2A_Overview of members' end-use data: Current APEC situation

23rd APEC Energy Statistics Workshop: Capacity Building in Conducting Household Energy Consumption (Phase I)

17-19 September 2025

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Outline

- APEC/EGEDA efforts
- Status of EEI template collection
- Household consumption trends
- Closing thoughts

APEC/EGEDA efforts

Milestone

Dec 2014
- Energy Efficiency indicators(EEI) template

Dec 2015
- EEI template & User Manual sent

Mar–Apr 2016
- Collection of EEI templates

May–June 2016
- Data evaluation

Nov 2016
- Reported progress in 28th EGEDA

June 2017
- EEI template revised (28th EGEDA)

Sept–Oct 2017
- Submission, evaluation and data analysis

Nov 2017
- Reported progress in 29th EGEDA

Jan 2018
- EEI template revised to include

Requested OECD/IEA members to share the IEA- EEI

March 2022

APEC/IEA Joint project

April 2022

APEC follows IEA template

May 2022

HKC and CT EEI templates submission to IEA

Dec 2023

Fill-in end-use consumption (BD; MAS; PHL)

Collaborative efforts

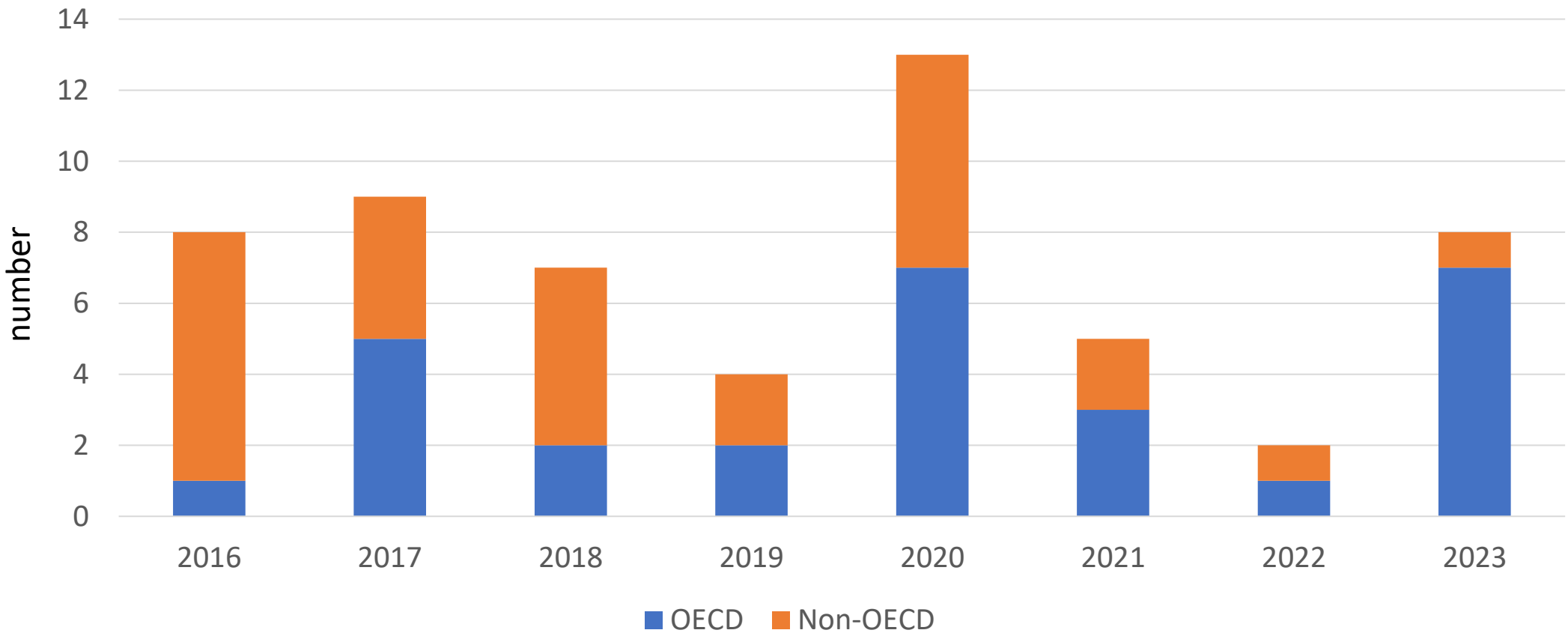
- ❑APEC/EGEDA and IEA
  - Joint APEC-IEA Workshops on end-use energy consumption (Part 1 and 2) – 2021-2022
  - Energy efficiency indicators (EEI) template
    - Using IEA EEI template
    - Sharing the APEC-OECD EEI templates with APEC
    - Sharing APEC- Non-OECD EEI templates (HKC; CT; PHL) with IEA
- ❑ Project with EE consultant
  - End-use energy consumption estimation (BD; MAS; PHL)
  - Statistics training resource person

