

Session 2-G1. Report on annual data collection and overview of 2023 energy supply and demand in APEC

The 37th Meeting of APEC Expert Group on Energy Data and Analysis (EGEDA37)

8-10 April 2026 – Guangdong, China

Mr Edito BARCELONA, EGEDA Secretariat



Outline

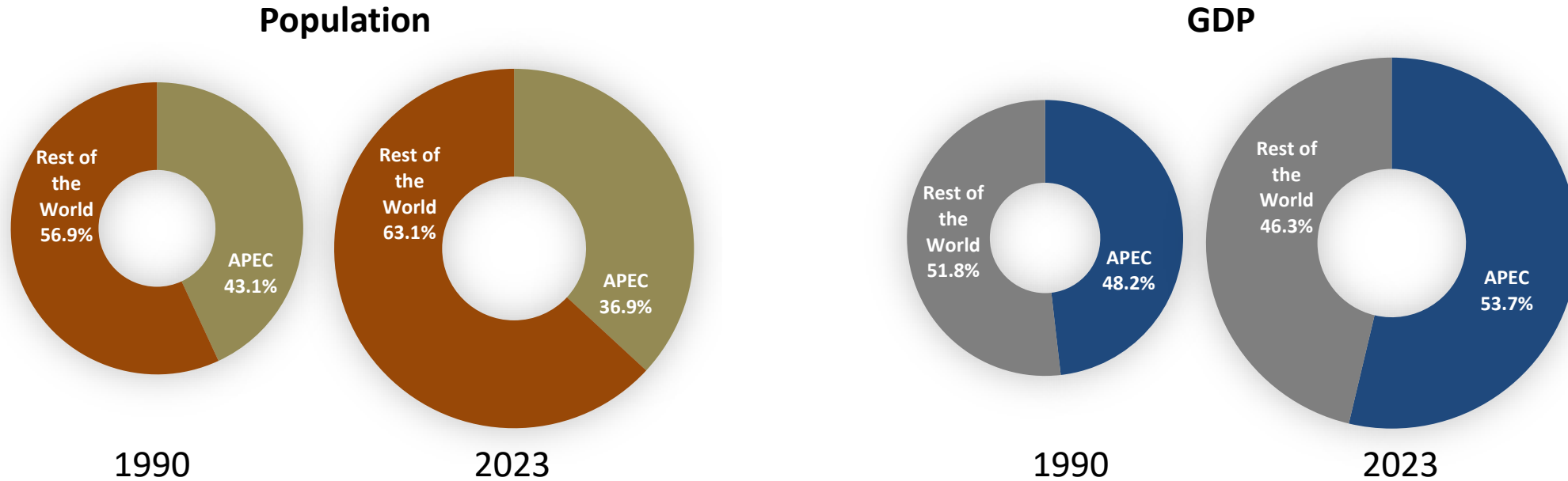
- Report on the collection of 2023 annual energy consumption and supply data
- APEC and the rest of the world
- Analysis of 2023 energy situation
- Long-term trends from 1990
- Summary

Collection of 2023 annual energy data

- **Data collection has become increasingly challenging**, as fewer economies are able to complete and return the full data templates. The Secretariat has therefore had to rely more heavily on the energy balance tables and publications submitted by economies.
- **Approval processes for official data have become more stringent in some economies**, resulting in longer internal review cycles and delays in data submission. The final dataset was received in October 2025— significantly later than the Secretariat’s preferred deadline of 31 March 2025.
- **There are also positive developments**, with some economies expanding their data collection to include more primary sources and reducing reliance on estimates.
- Several economies have also provided valuable revisions to historical data.
- To avoid delays in publication, the Secretariat has set 31 December as the cut-off date for revisions; updates received after this date will be incorporated into the following year’s publications.

APEC and the rest of the world

APEC and the rest of the World

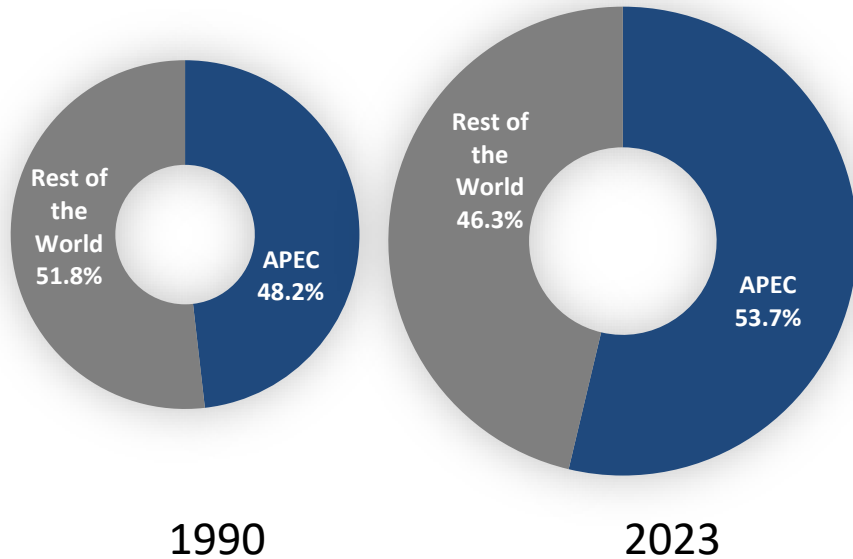


APEC's long-term trajectory shows a widening gap between its share of global population and its share of global GDP.

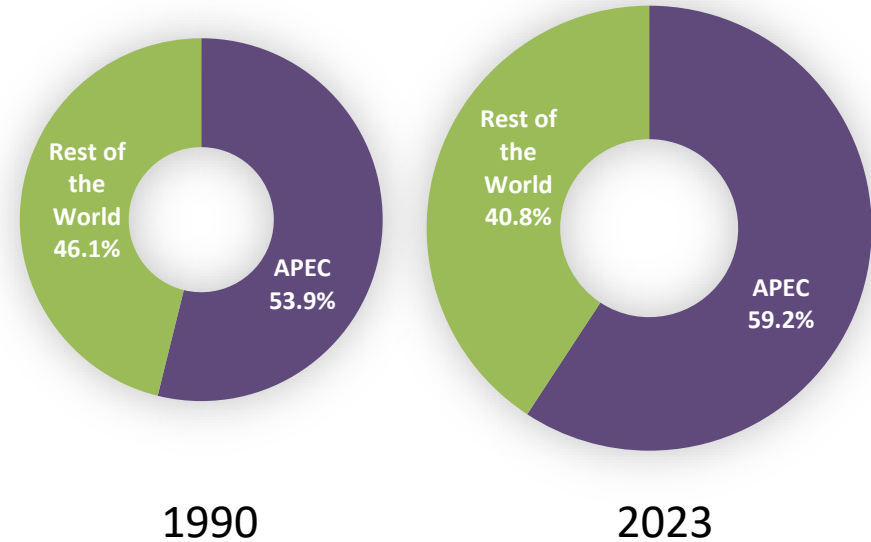
- In 1990, APEC held 43.1% of world population but generated 48.2% of global GDP.***
- By 2023, its population share fell to 36.9%, yet its economic weight rose to 53.7%.***
- This divergence underscores APEC's rising productivity and growing global economic influence.***

APEC and the rest of the World

GDP



Primary Energy Supply



APEC's energy use has expanded even faster than its economy.

