

23rd APEC Energy Statistics Workshop



Energy Consumption Survey Residential Sector

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Outlines

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1. Background and Objectives



1. Need for the Survey

- Energy consumption survey supplement the limitations of statistics and enable analysis of actual energy use



- Energy statistics are based on legally reported data from energy suppliers, which provide the information by industry
- The detailed data on actual end-use consumption remain limited and insufficiently captured

Data Sources



- Energy consumption surveys supplement and calibrate statistics to better reflect actual energy use
- This enhances data completeness and reliability for policy planning

Purpose of the Survey



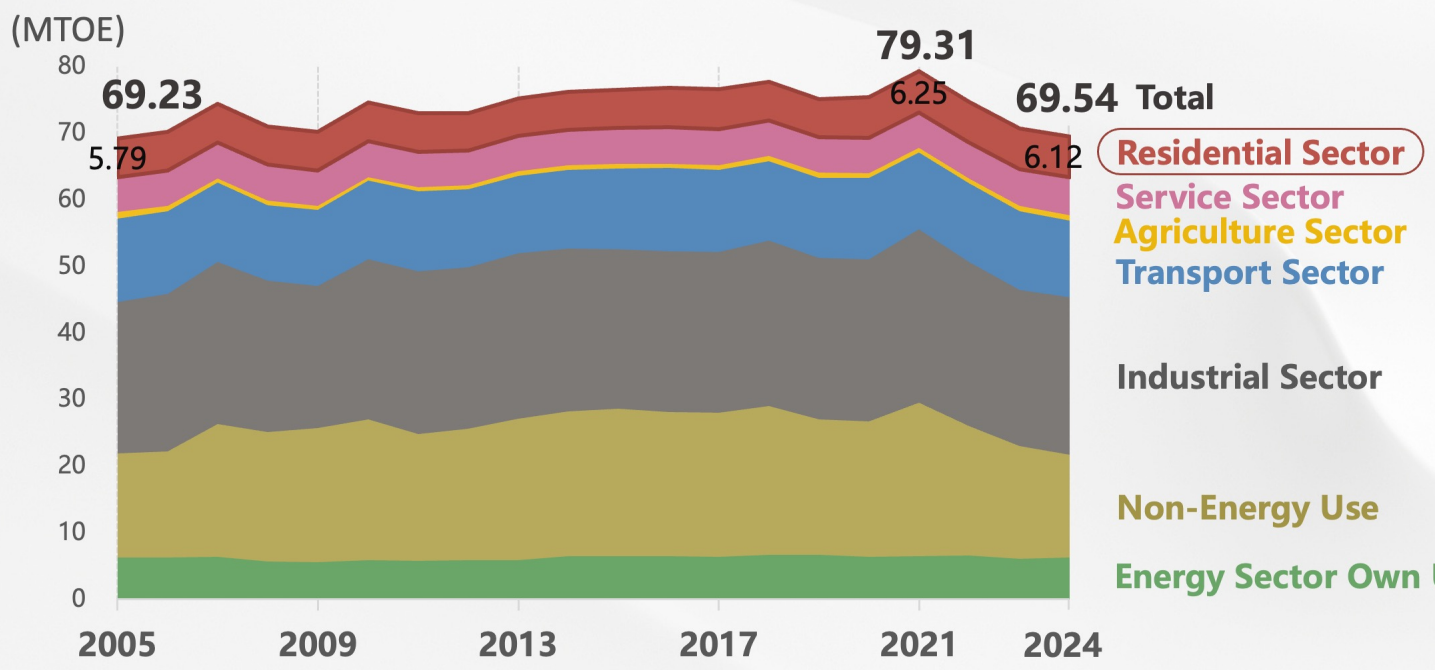
- The current five-year survey cycle suffices for long-term trend analysis but is not sufficient to capture real-time energy consumption dynamics
- Cross-sector survey integration will provide a more comprehensive view of overall energy consumption