Capability enhancement efforts

- Collaboration with member economies on energy efficiency projects for APEC funding:
  - Conducting energy consumption surveys.
  - Involvement of local statisticians aside from the energy statisticians.
- Ensure knowledge is sustained through the APEC Energy Statistics Workshop and EGEDA training activities
  - Conducting capability workshops on household energy consumption survey (3 Phases)
  - Expanding scope of energy statistics training

Status of EEI template collection

Number of submissions is a challenge



- ❑ OECD templates were collectively from IEA (CHL; ROK; NZ; US), and directly from AUS; CDA; JPN
- ❑ 2 Non-OECD submit through EGEDA online submission platform

Completeness is even more challenging

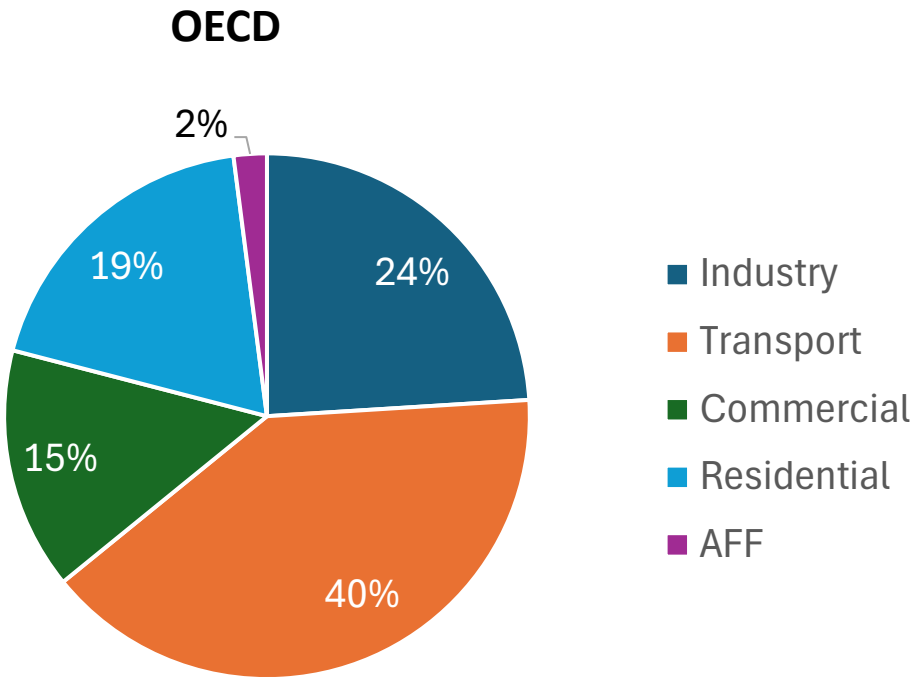
B	D	R
RESIDENTIAL	**units**	**2003**
Legend / Check all/none / Add remarks		
Space Heating		
Oil & Oil Products	PJ	352.82
Natural Gas	PJ	500.30
Coal & Coal Products	PJ	22.96
Biofuels & Waste	PJ	273.82
Heat	PJ	56.41
Electricity	PJ	140.74
Other	PJ	0
Total	**PJ**	**1,347.06**
Space Cooling		
Electricity	PJ	0.73
Other	PJ	0
Total	**PJ**	**0.73**
Water Heating		
Oil & Oil Products	PJ	44.11
Natural Gas	PJ	56.46
Coal & Coal Products	PJ	2.26
Biofuels & Waste	PJ	2.72
Heat	PJ	11.31
Electricity	PJ	62.24
Other	PJ	0
of which: solar thermal - **voluntary**	PJ	0
Total	**PJ**	**179.09**
Cooking		
Oil & Oil Products	PJ	31.25
Natural Gas	PJ	37.01
Coal & Coal Products	PJ	0
Biofuels & Waste	PJ	0
Heat	PJ	0
Electricity	PJ	37.56
Other	PJ	0
Total	**PJ**	**105.81**

