

Methodology for China Datasets

Power Transformation Lab, UCSD

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Overview

This document outlines the methodology for China power datasets across demand, supply, and parameters, including provincial annual/monthly electricity consumption and generation, installed capacity, and coal price indices.

The datasets are compiled from official statistics, regulatory disclosures, industry sources, and vetted third-party databases. They follow a standardized workflow covering data extraction, schema harmonization, unit normalization, and cross-verification to ensure data accuracy and consistency.

For China datasets not covered in this document, please refer to their separate methodology documents.

1. China Provincial Annual Electricity Consumption

Data Sources

- **Primary Source:** National Bureau of Statistics of China (NBS); originated from China Electricity Council (CEC)
- **Data Portal:** [NBS Provincial Annual Data](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial annual consumption metrics.
- **Normalization:** Conversion of reported values into standard energy units (GWh).
- **Validation:** Cross-verification of provincial aggregates against national totals.

Data Profile

- **Dataset File:** cn_prov_annual_consumption.csv
- **Data Period:** 1995 to 2025

Data Fields

Field	Description
province	Province name
year	Reporting year
demand_gwh	Total electricity demand in Gigawatt-hours (GWh)

2. China Provincial Monthly Electricity Consumption

Data Sources

- **Primary Source:** Dianchacha; originated from State Grid Corporation of China (SGCC)
- **Data Portal:** [Dianchacha Data Portal](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial monthly consumption metrics.
- **Normalization:** Conversion of reported values into standard energy units (GWh).
- **Validation:** Periodic audits to address potential reporting lags or discrepancies in third-party aggregates.

Data Profile

- **Dataset File:** cn_prov_monthly_consumption.csv
- **Data Period:** 2020-02 to 2026-05

Data Fields

Field	Description
province	Province name
year	Reporting year
month	Reporting month
demand_gwh	Total electricity demand in Gigawatt-hours (GWh)

3. China Provincial Annual Electricity Generation by Technology

Data Sources

- **Primary Source:** National Bureau of Statistics of China (NBS)
- **Data Portal:** [NBS Provincial Annual Data](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial annual generation metrics.
- **Normalization:** Conversion of reported values into standard energy units (GWh).
- **Validation:** Cross-verification of provincial aggregates against national totals.

Data Profile

- **Dataset File:** cn_prov_annual_generation_by_tech.csv
- **Data Period:** 1991 to 2025

Data Fields

Field	Description
technology	Power generation technology (e.g., thermal, hydro)
province	Province name
year	Reporting year
generation_gwh	Total electricity generation in Gigawatt-hours (GWh)

4. China Provincial Monthly Electricity Generation by Technology

Data Sources

- **Primary Source:** National Bureau of Statistics of China (NBS)
- **Data Portal:** [NBS Provincial Monthly Data](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial monthly generation metrics.
- **Normalization:** Conversion of reported values into standard energy units (GWh).
- **Validation:** Cross-verification of cumulative monthly aggregates against annual reported totals to ensure data fidelity.

Data Profile

- **Dataset File:** cn_prov_monthly_generation_by_tech.csv
- **Data Period:** 2002-04 to 2026-05

Data Fields

Field	Description
technology	Power generation technology (e.g., thermal, hydro, solar, wind)
province	Province name
year	Reporting year
month	Reporting month
generation_gwh	Total electricity generation in Gigawatt-hours (GWh)

5. China Provincial Annual Installed Capacity by Technology

Data Sources

- **Primary Source:** Dianchacha; originated from China Electricity Council (CEC)
- **Data Portal:** [Dianchacha Data Portal](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial annual installed capacity metrics.
- **Normalization:** Conversion of reported values into standard energy units (GW).
- **Validation:** Periodic audits to address potential reporting lags or discrepancies in third-party aggregates.

