Asia-Pacific Economic Cooperation

APERC Asia Pacific Energy Research Centre

EGEDA Updates

EGEEC 63 Meeting

7-8 November 2024 – Tianjin, China

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Outline

- Data collection and processing update
- EGEDA training courses and workshops
- International cooperation
- Progress toward APEC's energy intensity goal
- Progress toward APEC's renewable energy doubling goal
- Pursuing and encouraging efforts to triple global renewable energy capacity by 2030

Data collection and processing update

Regular APEC energy data collection

- 2022 annual energy supply and demand data
  - The secretariat has processed the 2022 annual energy supply and demand data.
- Other data collection
  - Annual energy prices
  - Annual GHG emissions
    - CO_2, CH_4 and N_2O emissions from energy combustion and fugitive emissions
    - CO_2 transported and stored
  - Energy efficiency indicators
  - Monthly oil and gas supply and demand (JODI)
  - Quarterly energy supply
  - Major economic indicators
  - Energy-related indicators

Smiley faces of JODI Oil in APEC (January to June 2024)

Economy	Sustainability	Timeliness (M-1 & M-2)	Completeness (%)	Sustainability	Timeliness	Completeness (%)
Brunei Darussalam	6	5	100%	☺	😐	☺
China	5	4	67%	😐	😐	😐
Hong Kong, China	6	6	100%	☺	☺	☺
Indonesia	6	6	100%	☺	☺	☺
Malaysia	6	6	52%	☺	☺	☹
Papua New Guinea	6	6	62%	☺	☺	😐
Peru	0	0	100%	☹	☹	☺
Philippines	0	0	0%	☹	☹	☹
Russia	0	0	0%	☹	☹	☹
Singapore	6	5	50%	☺	😐	☹
Chinese Taipei	6	6	100%	☺	☺	☺
Thailand	6	6	100%	☺	☺	☺
Viet Nam	0	0	0%	☹	☹	☹
Number of			☺	8	6	6
Compared to Jan – Jun 2023				-1	-1	No change
Compared to Jul – Dec2023				-1	-2	No change

Smiley faces of JODI Gas in APEC (January to June 2024)

Economy	Sustainability	Timeliness (M-1 & M-2)	Completeness (%)	Sustainability	Timeliness	Completeness (%)
Brunei Darussalam	6	6	100%	☺	☺	☺
China	6	5	64%	☺	😐	😐
Hong Kong, China	6	6	100%	☺	☺	☺
Indonesia	6	6	100%	☺	☺	☺
Malaysia	6	5	64%	☺	😐	😐
Papua New Guinea	0	0	0%	☹	☹	☹
Peru	0	0	15%	☹	☹	☹
Philippines	6	6	100%	☺	☺	☺
Russia	6	2	23%	☺	☹	☹
Singapore	6	6	64%	☺	☺	😐
Chinese Taipei	6	6	100%	☺	☺	☺
Thailand	6	6	91%	☺	☺	☺
Viet Nam	0	0	0%	☹	☹	☹
Number of ☺				10	7	6
Compared to Jan – Jun 2023				No change	-3	-1
Compared to Jul – Dec2023				No change	-3	No change

EGEDA training courses and workshops

Energy statistics course (Held in Tokyo)

- **22 January to 2 February 2024**
  - No. of economies – 9 (BD; CHL; MAS; PNG; PE; SGP; CT; THA; VN)
  - No. of participants – 12
  - Trainers - EGEDA secretariat, APERC researchers
- **Objectives**
  - Increase the capacity of energy statisticians in APEC economies
  - Keep the members up-to-date with new developments in energy statistics.
  - Enhance the human resource network between APEC economies and APERC
  - Increase the level of understanding of the APEC energy database by APEC economies
  - Introduce world trends in energy statistics to APEC economies
  - Improve the reliability of the APEC energy database
- **Next training will be held from 10 to 21 February 2025**

22nd APEC workshop on energy statistics

- **Date:** 23-26 July 2024
- **Theme:** Tracking the progress of capacity built from the last workshops
- **Participants:** 44 persons from 14 economies participated (9 persons online)

  IRENA in-person, 4 speakers from IEA online
- **Objectives**
  - The workshop's main objective was to provide knowledge on the new energy data and statistics required to monitor the energy sector during the energy transition.
  - The workshop enhanced the participants' ability to apply the methodologies and techniques learned from previous workshops in the collection of data such as:
    - new energy products and technologies,
    - energy efficiency indicators, and
    - new and renewable energy data and statistics.
  - The workshop facilitated dialogues on the issues and challenges encountered in collecting these data and statistics through economy presentations and roundtable discussions.