- ***In 1990, APEC consumed 53.9% of global primary energy.***
- ***By 2023, this increased to 59.2%, outpacing its GDP share.***
- ***This widening gap highlights intensifying energy demand and the need for accelerated efficiency improvements.***

Analysis of 2023 energy situation

Drivers of APEC energy consumption

GDP, billion USD @ 2021 PPP

	2022	2023	% change
China	29,683	31,227	5.2%
Other NE Asia	10,213	10,393	1.8%
Southeast Asia	9,465	9,855	4.1%
Oceania	1,832	1,882	2.7%
USA	24,051	24,662	2.5%
Other Americas	6,096	6,208	1.8%
Russia	5,614	5,816	3.6%
Total	86,954	90,042	3.6%

Population, thousand

	2022	2023	% change
China	1,412	1,411	-0.1%
Other NE Asia	207	207	-0.2%
Southeast Asia	605	610	0.8%
Oceania	41	42	2.3%
USA	334	337	0.8%
Other Americas	221	223	1.2%
Russia	144	144	-0.3%
Total	2,965	2,974	0.3%

- ***APEC GDP grew 3.6% from 2022 to 2023, while population grew only 0.3%, meaning nearly all economic gains came from productivity rather than demographics.***
- ***China (+5.2%) and Southeast Asia (+4.1%) led regional expansion, with strong GDP growth despite flat or declining populations.***
- ***Most economies maintained stable or slightly shrinking populations but still achieved positive GDP growth, reflecting aging societies and rising labor productivity.***

Total primary energy supply (TPES), Petajoules

By energy

	2022	2023	% change
Coal	131,918	129,519	-1.8%
Oil	101,375	103,991	2.6%
Gas	86,847	87,346	0.6%
Nuclear	19,638	20,126	2.5%
Hydro	9,158	8,615	-5.9%
Other RE	22,859	24,764	8.3%
Others	1,060	1,009	-4.8%
Total	372,855	375,371	0.7%

By region

	2022	2023	% change
China	155,546	160,186	3.0%
Other NE Asia	33,028	32,097	-2.8%
Southeast Asia	29,107	29,644	1.8%
Oceania	6,388	6,510	1.9%
USA	91,064	89,734	-1.5%
Other Americas	23,017	23,210	0.8%
Russia	34,704	33,991	-2.1%
Total	372,855	375,371	0.7%

- ***TPES increased 0.7%, with strong growth in other renewables (+8.3%) and nuclear (+2.5%) offset by declines in coal (-1.8%) and hydro (-5.9%).***
- ***China drove most of the regional increase (+3.0%), while Other Northeast Asia, Russia, and the USA recorded declines.***
- ***Fossil fuels remain dominant, and rising oil and gas use counterbalanced coal reductions, resulting in only marginal overall growth.***

Electricity generation, TWh

By energy source

	2022	2023	% change
Coal	8,075	8,240	2.0%
Oil	182	150	-17.5%
Gas	3,913	4,118	5.3%
Nuclear	1,799	1,844	2.5%
Hydro	2,597	2,452	-5.6%
Geothermal	63	64	1.2%
Solar & Wind	2,207	2,540	15.1%
Others	262	267	1.8%
Total	19,098	19,675	3.0%

By region

	2022	2023	% change
China	8,849	9,456	6.9%
Other NE Asia	1,954	1,920	-1.8%
Southeast Asia	1,159	1,199	3.5%
Oceania	320	323	1.0%
USA	4,473	4,430	-1.0%
Other Americas	1,174	1,166	-0.7%
Russia	1,170	1,181	1.0%
Total	19,098	19,675	3.0%

- **Electricity generation rose 3.0%, led by solar & wind (+15.1%) and gas (+5.3%), with coal also increasing slightly.**
- **Low-carbon output was mixed: hydro declined (-5.6%), nuclear grew modestly, and solar & wind surged — highlighting both progress and weather-sensitive vulnerabilities.**
- **Growth was concentrated in China (+6.9%), while mature systems such as Other Northeast Asia, the USA, and Other Americas saw declines.**

Total final energy consumption (FEC), Petajoules

By energy

	2022	2023	% change
Coal	26,741	25,573	-4.4%
Oil	70,125	71,018	1.3%
Gas	37,111	36,928	-0.5%
Electricity	59,130	60,926	3.0%
Heat	12,188	12,989	6.6%
Others	8,987	9,420	4.8%
Total	214,282	216,853	1.2%

