13.b. Report on Relevant Data for a Discussion about a “New Collective Aspirational Goal for the Power Sector”

The 69th Meeting of APEC Energy Working Group (EWG69)

26-27 February 2025 – Gyeongju, Republic of Korea

Mr Glen SWEETNAM
Chair, EGEDA
Senior Vice President, APERC

Relevant Data

- Final energy intensity
- Renewable energy generation
- APEC CO_2 emissions
  - Total
  - Power Sector
- Components of power generation
- Importance of “dispatchable” energy sources

APEC's 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)	2.5%	3.5%	0.8%	-1.0%	5.6%	4.2%	1.9%	1.4%	0.8%	0.6%	0.5%	1.2%	2.8%	0.2%	-4.2%	4.6%	2.3%	30.9%
Change in GDP (PPP, constant 2021 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	-2.7%	-1.9%	-2.1%	-0.7%	-0.1%	0.0%	-2.2%	-2.4%	-2.9%	-2.9%	-2.8%	-2.8%	-1.3%	-3.1%	-3.0%	-1.5%	-0.2%	**-28.2%**

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

- *GDP growth in 2022 was lower than all except two years since 2005.*
- *The drop in energy intensity in 2022 was also considerably less than the historical average of approximately 2% per year.*
- *We still expect APEC to meet its energy intensity goal by 2035.*