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International cooperation

Secretariat's participation in international meeting

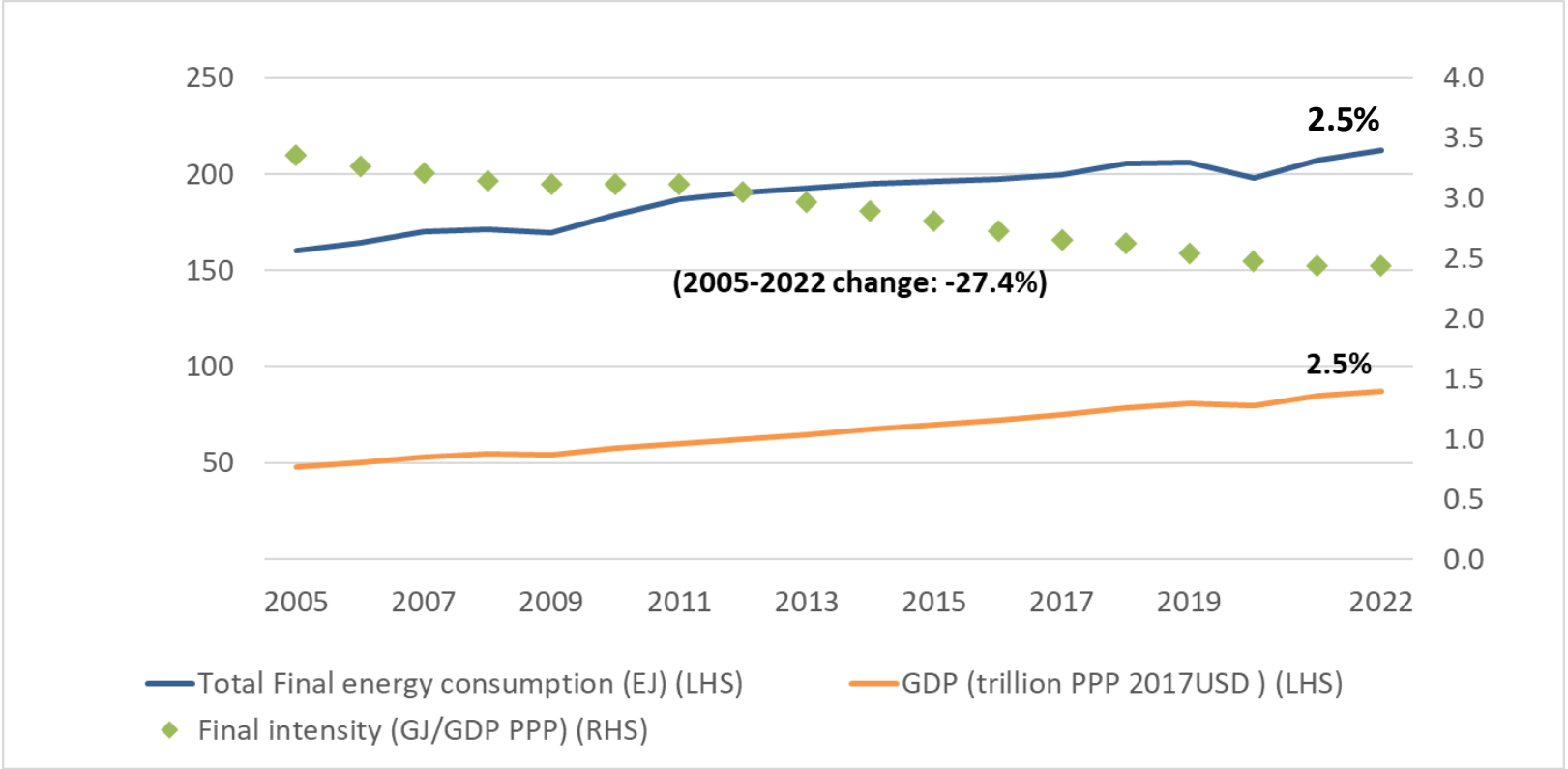
Task Team for the Revision of Standard International Energy Classification (TT-SIEC) under International Energy Statistics Working Group (InterEnerStat)

- ❑ Discuss revisions to SIEC with the ongoing revisions of Central Product Classification (CPC) and International Standard Industrial Classification (ISIC)
- ❑ Monthly online meetings likely to continue for another year
- ❑ Limited Progress to date
  - IEA is continuing to review the definition of synthetic fuel after discussions on 23 January 2024
  - Regarding "Waste", no agreement was reached
  - Categorization of "Fuel wood, wood residues and by-products" is being discussed
  - There is a general agreement for including "cooling " in the energy product classification and not limiting it to district cooling but further discussion and clarification is needed
  - Hydrogen will be classified at the same level of electricity and heat removing it from "Other hydrocarbons"
  - Date of next meeting not yet announced

Progress toward APEC's energy intensity goal

Both energy and GDP rebounded in 2022

TFEC (EJ), GDP (trillion PPP 2017 USD), Final energy intensity (GJ/GDP PPP)



Sources: APEC statistics (EGEDA), APERC analysis

- Both total final energy consumption (TFEC) (+2.5%) and economic growth (+2.5%) went up in 2022
- As a result, energy intensity was unchanged (0.0%) in 2022

APEC final energy intensity continues to decline

Annual change in APEC final energy intensity, 2006-22

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2005-22
Change in Final Energy Consumption (FEC)	2.4%	3.5%	0.9%	-1.2%	5.7%	4.2%	2.0%	1.2%	1.1%	0.6%	0.6%	1.2%	2.9%	0.3%	-3.9%	4.6%	2.5%	32.4%
Change in GDP (PPP, constant 2017 US dollars)	5.3%	5.5%	3.0%	-0.3%	5.7%	4.2%	4.2%	3.9%	3.8%	3.7%	3.4%	4.0%	4.1%	3.4%	-1.3%	6.2%	2.5%	82.3%
Change in final energy consumption intensity	-2.8%	-1.8%	-2.1%	-0.9%	0.1%	0.0%	-2.2%	-2.6%	-2.6%	-3.0%	-2.7%	-2.7%	-1.2%	-3.0%	-2.6%	-1.5%	-0.02%	**-27.4%**

Note: Numbers may not add due to rounding.

Sources: APEC statistics (EGEDA), WB (GDP PPP), CT (WEO), APERC analysis

- Final energy intensity fell 27.4% between 2005 and 2022.
- Unlike the Great Recession in 2009, COVID-19 did not cause a reversal in final energy intensity in 2020/2021.

Primary energy intensity is now declining more slowly

Annual change in APEC primary energy intensity, 2006-22

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2005-22
Change in Primary Energy Supply (PES)	2.5%	3.3%	0.7%	-0.1%	5.2%	4.0%	0.9%	1.8%	0.0%	-0.5%	0.5%	1.8%	3.6%	1.4%	-2.2%	5.9%	2.4%	35.8%
Change in GDP (PPP, constant 2017 US dollars)	5.3%	5.5%	3.0%	-0.3%	5.7%	4.2%	4.2%	3.9%	3.8%	3.7%	3.4%	4.0%	4.1%	3.4%	-1.3%	6.2%	2.5%	82.3%
Change in primary energy supply intensity	-2.7%	-2.1%	-2.2%	0.3%	-0.5%	-0.2%	-3.2%	-2.0%	-3.6%	-4.1%	-2.8%	-2.1%	-0.6%	-2.0%	-0.9%	-0.3%	-0.1%	**-25.5%**