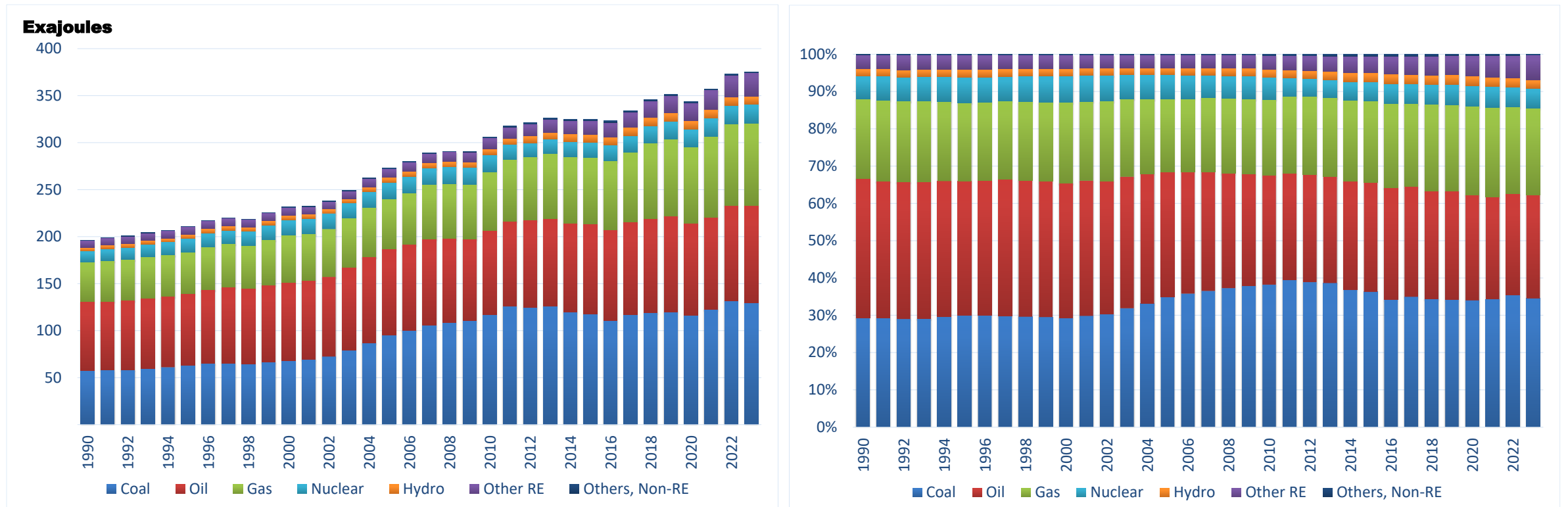
By sector

	2022	2023	% change
Industry	84,823	85,943	1.3%
Transport	61,020	62,901	3.1%
Buildings	57,394	56,462	-1.6%
Commercial	19,633	19,604	-0.1%
Residential	37,760	36,858	-2.4%
Others	11,045	11,546	4.5%
Total	214,282	216,853	1.2%

- ***FEC grew 1.2%, driven by electricity (+3.0%), heat (+6.6%), and oil (+1.3%), while coal and gas declined.***
- ***Transport (+3.1%) and industry (+1.3%) expanded, while buildings (-1.6%) — especially residential (-2.4%) — fell due to milder weather, efficiency gains, or behavioral shifts.***
- ***The overall pattern shows a gradual shift away from direct fossil fuels toward electricity and heat, reflecting structural transition and improving efficiency.***