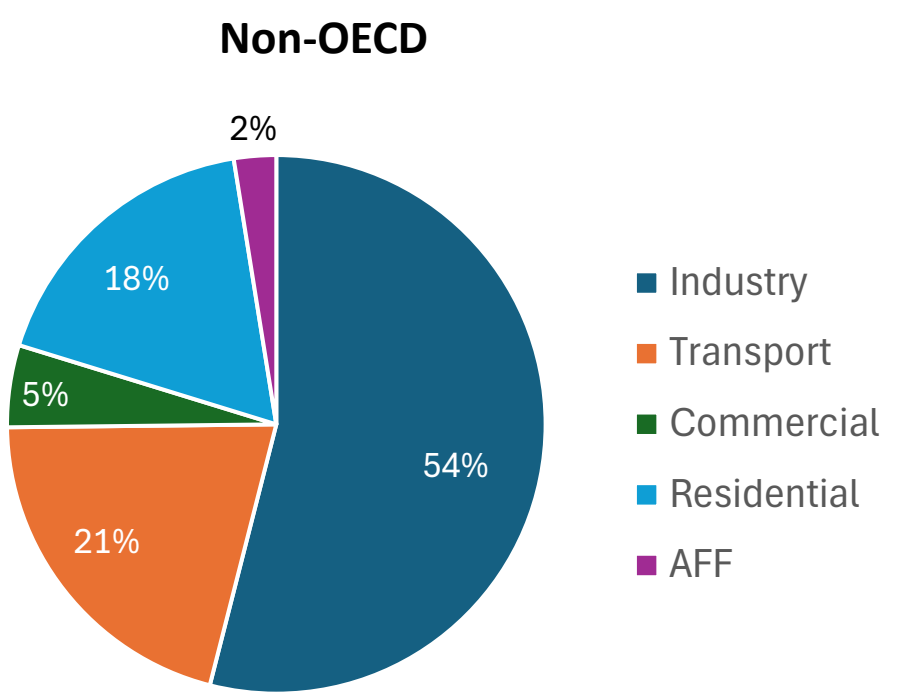
B	D	R	S
RESIDENTIAL	**units**	**2003**	**2004**
Legend / Check all/none / Add remarks			
Appliances Diffusion (number of units per occupied dwelling)			
Refrigerators	unit/dw	0	0
Freezers	unit/dw	0.83	0.83
Refrigerator/Freezer Combinations	unit/dw	0.99	0.99
Dish Washers	unit/dw	0.43	0.44
Clothes Washers	unit/dw	0.95	0.92
Clothes Dryers	unit/dw	0.26	0.27
Television/Home entertainment	unit/dw	1.42	1.37
PC/Information & communication technology	unit/dw	0	0
Appliances Stock (only within occupied dwellings)			
Refrigerators	10^6	0	0
Freezers	10^6	20.99	21.34
Refrigerator/Freezer Combinations	10^6	25.06	25.43
Dish Washers	10^6	10.79	11.15
Clothes Washers	10^6	24.07	23.61
Clothes Dryers	10^6	6.69	6.98
Television/Home entertainment	10^6	35.92	34.97
PC/Information & communication technology	10^6	0	0

- *Residential energy consumption is disaggregated into end-uses by fuel;*
- *Appliance data were likewise collected;*
- *Only **2** Non-OECD members can complete the template.*