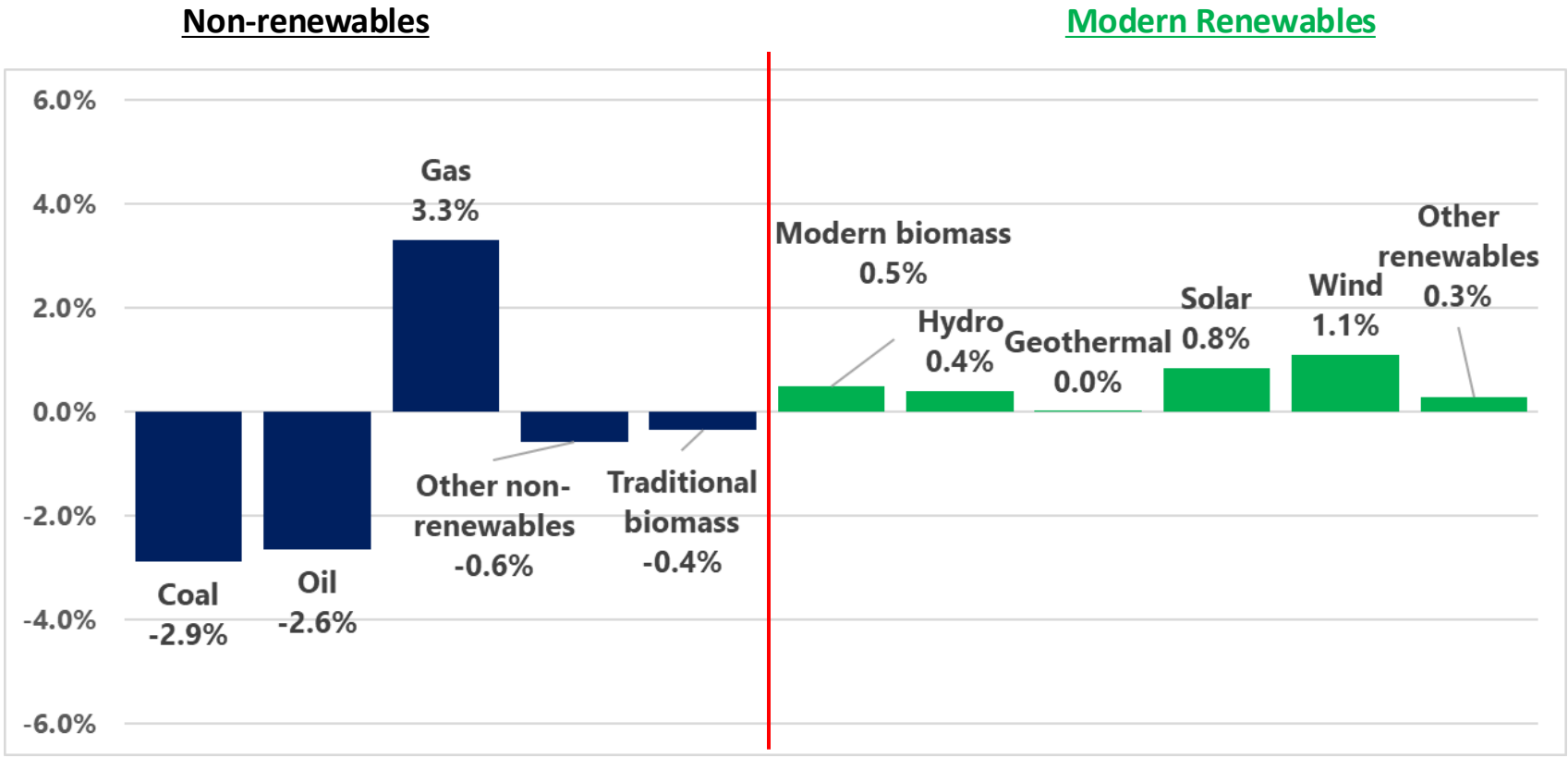
Sources: APEC statistics (EGEDA), WB (GDP PPP), CT (WEO), APERC analysis

- Primary energy intensity reduced by 25.5% between 2005-2022.
- Since 2018, primary energy intensity appears to be declining more slowly than final energy intensity.

Progress toward APEC's renewable energy doubling goal

In energy supply, coal and oil lost shares to gas and renewables . . .

Percent point change in fuel shares in **primary energy supply**, 2010-2022



Note: Renewable energy includes electricity and heat generated from renewable energy sources
Source: APEC data

- From 2010 to 2022, the renewable share increased by 3.1 percentage points, 66% of the way to the goal.

Renewable energy continues to gain share

Primary energy supply, PJ

	2010	2022	% change
Non-renewables	**287,793**	**338,257**	**17.5%**
Coal	116,855	130,916	12.0%
Oil	89,927	99,160	10.3%
Gas	61,718	86,978	40.9%
Other non-renewables	19,293	21,203	9.9%
Traditional biomass	**3,209**	**2,581**	**-19.6%**
Modern renewable energy	**14,610**	**29,315**	**100.7%**
Modern biomass	4,154	6,888	65.8%
Hydro	6,357	9,158	44.1%
Geothermal	1,471	1,826	24.2%
Solar	157	3,325	2022.3%
Wind	586	4,815	722.1%
Other renewables	1,885	3,302	75.1%
Total	**305,611**	**370,152**	**21.1%**
Modern RE share	**4.78%**	**7.92%**	**65.7%**