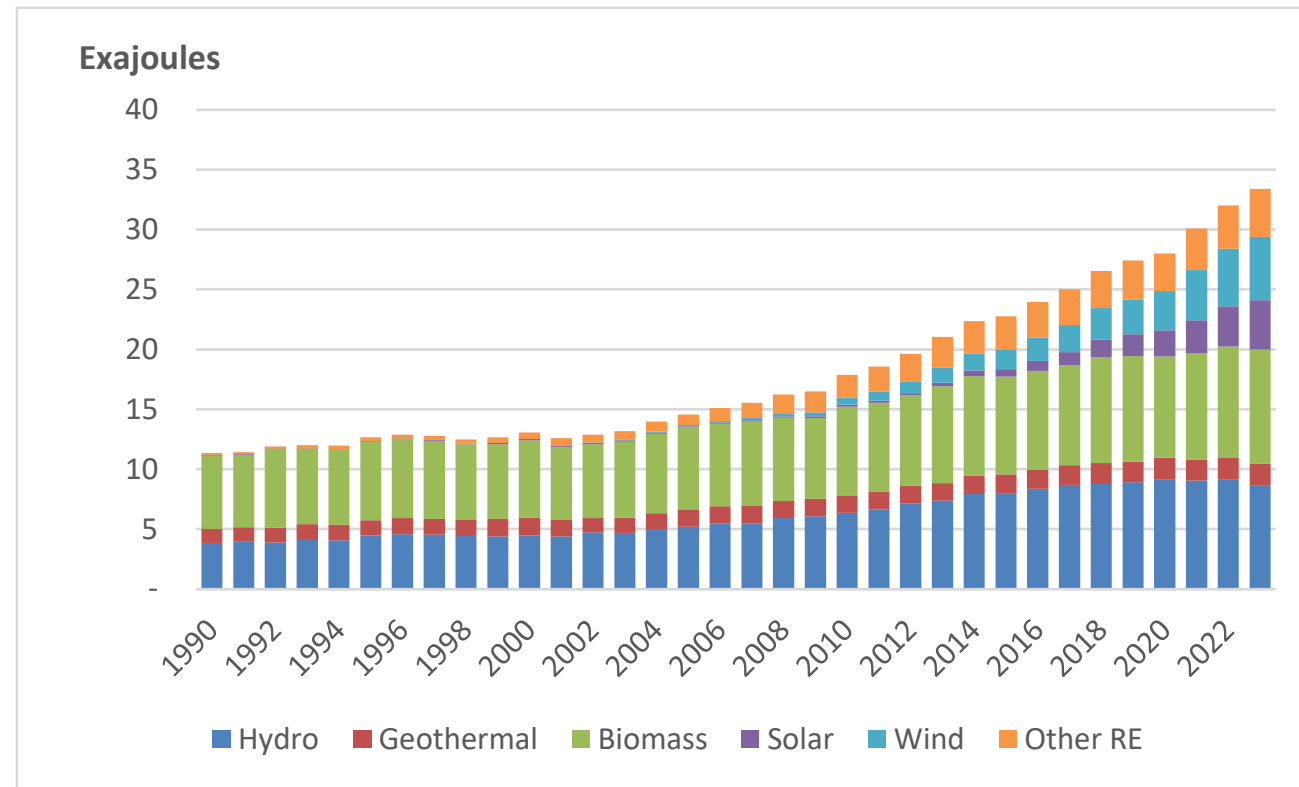
Long-term trends

Total primary energy supply by type of energy



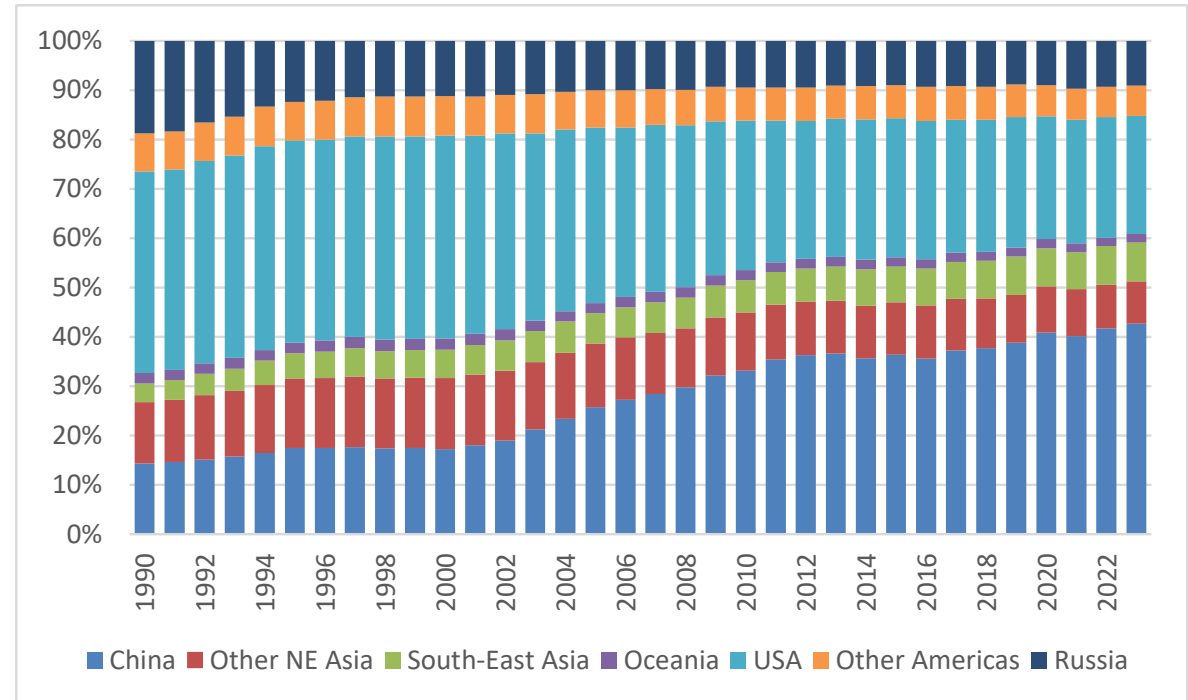
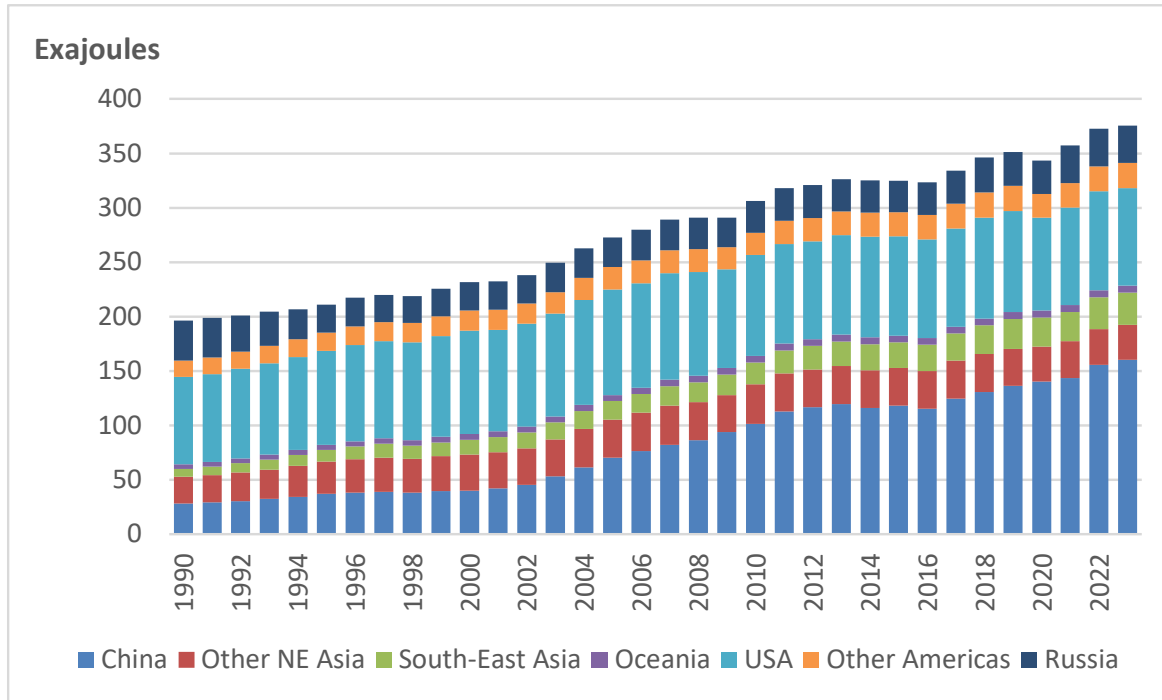
- ***APEC's primary energy supply grew steadily from 1990 to 2023 (CAGR 2.0%), driven by continuous expansion of oil, coal, and natural gas.***
- ***Renewables accelerated sharply after the mid-2000s, but fossil fuels still dominate, underscoring the scale of the transition challenge.***
- ***Growth patterns reflect major global disruptions but show long-term resilience in energy demand.***