Household consumption trends

Residential sector consumes one-third of TFEC

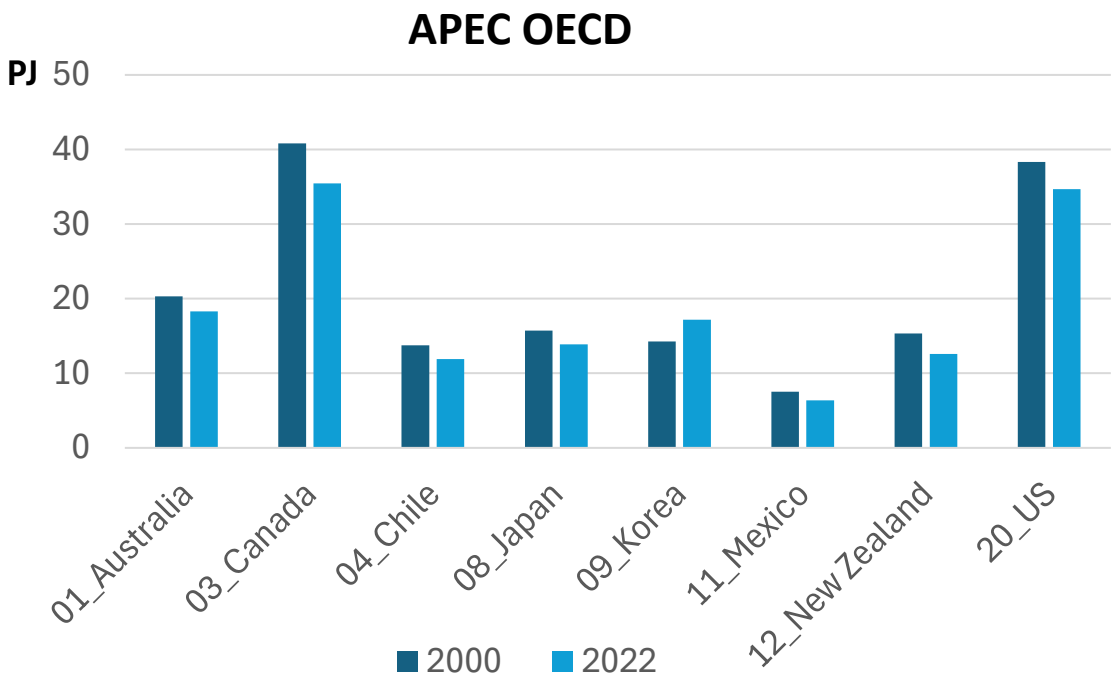


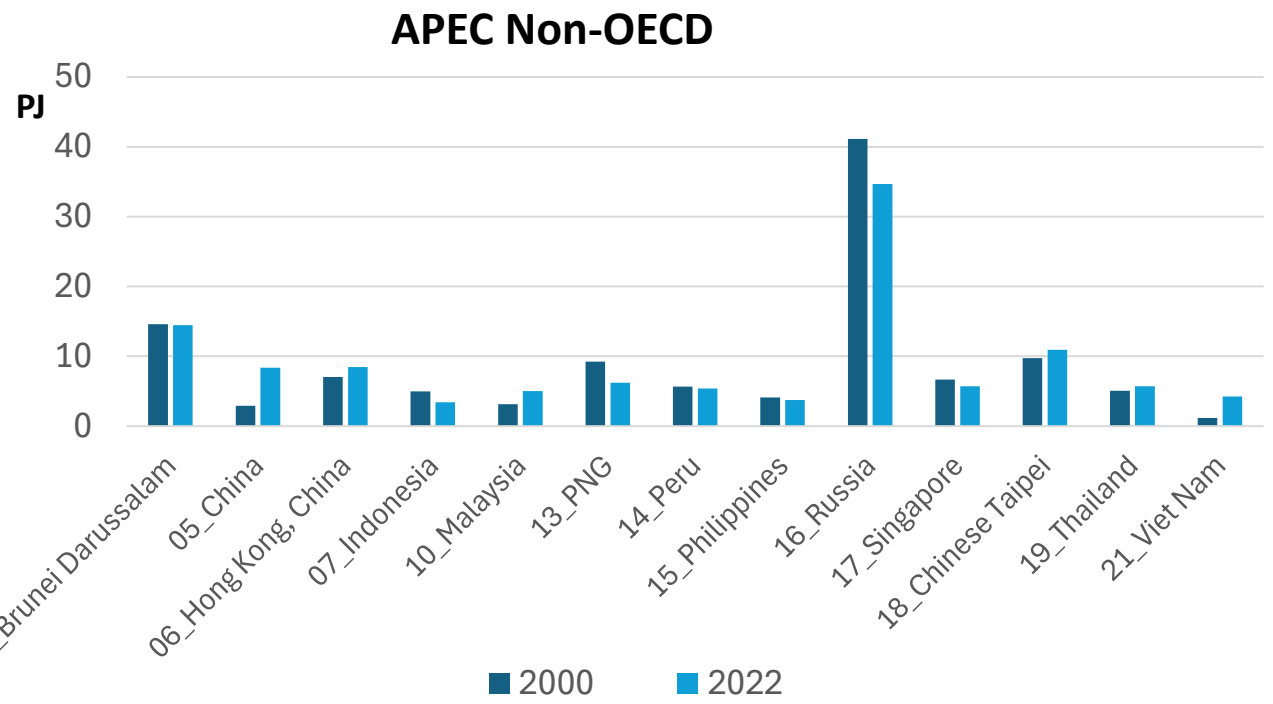


- *Residential consumption accounts for one-third of TFEC in both APEC-OECD and APEC-Non-OECD;*
- *Growth of residential consumption in APEC Non-OECD was faster (2.3%) in APEC Non-OECD than in APEC OECD (0.3%) between 2000 and 2022.*