Final energy consumption, PJ

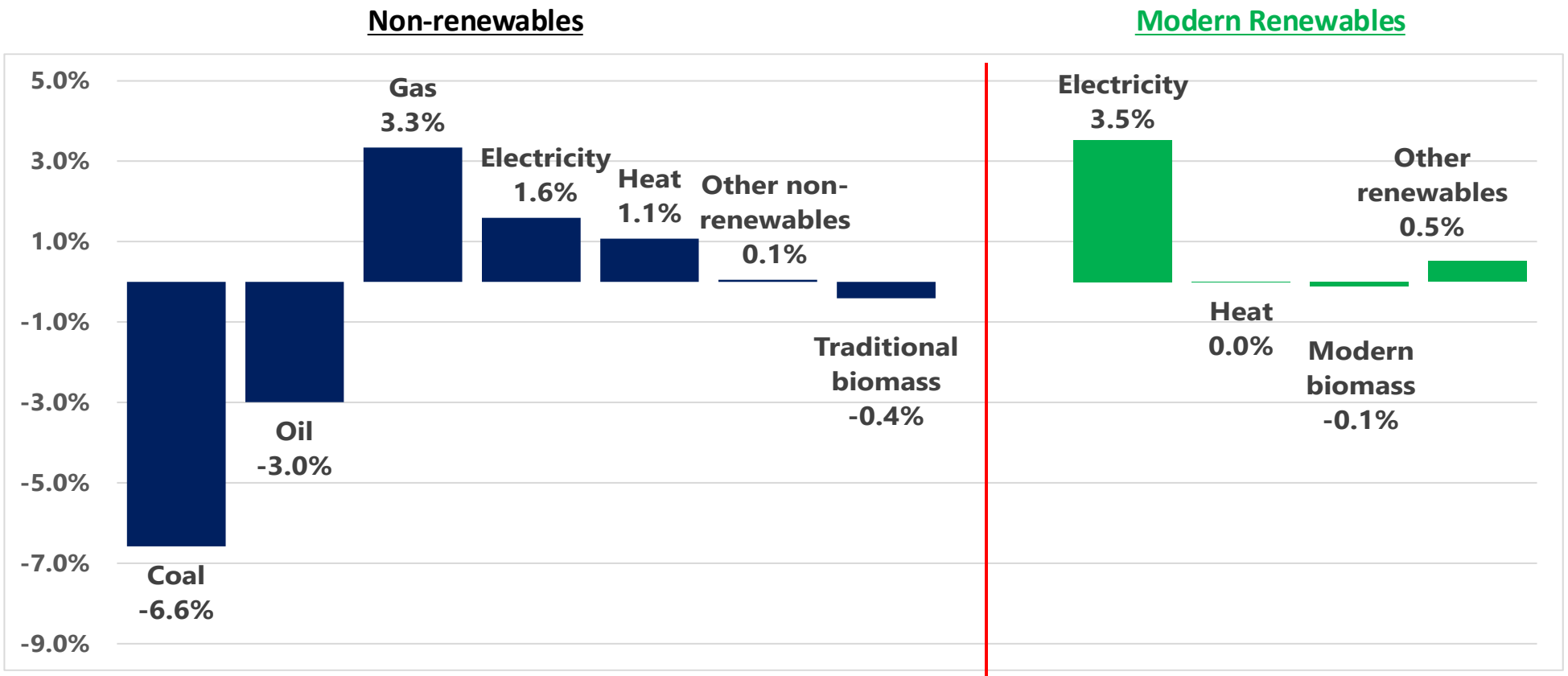
	2010	2022	% change
Non-renewables	**165,126**	**187,566**	**13.6%**
Coal	32,116	25,368	-21.0%
Oil	64,184	69,252	7.9%
Gas	26,156	37,495	43.4%
Electricity	34,574	43,207	25.0%
Heat	7,884	11,884	50.7%
Other non-renewables	213	360	69.1%
Traditional biomass	**3,209**	**2,581**	**-19.6%**
Modern renewable energy	**10,704**	**22,132**	**106.8%**
Electricity	6,234	15,937	155.6%
Heat	62	284	355.7%
Modern biomass	2,824	3,088	9.4%
Other renewables	1,583	2,824	78.3%
Total	**179,038**	**212,278**	**18.6%**
Modern RE share	**5.98%**	**10.43%**	**74.4%**

Note: Consumption of electricity and heat from renewables is calculated from the share of total electricity and heat production.

Source: APEC data.

In final energy use, the pattern was similar

Percent change in fuel shares in **final energy consumption**, 2010-2022



Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data.

- From 2010 to 2022, the renewable share increased 4.4 percentage points, 74% of the way to the goal.