Renewable energy supply



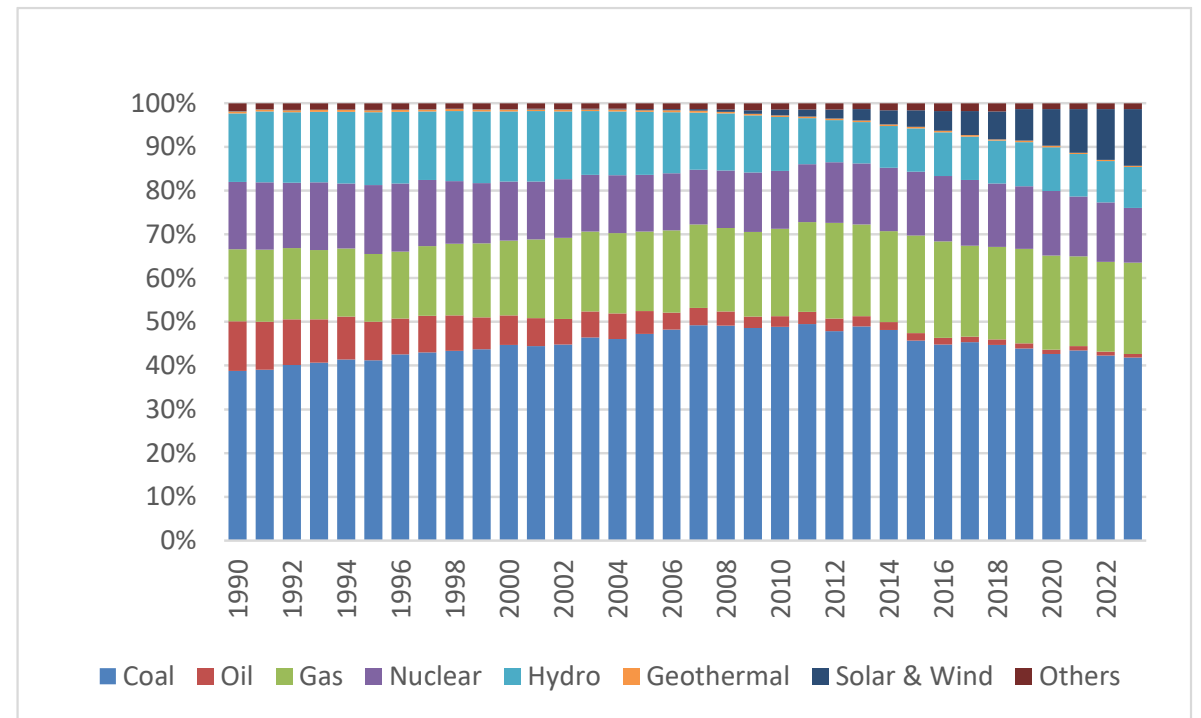
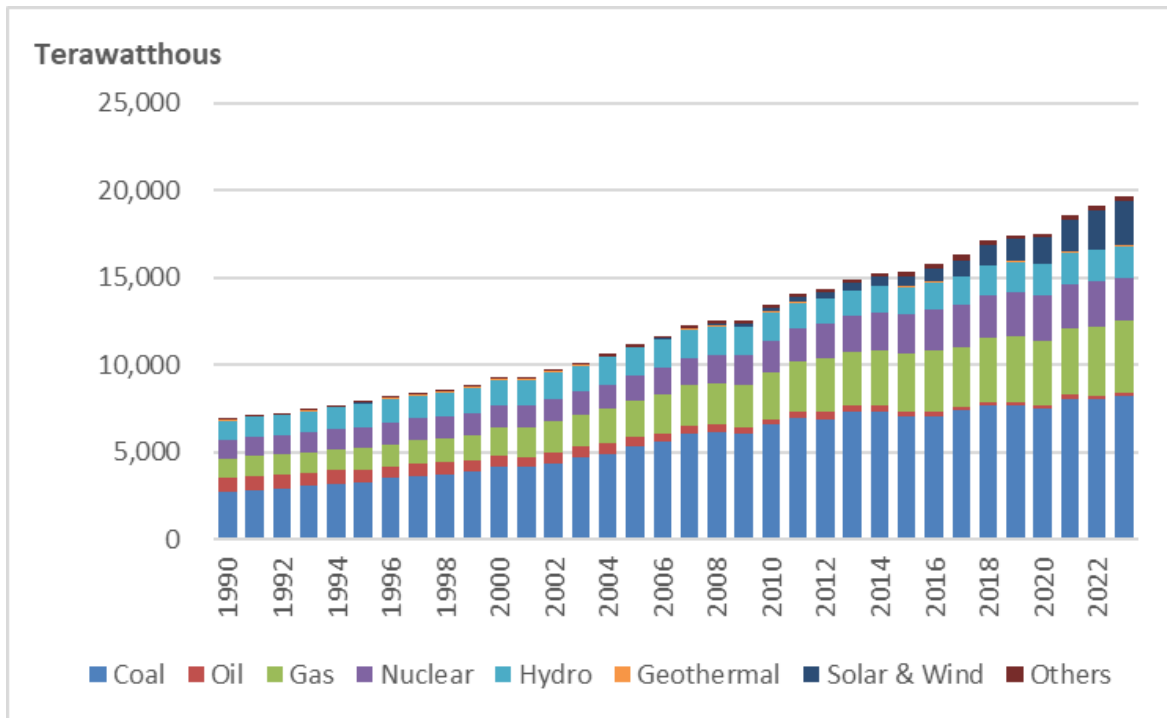
- ***Renewable energy expanded steadily since 1990, with rapid acceleration after 2010 as solar and wind scaled up.***
- ***The renewable mix is increasingly diversified, though hydro remains the largest contributor despite slower growth.***
- ***Solar and wind show the fastest sustained growth, reshaping the low-carbon landscape.***

Primary energy supply by region



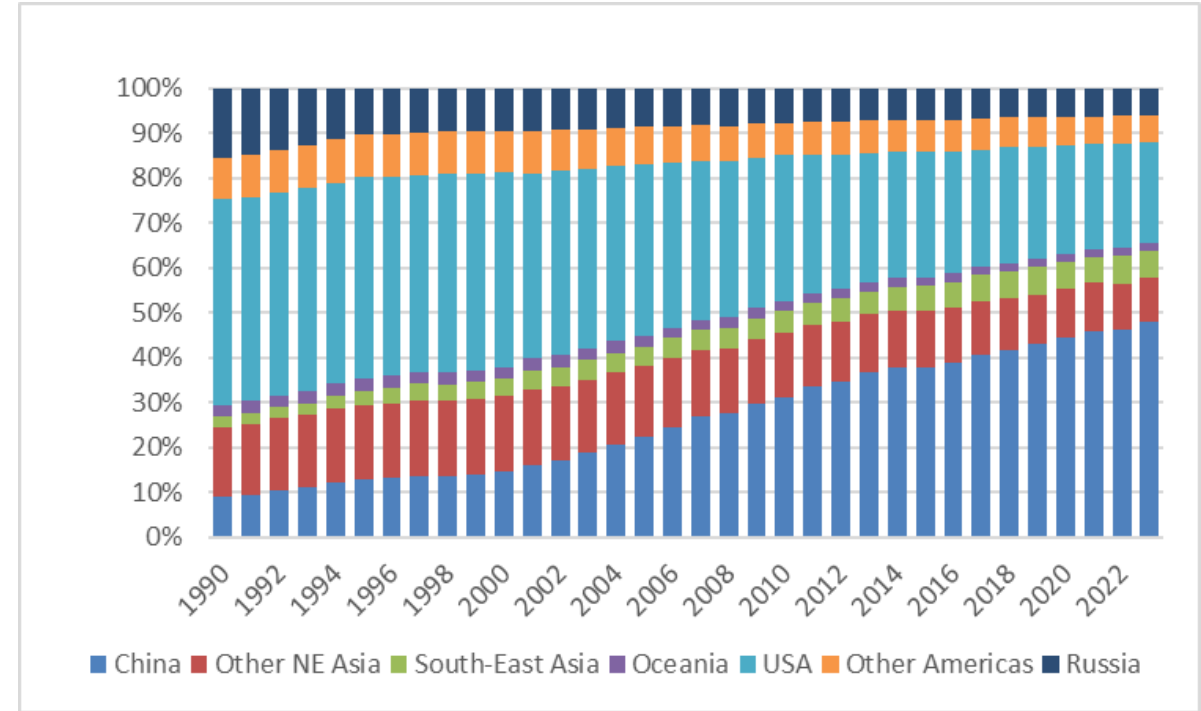
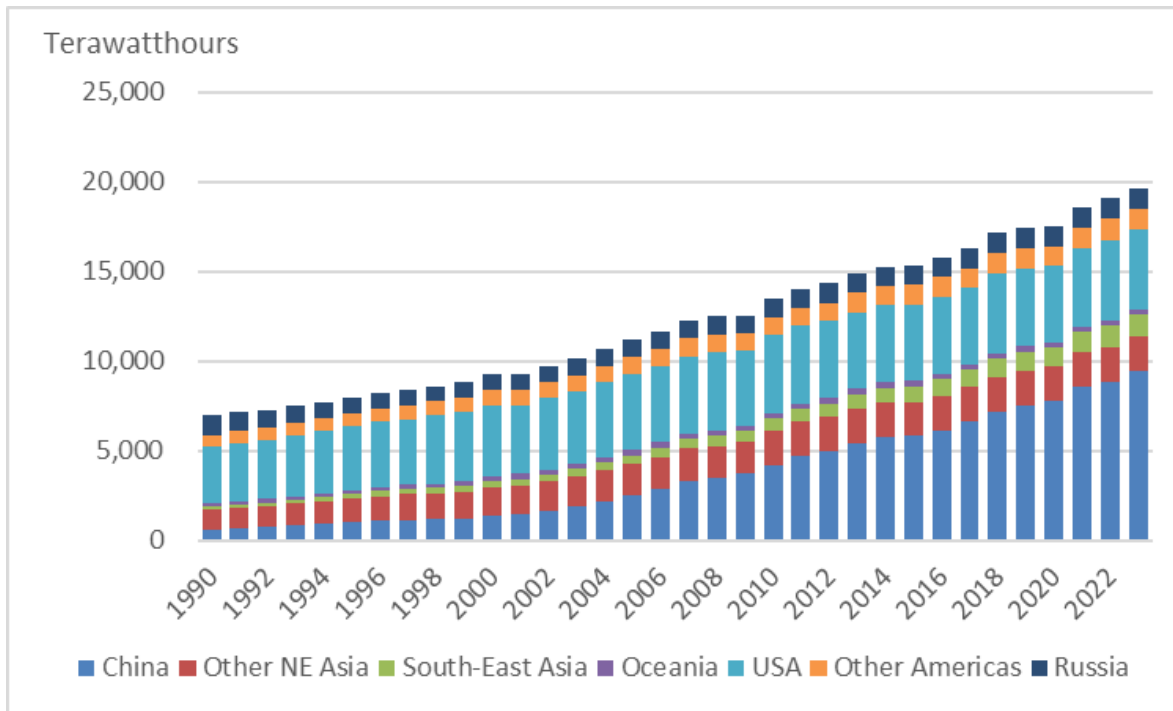
- ***All regions increased energy supply since 1990, but China's surge from the early 2000s fundamentally reshaped APEC's energy profile.***
- ***The United States grew slowly, Southeast Asia rose steadily, and Russia and Oceania remained relatively stable.***
- ***China is now the single largest driver of regional energy demand growth.***