Residential consumption varies between members

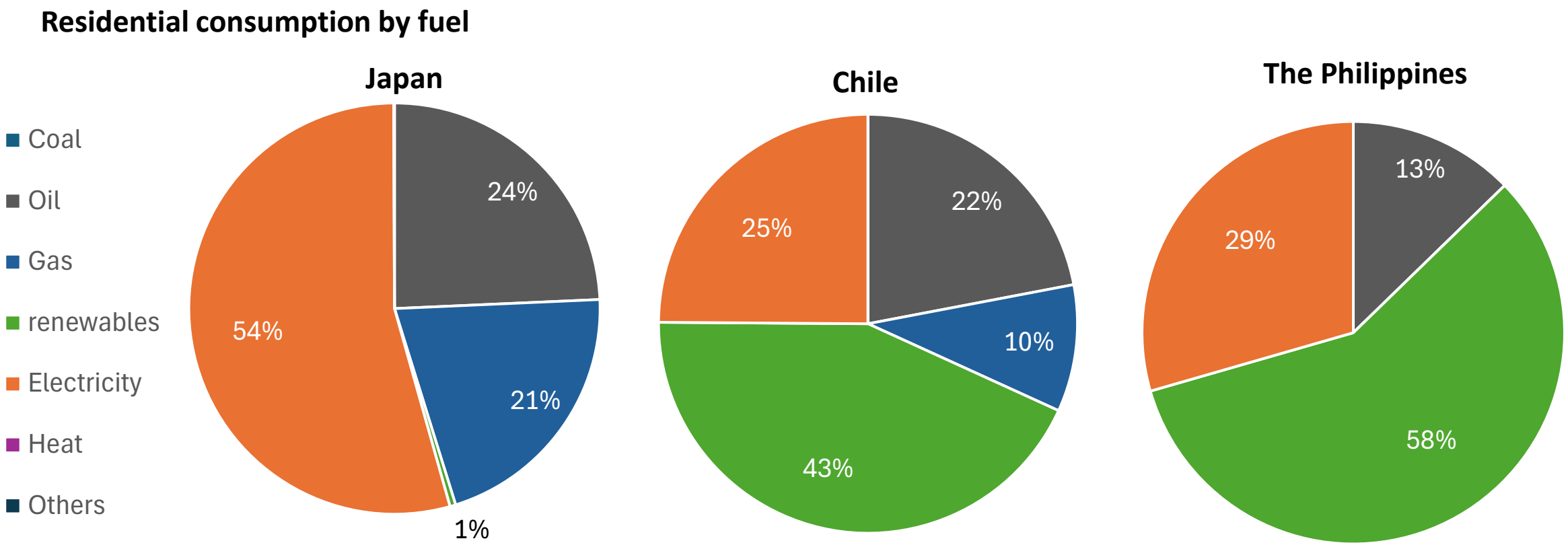
Energy consumption per capita in residential





- *Per capita consumption in residential in most APEC OECD members declined from 2000 to 2022;*
- *In contrast, energy consumption per capita in residential in most APEC Non-OECD members increased;*
- *Residential consumption is dependent on various factors, in this case, the size of the population.*