Renewable power generation increased 144% over the last 12 years

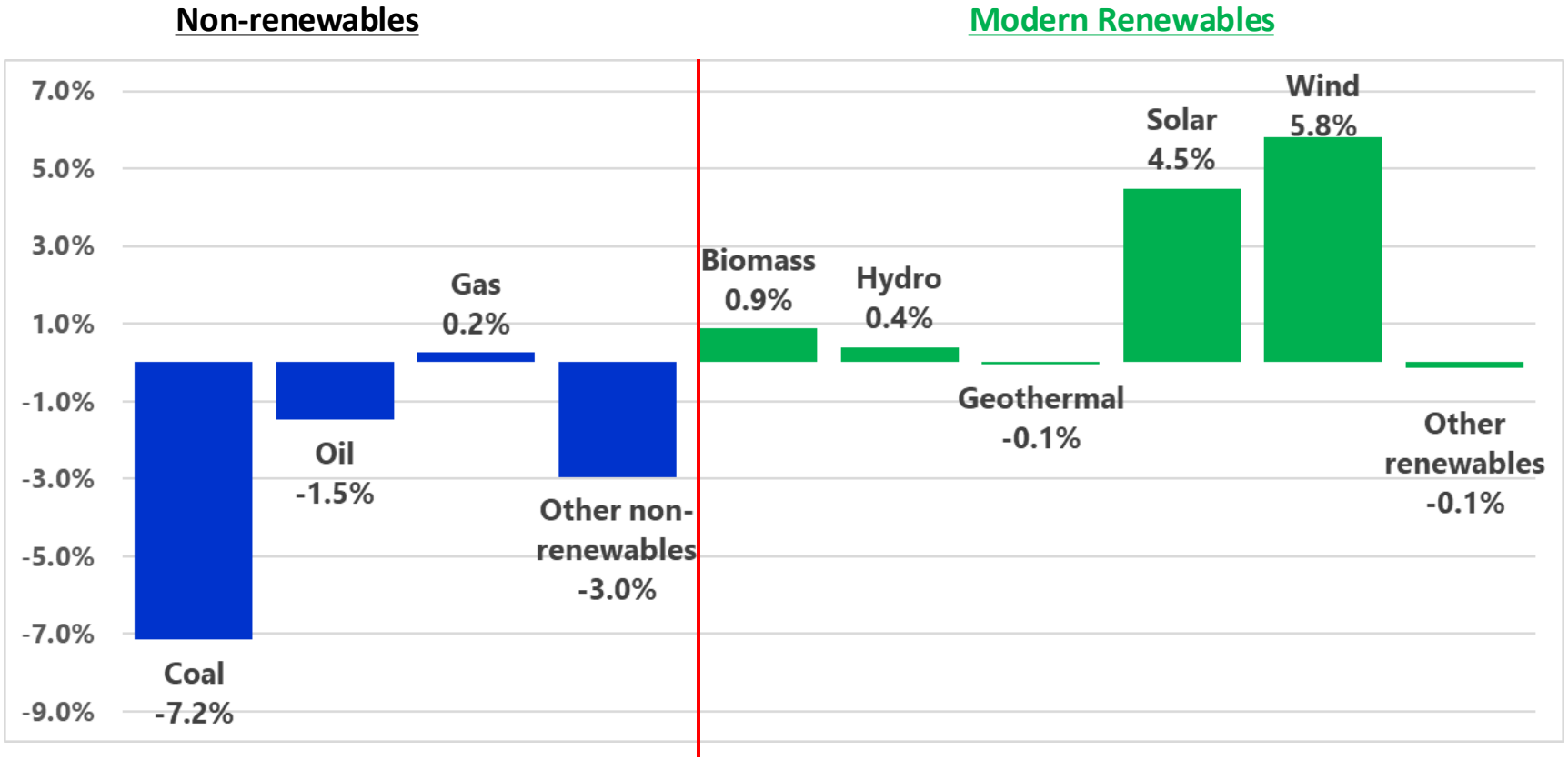
Electricity Generation, TWh

	2010	2022	% change
Non-renewables	**11,334**	**13,882**	**22.5%**
Coal	6,577	7,948	20.8%
Oil	325	177	-45.7%
Gas	2,686	3,850	43.3%
Nuclear	1,658	1,799	8.5%
Other non-renewables	87	109	24.9%
Modern renewable energy	**2,114**	**5,157**	**143.9%**
Modern biomass	67	260	287.5%
Hydro	1,780	2,595	45.8%
Geothermal	53	63	19.7%
Solar	9	867	9544.9%
Wind	163	1,337	722.1%
Other renewables	43	34	-20.5%
Total	**13,448**	**19,039**	**41.6%**
Modern RE share	**15.72%**	**27.09%**	**72.3%**

- In 2022, modern renewable energy provided more than a quarter of total power generation.

Coal and oil lost shares to renewables and gas

Percent point change in electricity generation market share, 2010-2022

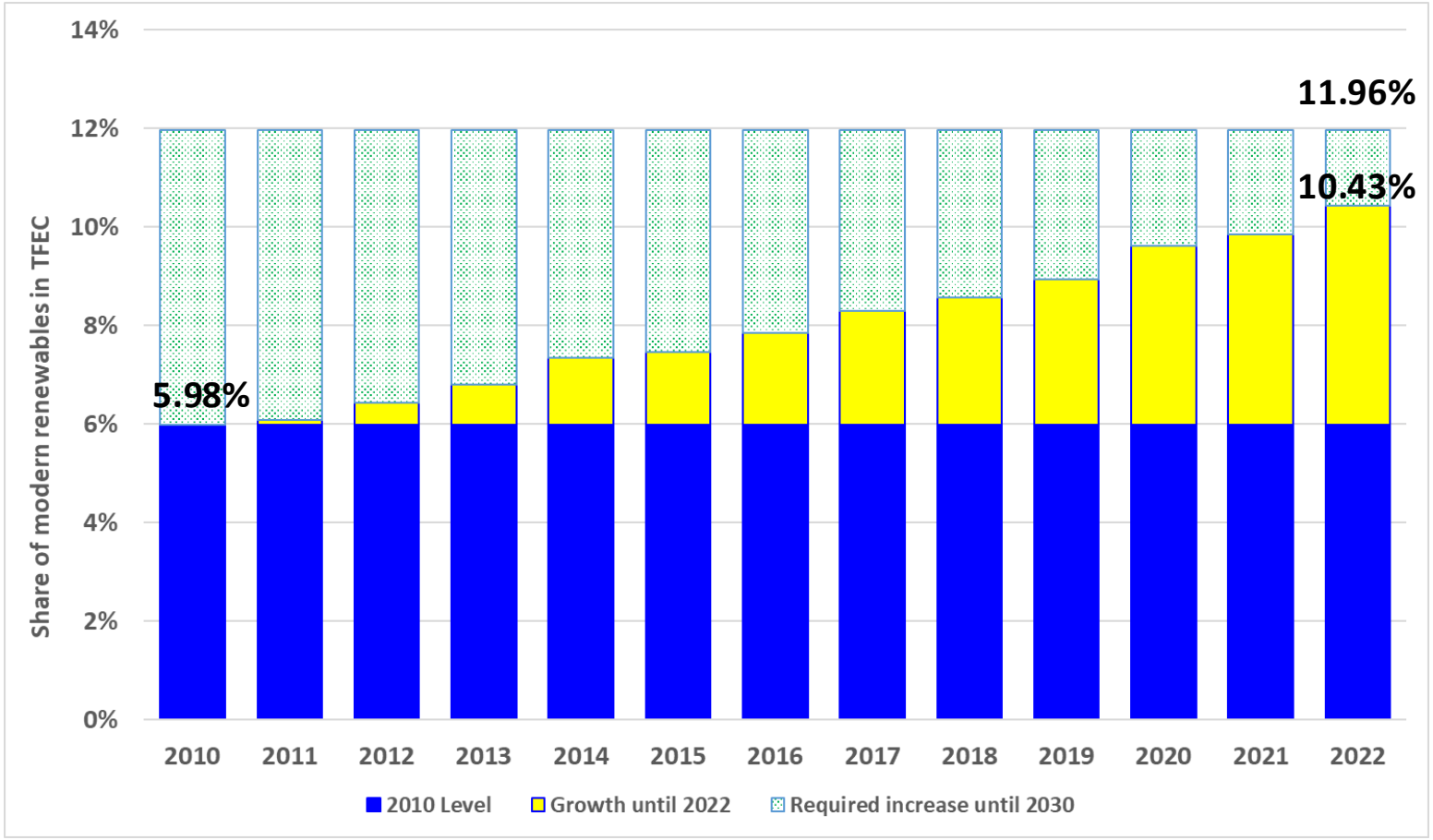


Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data.