Future Enhancements

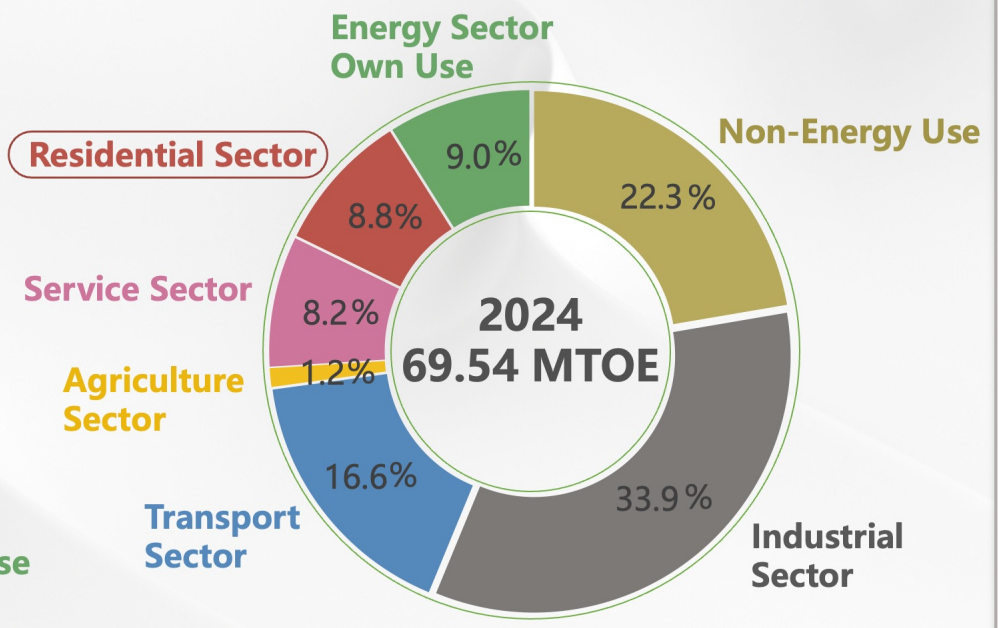
2. Energy Consumption Trends

- The overall energy consumption has remained stable, ranging between 70 and 80 MTOE over the years.
- In the residential sector, energy consumption peaked at 6.25 MTOE in 2021 during the COVID-19 pandemic. Although it slightly declined as the pandemic eased, it rose again to 6.12 MTOE in 2024.

Historical Trend by Sector



Energy Consumption in 2024



3. Survey Objectives

- Key focus for this year: Residential and services sectors, conducted as a single survey every 5 years.
- Energy statistics primarily rely on legally reported data from energy suppliers.
- Energy consumption surveys supplement and calibrate statistics to better reflect actual energy use.

Consumption Trends

Residential sector energy consumption remains stable, with a temporary increase during the COVID-19 pandemic

- Conduct statistical analysis and estimation
- Compare consumption structure and trend changes

Statistical Scope Review

Examine differences between estimated results and official statistics, and analyze possible causes of discrepancies

- Identify actual supply-consumption gaps
- Propose improvements for energy statistics

Emerging Devices Usage

Incorporate EV chargers, smart devices, and ICT equipment into the survey scope

- Reflect the latest energy use trends and lifestyle patterns
- Provide supplementary data for consumption statistics and estimates

2. Survey Mechanism



1. Survey Mechanism and Feedback

- Survey findings assess the completeness and consistency of statistics, ensuring they reflect actual conditions.

Survey Mechanism

- Sectors:** Residential & Services, Transport, Industry, Agriculture
- Frequency:** Every 5 years (following EIA practice)
- Data Collection:** Questionnaires and estimation to obtain end-use data
- Data Usage:** Not directly included in official statistics, but used for supply-demand comparison

Feedback on Energy Statistics - LPG

- Comparison:** Energy balance and survey results show similar total consumption in residential and services sectors, but with structural differences
- Adjustment:** Residential and services consumption was previously allocated by fixed ratios. Following consultation with oil companies, allocations have been revised based on survey results