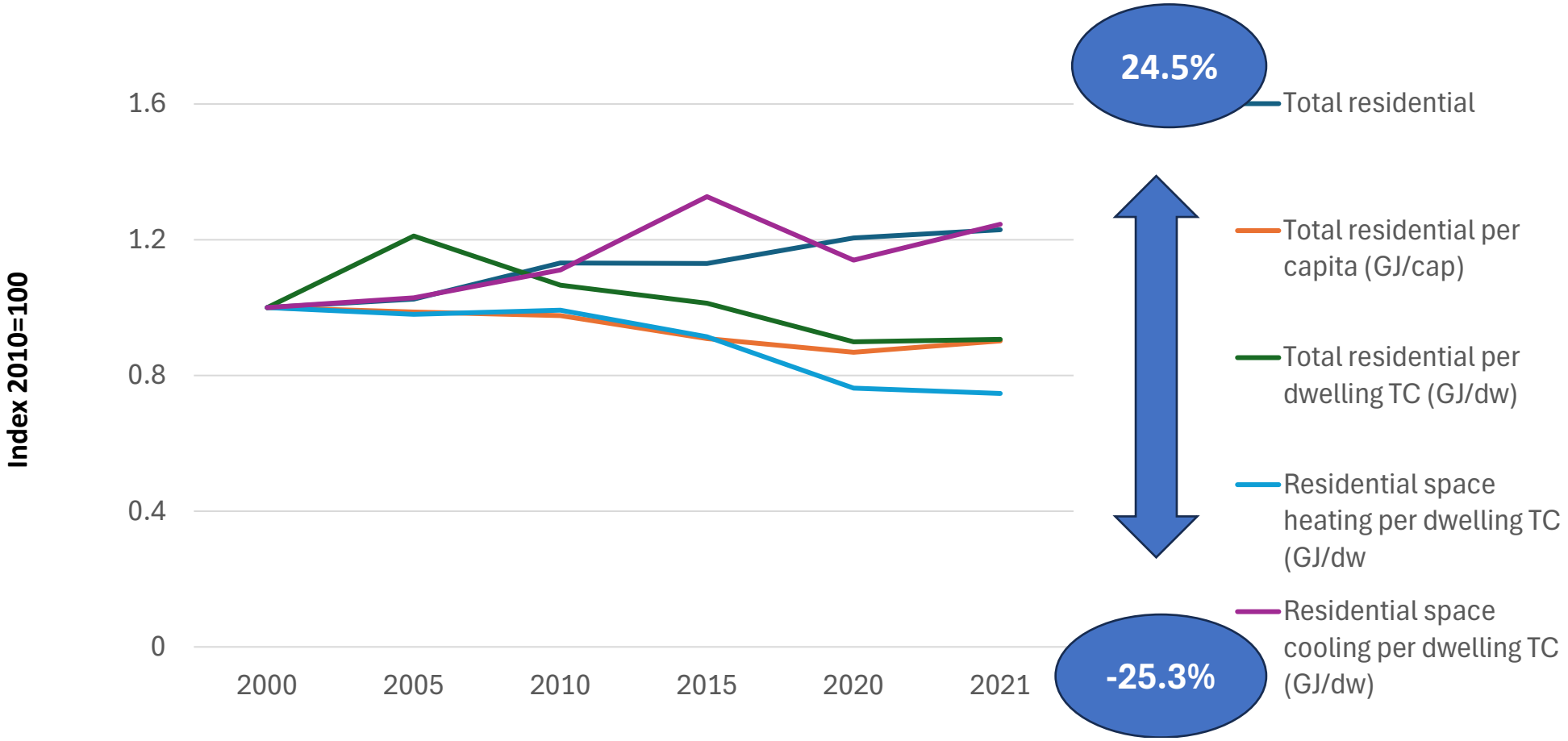
Residential consumption by fuel varies significantly



- *Consumption by fuel share significantly varies by each economy;*
- *Clearly, consumption trends depend on the availability of resources, quality of life, and weather, among others*

Explains basic consumption patterns (1)