Electricity generation by source



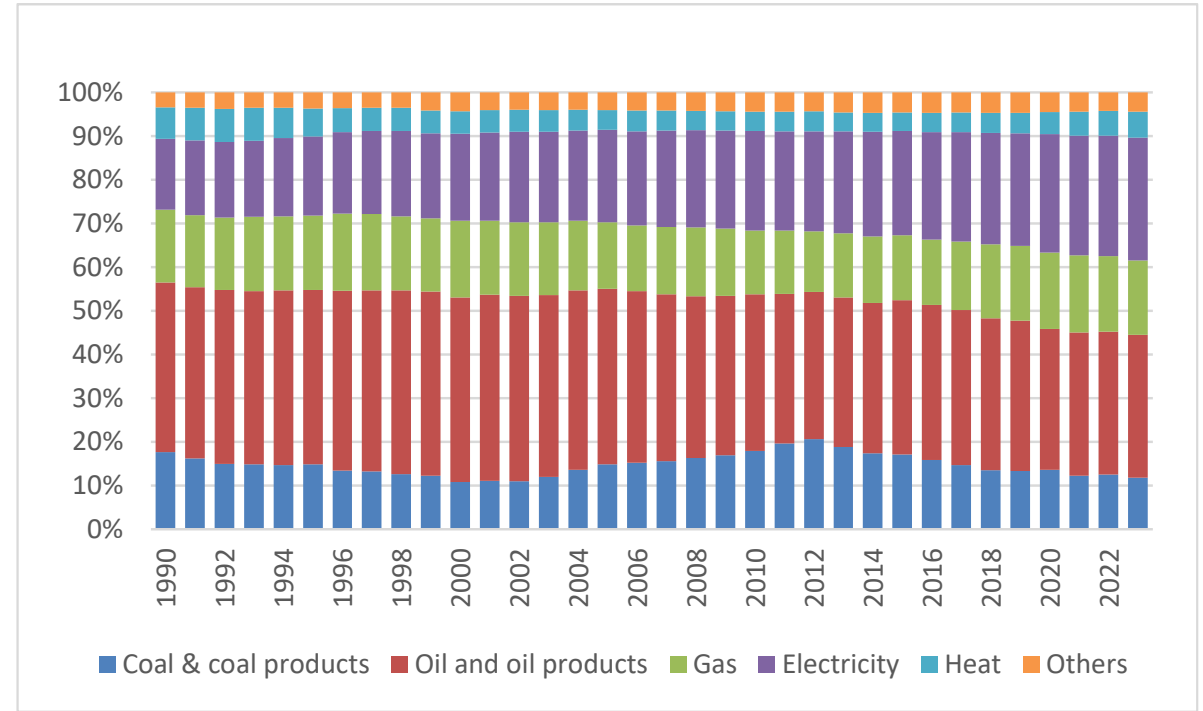
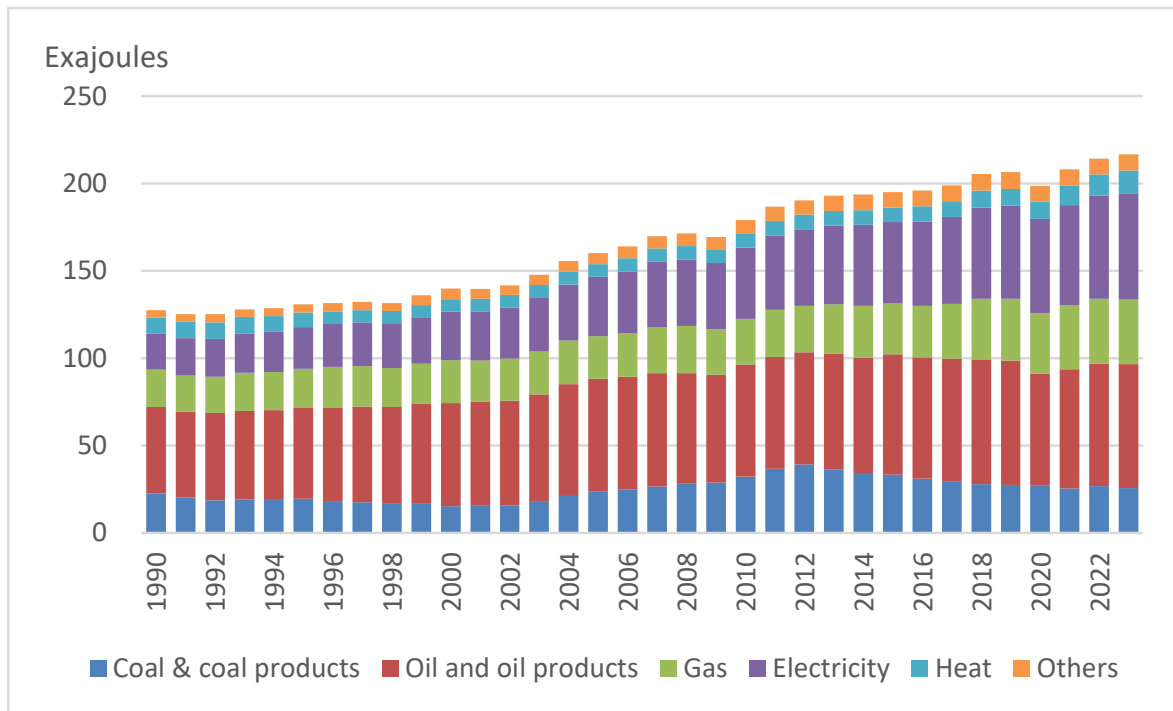
- ***Electricity generation grew at CAGR 3.2%, with rapid expansion after 2000.***
- ***Coal, gas, and nuclear remain major contributors, but solar and wind show the fastest growth since 2010.***
- ***The mix is diversifying, though fossil fuels still dominate overall generation.***