Data Profile

- **Dataset File:** cn_prov_annual_capacity_by_tech.csv
- **Data Period:** 2009 to 2024

Data Fields

Field	Description
technology	Power generation technology (e.g., thermal, hydro)

Field	Description
province	Province name
year	Reporting year
cumulative_capacity_gw	Cumulative electricity generation capacity in Gigawatts (GW)

6. China Provincial Annual Solar PV Grid-Connected Capacity by Type

Data Sources

- **Primary Source:** National Energy Administration of China (NEA); originated from Renewable Energy Information Management Center (REIMC) and China Electricity Council (CEC)
- **Data Portal:** [NEA Press Release](#)

Data Processing

- **Retrieval:** Systematic collection of solar PV statistics from official NEA Press Releases.
- **Normalization:** Conversion of reported values into standard energy units (GW).
- **Validation:** Cross-verification of provincial aggregates against national totals.

Data Profile

- **Dataset File:** cn_prov_annual_solar_pv_capacity_by_type.csv
- **Data Period:** 2018 to 2025

Data Fields

Field	Description
province	Province name
year	Reporting year
pv_type	Category of photovoltaic (PV) capacity data by installation type and measurement basis (e.g., residential, non-residential, distributed, centralized, new, cumulative)

Field	Description
capacity_gw	Electricity generation capacity in Gigawatts (GW)

7. China Provincial Monthly Solar PV Installed Capacity

Data Sources

- **Primary Source:** Dianchacha; originated from China Electricity Council (CEC)
- **Data Portal:** [Dianchacha Data Portal](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial monthly solar PV metrics.
- **Normalization:** Conversion of reported values into standard energy units (GW).
- **Validation:** Periodic audits to address potential reporting lags or discrepancies in third-party aggregates.

Data Profile

- **Dataset File:** cn_prov_monthly_solar_pv_capacity.csv
- **Data Period:** 2018-12 to 2026-04

Data Fields

Field	Description
province	Province name
year	Reporting year
month	Reporting month
cumulative_capacity_gw	Cumulative electricity generation capacity in Gigawatts (GW)

8. China Provincial Monthly Wind Power Installed Capacity

Data Sources

- **Primary Source:** Dianchacha; originated from China Electricity Council (CEC)

- **Data Portal:** [Dianchacha Data Portal](#)

Data Processing

- **Retrieval:** Systematic extraction of provincial monthly wind power metrics.
- **Normalization:** Conversion of reported values into standard energy units (GW).
- **Validation:** Periodic audits to address potential reporting lags or discrepancies in third-party aggregates.

Data Profile

- **Dataset File:** cn_prov_monthly_wind_capacity.csv
- **Data Period:** 2022-05 to 2026-04

Data Fields

Field	Description
province	Province name
year	Reporting year
month	Reporting month
cumulative_capacity_gw	Cumulative electricity generation capacity in Gigawatts (GW)

9. China Coal Price Indices

Data Sources

- **Primary Source:** China Coal Transport and Distribution Association (CCTD); China Coal Economic Research Association (CCERA)
- **Data Portal:** [CCTD Data Center](#); [CCERA Statistics Portal](#)

Data Processing

- **Retrieval:** Systematic collection of key coal price benchmarks from official association announcements and statistical compilations.
- **Normalization:** Standardization of price metrics into a unified temporal scale to facilitate cross-index comparison.
- **Validation:** Periodic cross-verification across benchmark indices to monitor market volatility and ensure price consistency.

Data Profile

- **Dataset File:** cn_coal_price_indices.csv
- **Data Period:** 2007-11-23 to 2026-07-10

Data Fields

Field	Description
<code>fuel_type</code>	Type of fuel covered by the index
<code>index_name</code>	Official name of the coal price index
<code>calorific_grade</code>	Calorific grade of the coal used in the index
<code>price_rmb_per_ton</code>	Coal price in RMB per metric ton
<code>year</code>	Reporting year
<code>month</code>	Reporting month
<code>day</code>	Reporting day