Australia– Households energy consumption

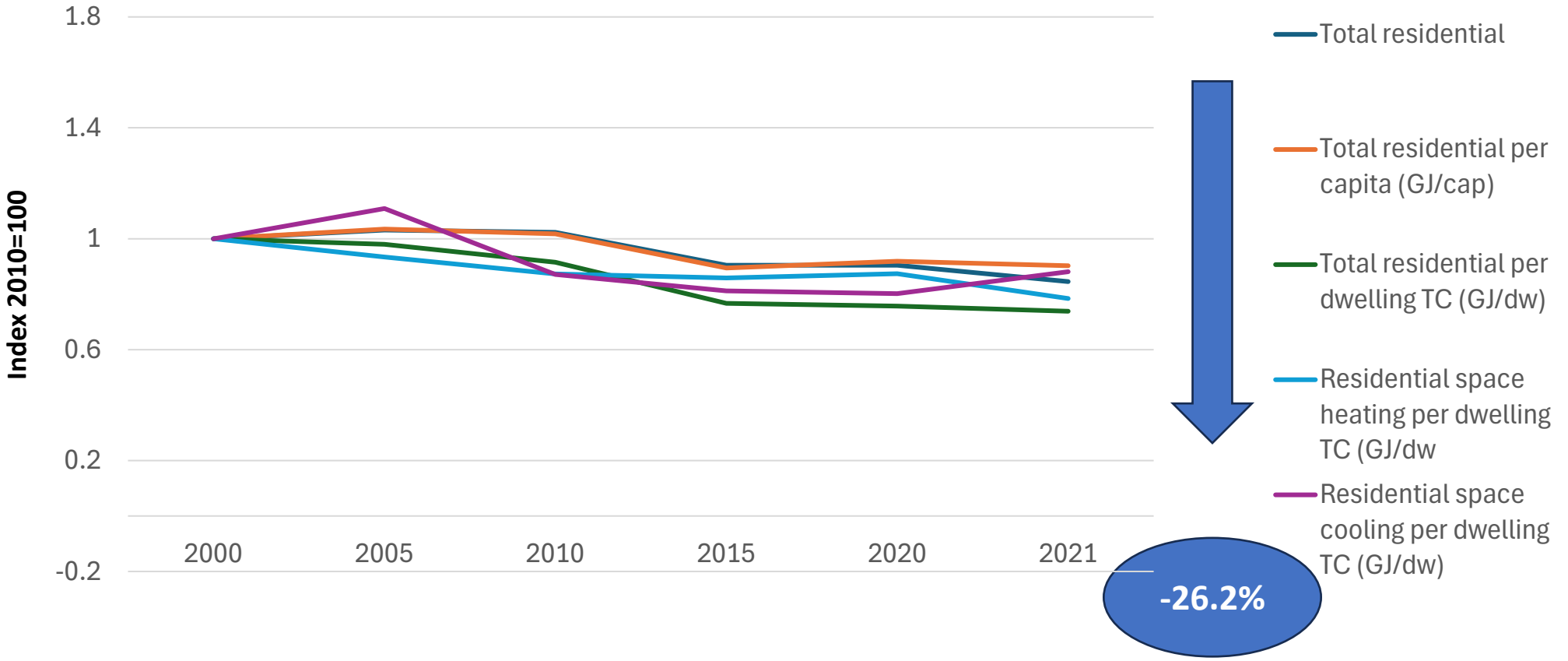


***TC = temperature correction** intends to remove the fluctuations in energy consumption due to fluctuations in temperature in the given year compared with the average temperature of an economy.*

- *Efficiency indicators help understand the trends and key drivers of energy consumption, such as population, number of dwellings and size of dwellings.*

Explains basic consumption patterns (2)

Japan– Households energy consumption



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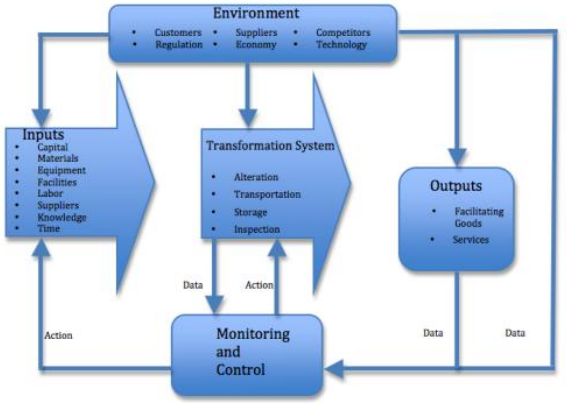
Closing thoughts

Methods used to collect data for indicators

- Administrative sources
  - Basis as often gathers many data
  - To be consulted before starting new data collection
- Surveys
  - The key: a representative sample
  - Possibly expanding existing surveys
- Metering and measuring
  - Costly but very effective for monitoring specific equipment efficiency
- Modelling
  - Complementary to surveys or stand alone



Better data=better analysis

- Collecting end-use energy consumption is always a challenge, but there are ways to collect them.
- Cooperation within the local government is important; for example, statistics offices are the sources of Administrative data or are designated to conduct surveys. However, the energy sector is more knowledgeable about energy data.
- Analysing and collecting energy consumption data is a continuing process; hence, we do not stop to learn and explore.
- It is clear that the more detailed information collected, the better we know true trends.

Asia-Pacific Economic Cooperation

APERC Asia Pacific Energy Research Centre

Thank you for your kind attention.

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