Electricity generation by region



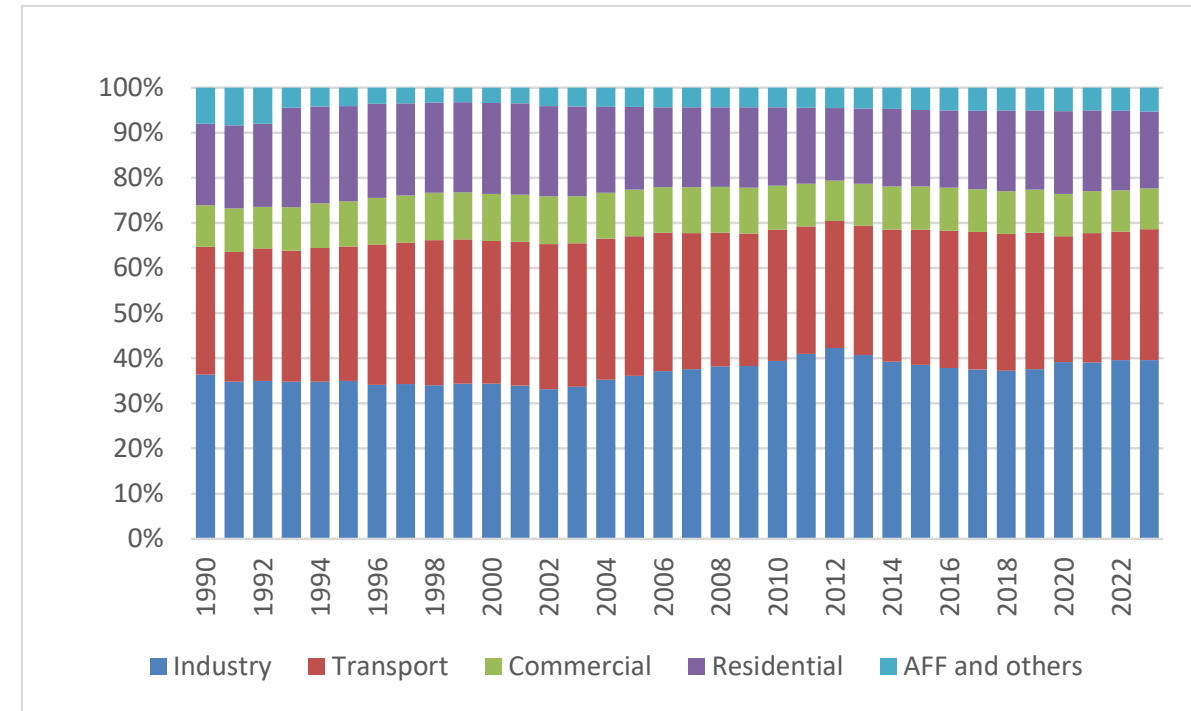
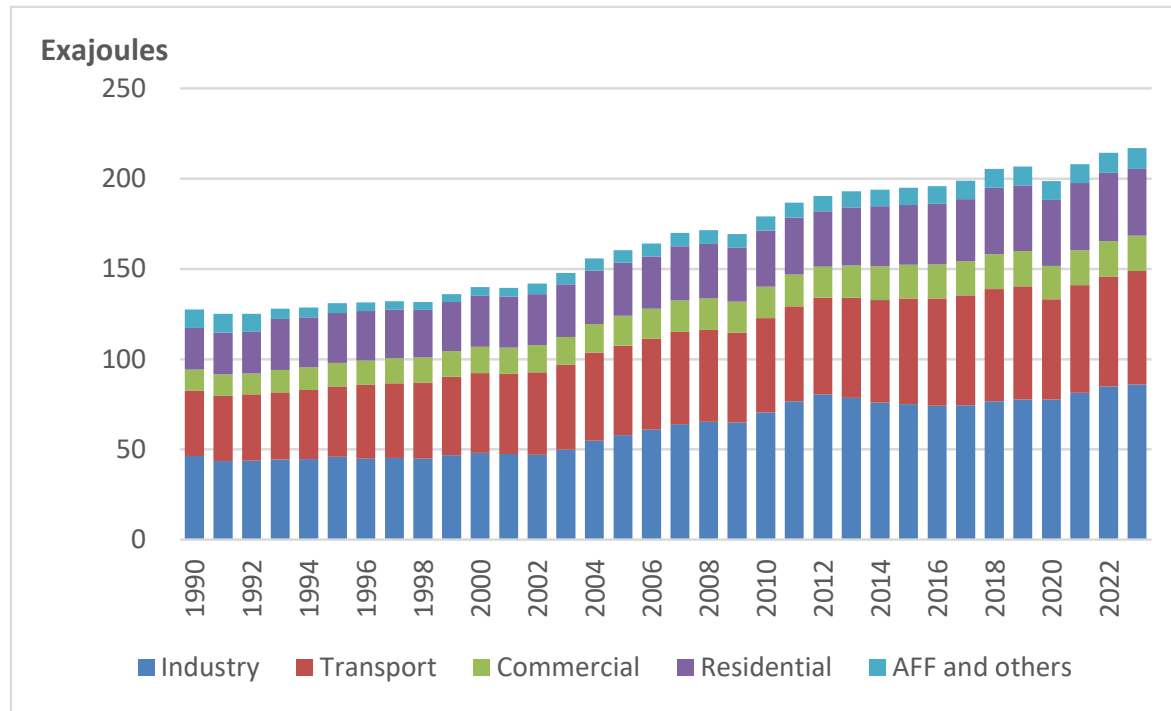
- **Electricity generation rose steadily from 1990 to 2023, with the fastest growth after 2000.**
- **China (CAGR 8.6%) became the dominant driver, far outpacing all other regions.**
- **Mature economies grew slowly, while Southeast Asia and other emerging regions expanded steadily with electrification.**