- From 2010 to 2022, the renewable share increased 11.4 percentage points, 72.3% of the way to the goal.

Tracking the APEC renewable energy doubling goal

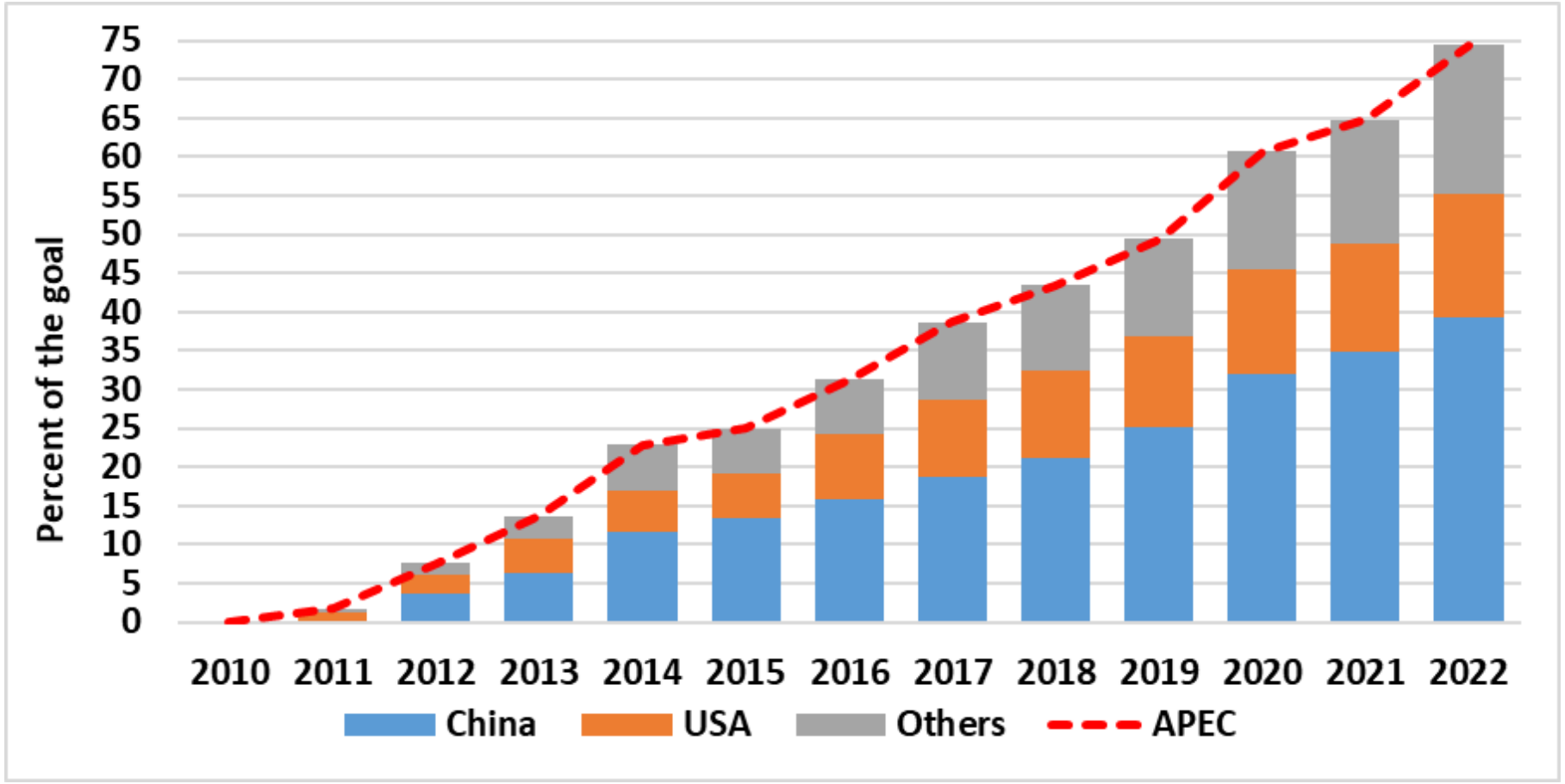


Just 1.53 percentage points more in the next 8 years

4.45 percentage points increase in the last 12 years

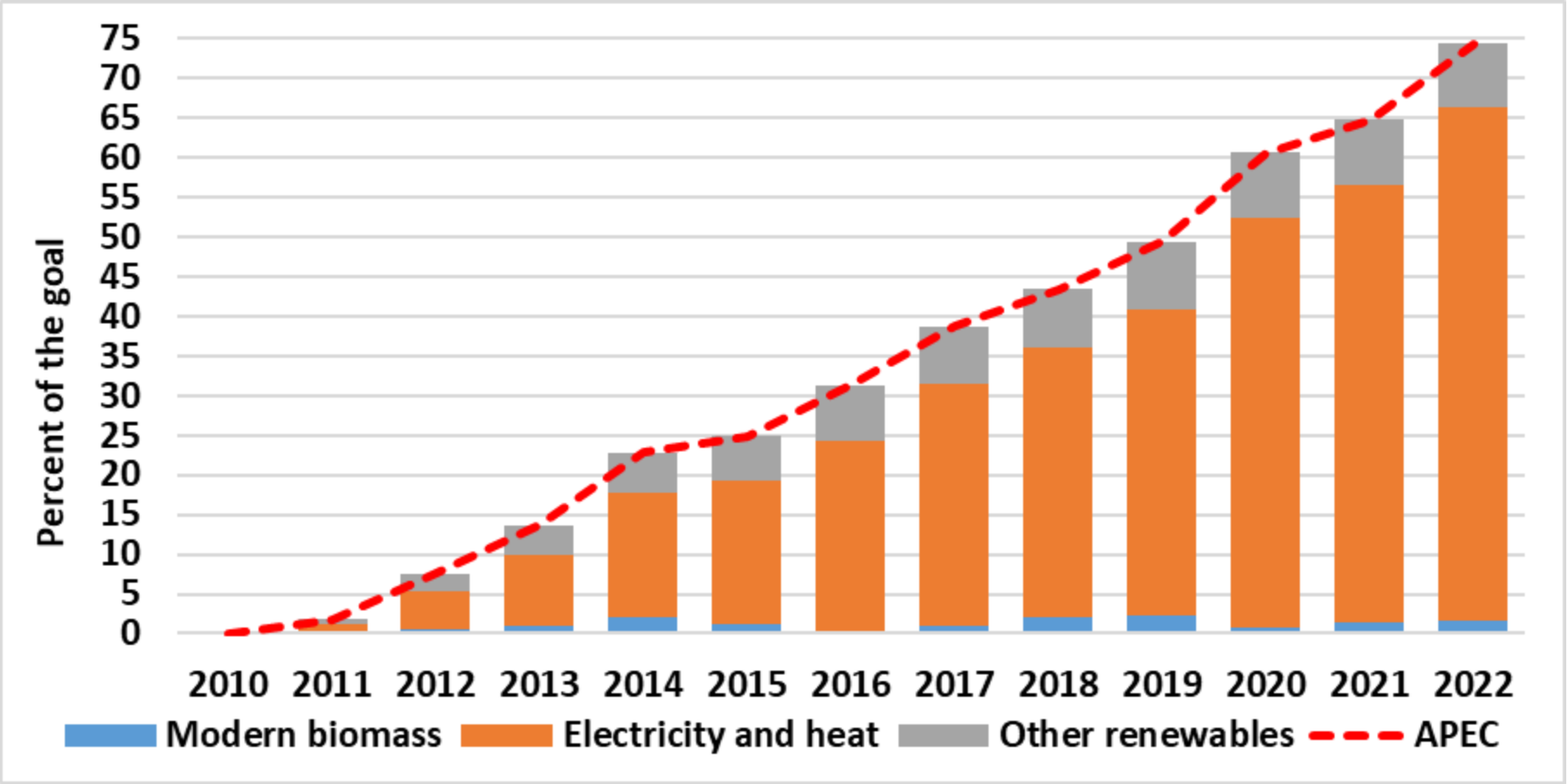
- In 2022, which is still 8 years to 2030, APEC has increased RE share in final energy consumption by 4.45 percentage points, needing to increase by just 1.53 percentage points more in the next 8 years (2023 to 2030).

China and the USA are the main sources of renewable energy growth



- China's renewable energy share increased by 3.0 times from 2010 to 2022; that of the USA increased by 1.6 times during the same period. The rest of APEC also increased by 1.7 times.

Electricity generation is the main source of renewable energy growth



- Electricity generation accounted for 87% of the total increase in renewable energy share; other renewables for 11%, while modern biomass for 2%.