Renewable power generation doubled over the last decade

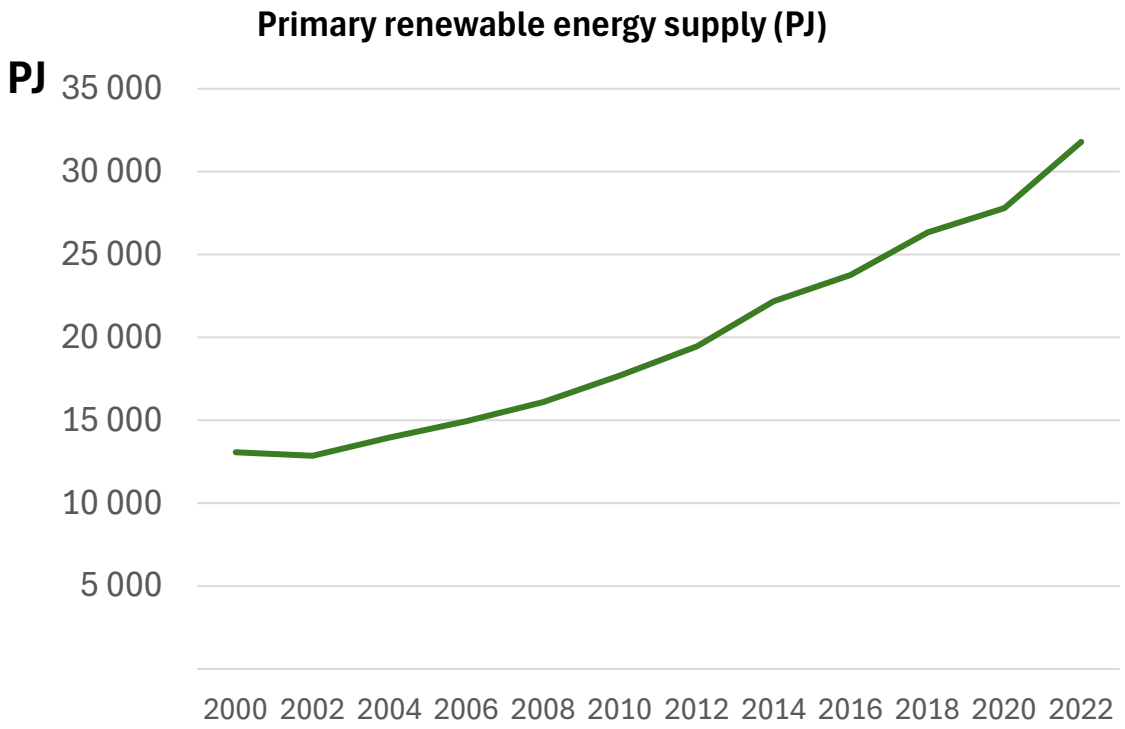
Electricity Generation, TWh

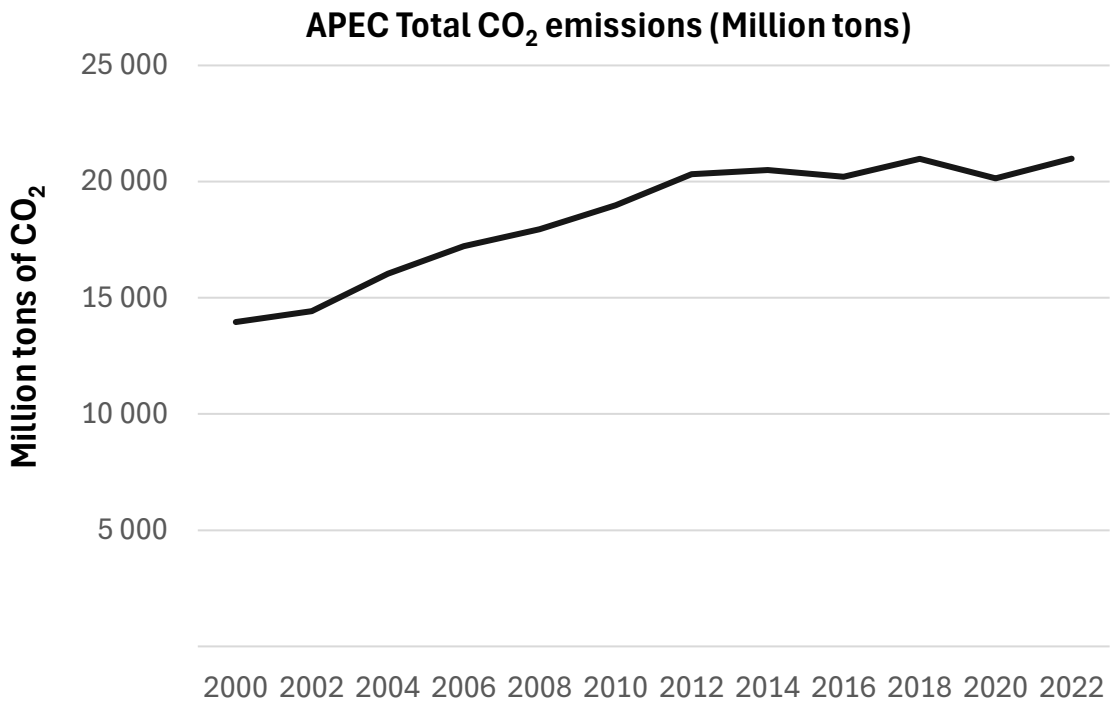
	2010	2022	% change
Non-renewables	**11,334**	**13,901**	**22.7%**
Coal	6,578	7,954	20.9%
Oil	326	177	-45.6%
Gas	2,688	3,864	43.7%
Nuclear	1,658	1,799	8.5%
Other non-renewables	84	107	27.9%
Modern renewable energy	**2,116**	**5,156**	**143.7%**
Modern biomass	67	259	286.7%
Hydro	1,783	2,598	45.7%
Geothermal	52	63	20.9%
Solar	9	867	9542.4%
Wind	163	1,335	720.7%
Other renewables	43	34	-20.7%
Total	**13,450**	**19,058**	**41.7%**
Modern RE share	**15.73%**	**27.06%**	**72.0%**

Sources: APEC statistics (EGEDA), APERC analysis

- *In 2022, modern renewable energy provided over a quarter of total power generation.*
- *Renewable energy is on track to meet the APEC goal early.*