Final energy consumption by energy type



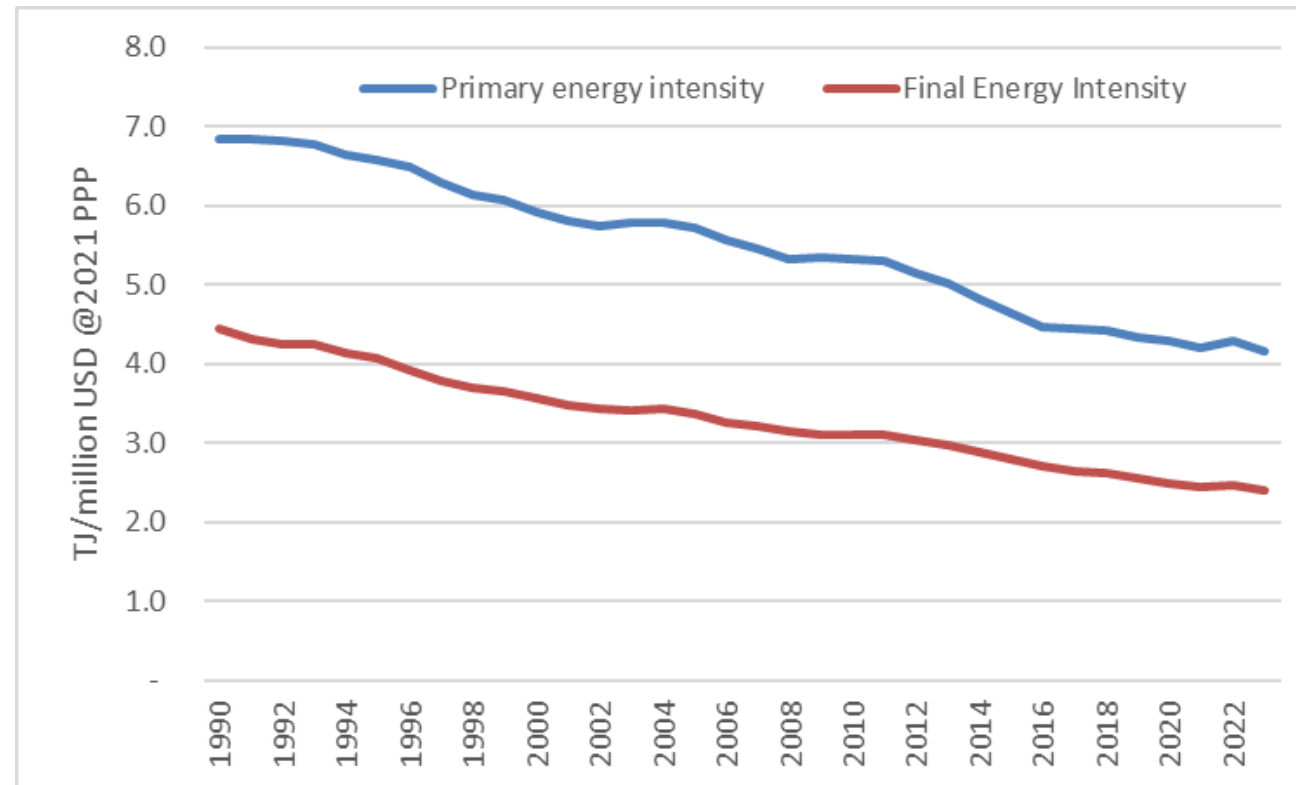
- ***FEC grew at CAGR 1.6%, slower than TPES, with oil remaining the largest energy source.***
- ***Electricity (CAGR 3.3%) and gas (CAGR 1.7%) grew consistently, while coal's share rose more slowly after the 2000s.***
- ***The mix is gradually diversifying, reflecting a slow shift away from heavy reliance on coal and oil.***

Final energy consumption by sector



- **Final energy consumption has expanded steadily since 1990, driven primarily by industry (CAGR 1.9%) and transport (CAGR 1.7%), which together account for most of the long-term growth in APEC's energy use.**
- **Sectoral shares remain strikingly stable, indicating that structural shifts in the economy have not fundamentally altered the balance between industry, transport, buildings, and other sectors over the past three decades.**
- **Commercial (CAGR 1.6%) and residential (CAGR 1.4%) consumption continue to rise in absolute terms, yet their relative shares stay flat, showing that demand in buildings is growing broadly in line with overall energy consumption rather than outpacing it.**

Energy Intensity



- ***Both primary (-1.5% CAGR) and final (-1.8% CAGR) energy intensity declined steadily from 1990 to 2023.***
- ***This reflects long-term improvements in technology, structural economic shifts, and efficiency gains.***
- ***The narrowing gap between primary and final intensity suggests improvements in transformation and end-use efficiency.***

Summary

- **Economic growth continues to outpace energy demand**, with 2023 showing modest increases in TPES (+0.7%) and FEC (+1.2%) alongside long-term declines in energy intensity (-1.5% primary, -1.8% final CAGR since 1990), reflecting sustained improvements in efficiency and structural economic shifts.
- **Energy transition is progressing but remains uneven**: solar and wind show the fastest long-term growth, accelerating sharply after 2010, while hydro growth has slowed and fossil fuels still dominate TPES and electricity generation. The 2023 decline in hydro underscores ongoing climate- and weather-related vulnerabilities.
- **Regional dynamics are increasingly divergent**: China remains the dominant driver of long-term growth in TPES and electricity generation (CAGR 8.6% since 1990), while mature economies show slower or declining demand. Emerging regions such as Southeast Asia continue steady expansion, reshaping APEC's energy landscape over time.

Thank you.

<https://aperc.or.jp>