Pursuing and encouraging efforts to triple global renewable energy capacity by 2030

Support for tripling global renewable energy capacity

COP28 Declaration (excerpt)

To accelerate the energy transition, the COP 28 Presidency took a leading role in launching the Global Renewables and Energy Efficiency Pledge. With the endorsement of 130 national governments (as of 11 December, including the European Union (EU)), the Pledge stipulates that signatories commit to work together ***to triple the world's installed renewable energy generation capacity to at least 11,000 GW by 2030…..***

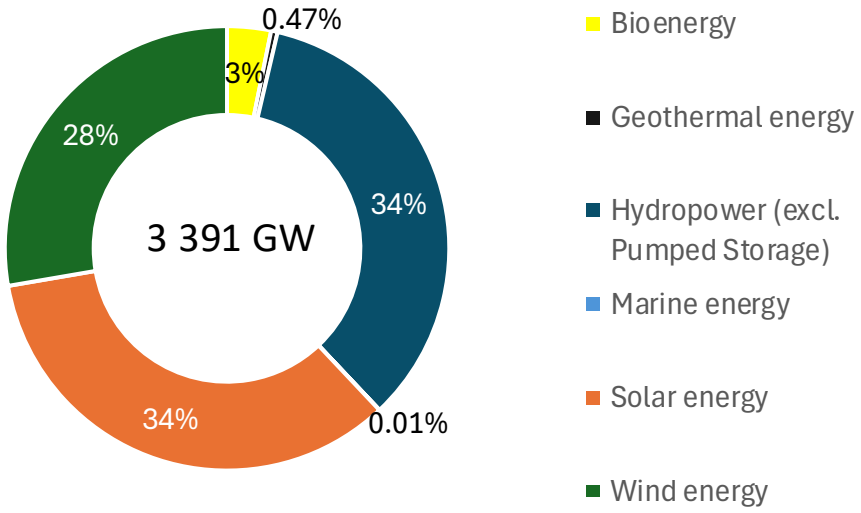
(COP28 UAE, 2023)

2023 APEC Leaders' Golden Gate Declaration (excerpt)

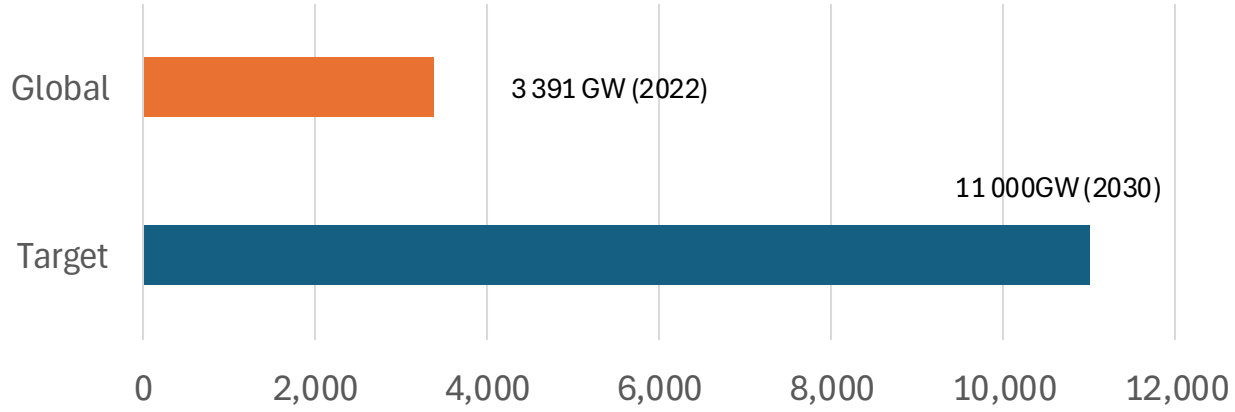
We will pursue and encourage efforts to triple renewable energy capacity globally through existing targets and policies as well as demonstrate similar ambition with respect to other zero and low emissions technologies including abatement and removal technologies in line with domestic circumstances by 2030.