Sector	LPG Consumption (TOE)			LPG Consumption Structure (%)	
	Energy Balance(A)	Energy Consumption Survey(B)	Gap (A)-(B)	Energy Balance	Energy Consumption Survey
Residential	1,071,271	991,729	79,542	90.9	79.0
Service	107,332	263,813	-156,480	9.1	21.0
Total	1,178,603	1,255,541		100.0	100.0

Similar total consumption

Structural differences

2. Collaboration Mechanism

Collaboration

- Internal Working Meetings
- Expert Consultation Meetings
- Regular Progress Reviews

Competent Authority



Energy Administration
Ministry of Economic Affairs

- Approve and monitor project progress
- Review and accept deliverables
- Ensure compliance with energy statistics Regulations and policy requirements

Energy Statistics




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- Energy statistics research, data collection and analysis, and compilation of statistical publications
- Coordinate with outsourced agency, and conduct preliminary review of results



DSIGroup

Survey Implementing

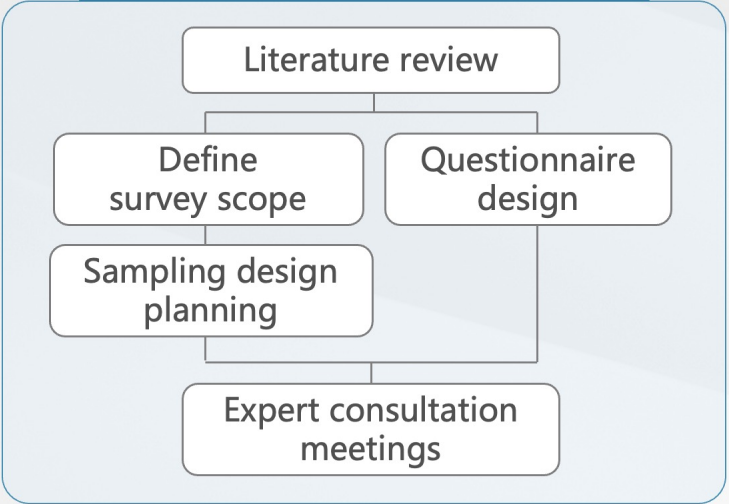
- Survey planning and implementation
- Questionnaire and sampling design
- Interviewer recruitment and training
- Survey analysis and results compilation

