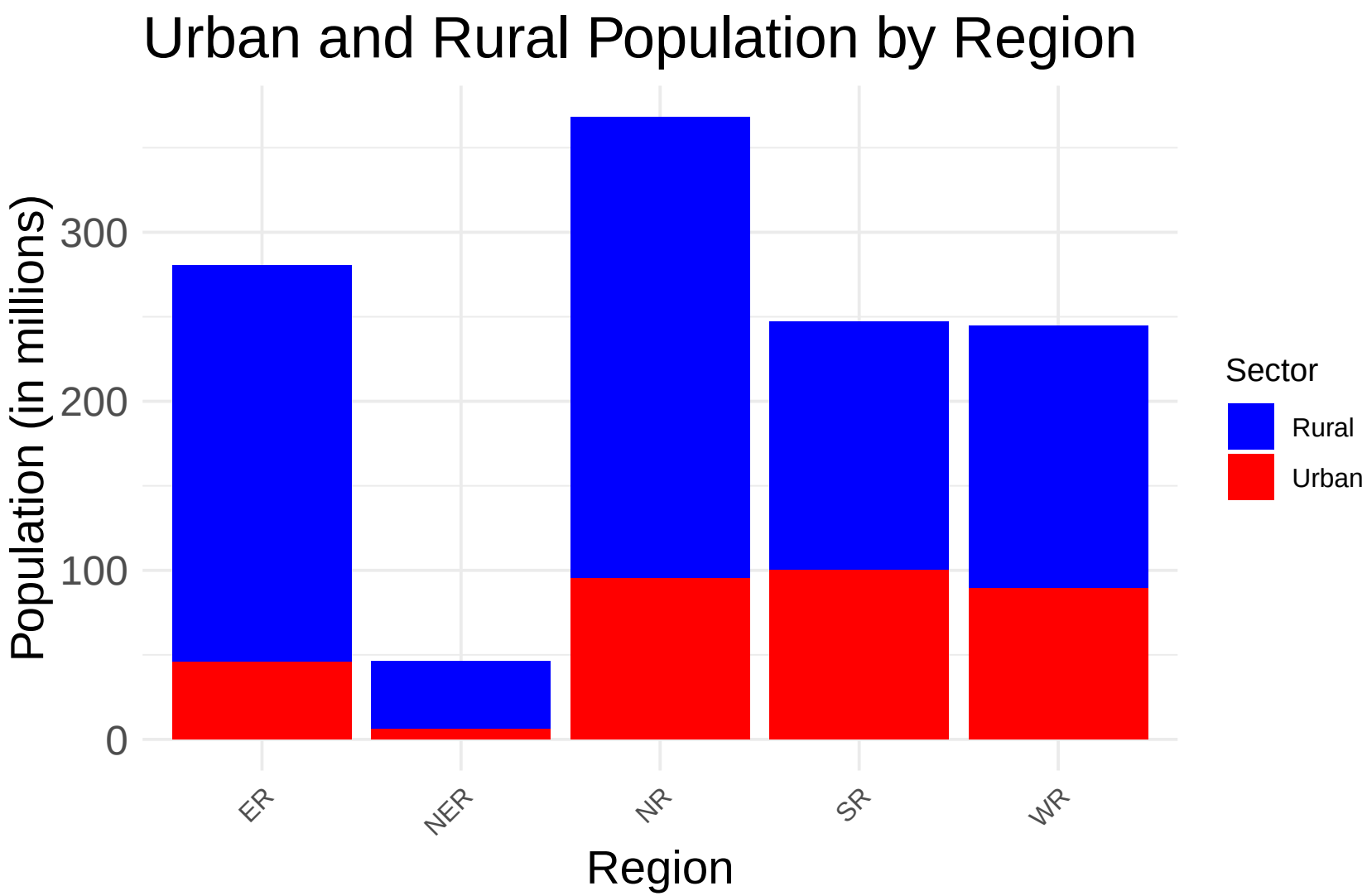
Building material for floor


Karnataka
Kerala
Bihar
Rural
Urban
Proportion of Households
1.00
0.75
0.50
0.25
0.00
1
2
3
4
5
Quintile
Burnt Brick/ Stone/ Limestone
Mud/ Unburnt Brick
Canvas
Other Katcha
Cement/ RBC/ RCC
Other Pucca
Grass/ Straw/ Bamboo
Tiles/ Slate

AC / Cooler ownership



Urban / Rural Population distribution



Final note

- As living standards and socio-economic conditions improve, consumption patterns will also evolve.
- This could potentially lead to huge jump in our energy demand projections.
- Further, extremely low level of ownership of electric appliances and transport vehicles and growth in urbanisation is a source of uncertainity regarding the nature of change in consumption of material goods.
- Finally, the nature of technologies can see dramatic changes, leading to higher uncertainities regarding emission projections till 2070.