Global installed renewable energy capacity in 2022

Estimated global RE capacity (GW)



Current and target global RE generation capacity

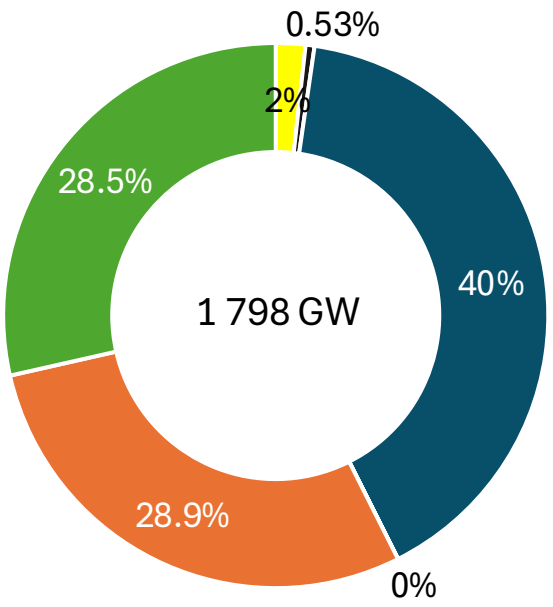


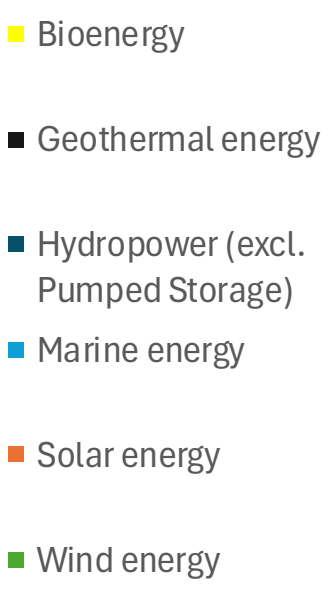
Source for both figures: IRENA

- The COP28 target for 2030 is 11 000 GW of installed renewable generation capacity.
- In 2022, IRENA estimates that hydropower, solar, and wind represented roughly equal shares of installed renewable generation capacity.

APEC's share of global RE capacity

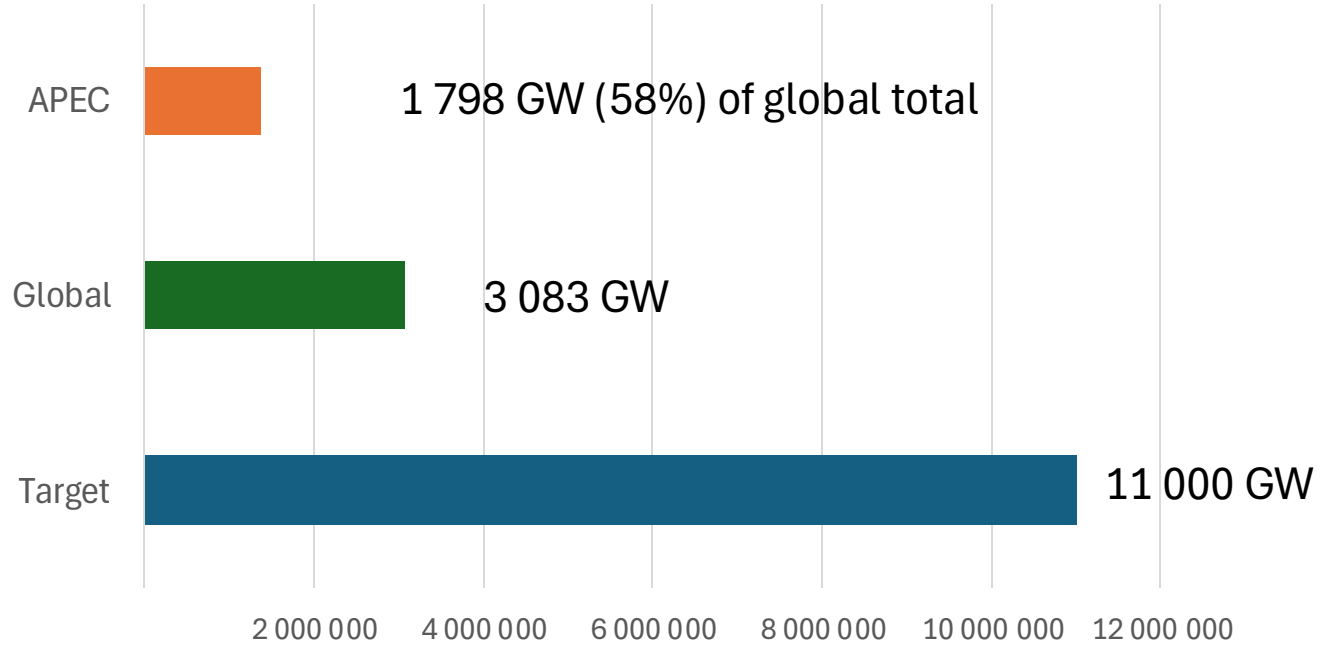
Estimated APEC RE capacity (GW), 2021





Source: EGEDA

2021 APEC and 2021 global relative to 2030 target



Sources: APEC - EGEDA, global - IRENA

- In 2021, APEC accounted for approximately 58% of global total RE generation capacity.
- Going forward, EGEDA will report on APEC's RE generation capacity.

Summary

- Following the pandemic, APEC GDP and energy consumption both rebounded.
- Renewable energy was the fastest growing energy source in APEC in 2022.
- Based on history and APERC projections:
  - APEC is likely to meet its final energy intensity goal by 2035.
  - APEC is almost certain to meet its renewable energy doubling goal.
- In 2021, APEC accounted for approximately 58% of global renewable generation capacity.

APERC/EGEDA will continue to track energy intensity, renewable energy share, and RE generation capacity.

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Thank you.

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