3. Survey Planning in Residential Sector

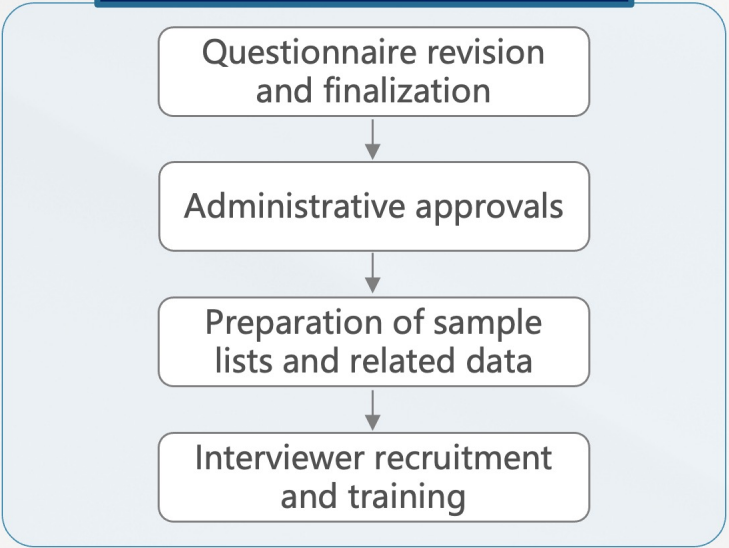


1. Survey Execution Process

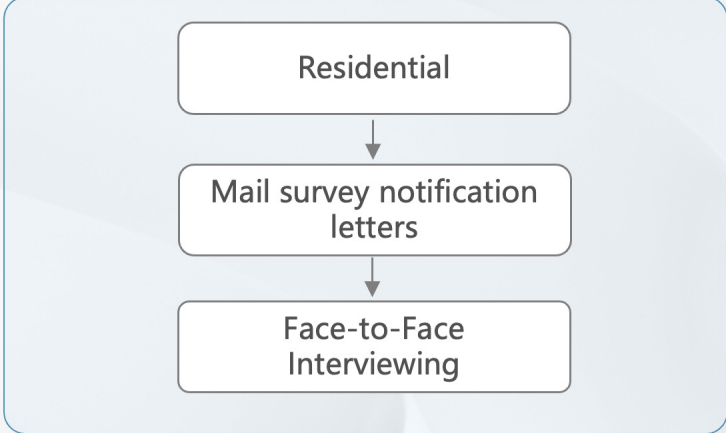
1. Survey Planning Phase



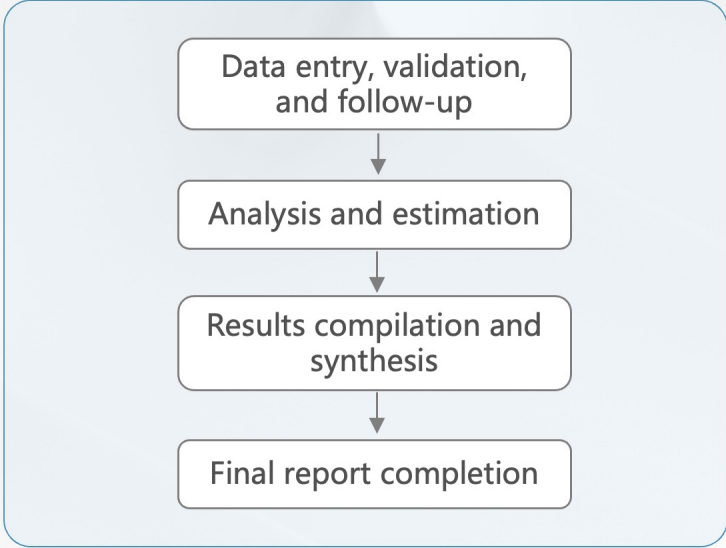
2. Preparatory Phase



3. Survey Implementation Phase



4. Data Analysis Phase



2. Survey Planning

1. Scope

Non-commercial households, covering all major cities and counties

2. Respondents

Household head or person responsible for managing household finances

3. Survey Population

Power company metered database for non-commercial users

4. Implementation

Face-to-Face Interviewing

5. Sampling Design

- Two-dimensional stratified random sampling by residential area and electricity consumption
- Simple random sampling within each stratum



6. Survey Content

- 1. Annual Energy Consumption**
 - Types of Energy: Electricity, LPG, diesel, gasoline, solar, etc.
 - Energy Consumption (by season)
- 2. Equipment Usage**
 - Equipment type, quantity, and usage
 - Energy type, equipment age, smart device status
 - Presence of energy-saving labels / efficiency tiers
- 3. Household and Building Characteristics**
 - Building information: type, usage, floor area, building age, etc.
 - Number of household residents

Electricity Consumption Tiers	Total	≤120 kWh	121~330 kWh	331~500 kWh	501~700 kWh	701~1,000 kWh	1,001 kWh
Total	1,329	179	455	275	172	128	120
North	459	48	157	114	72	38	30
Central	289	39	107	53	30	30	30
South	401	62	161	78	40	30	30
East	180	30	30	30	30	30	30

4. Future Enhancement Plan



Future Enhancement Plan

- Emerging energy diversification
- Enhancing Insights into energy consumption through survey-based data collection
- Ongoing Review for Policy Improvement



1. Survey Frequency

Currently conducted every 5 years, planned to shift to every 3 years

2. Cross-Sector Survey Integration

Integrate industrial, service, and agricultural sectors into a single survey, residential sector will be considered for a separate survey or removal

3. Enhanced Parameter for Estimation

More parameters for calibration and estimation, supporting sector-specific adjustments and renewable energy estimates

4. Thematic Surveys

E.g., focusing on qualitative survey on AI usage or end-use oil data in the transport sector



THANK YOU
FOR YOUR ATTENTION