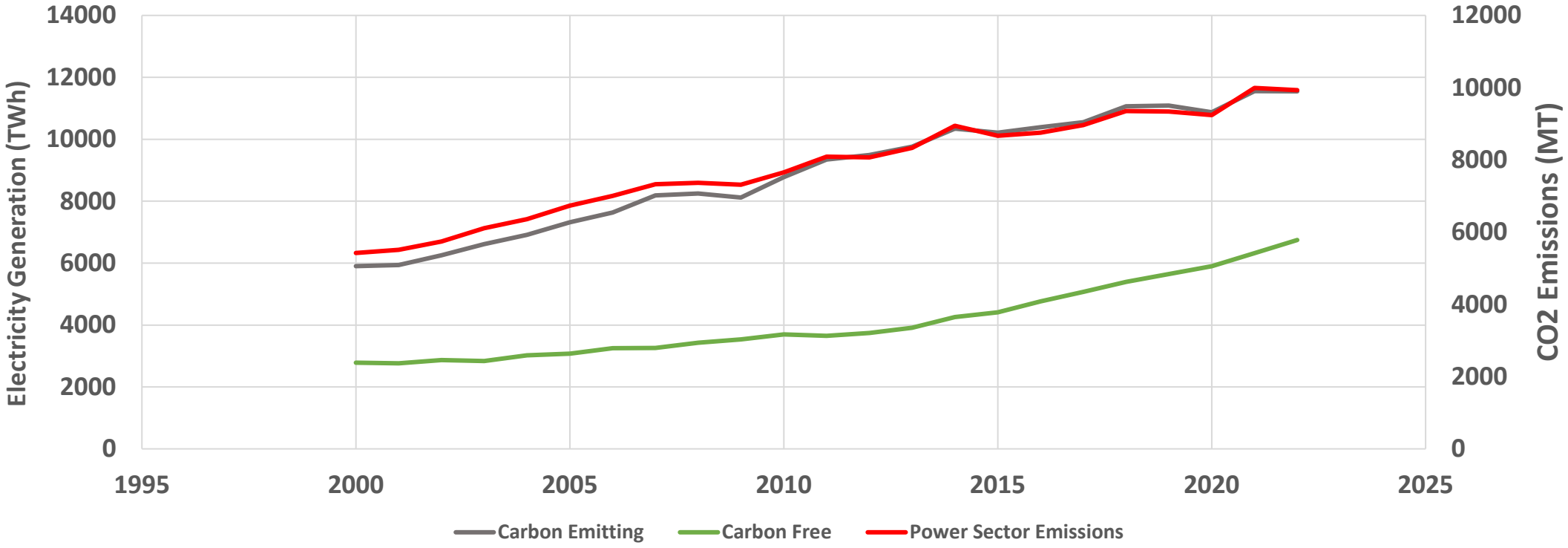
The energy transition quandary





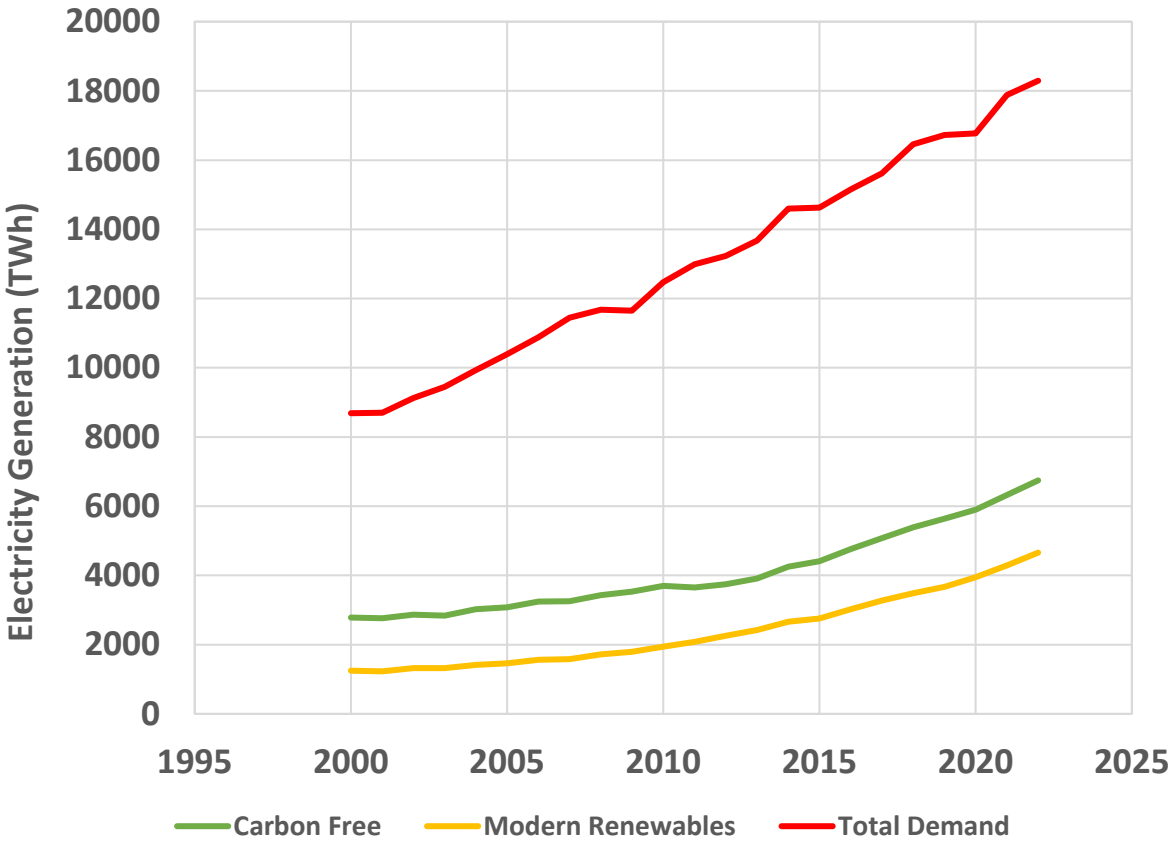
- *APEC energy intensity continues to decline and the growth in renewable energy supply is accelerating.*
- *APEC is on track to meet or exceed its energy goals on both renewable energy and energy intensity, yet from 2012 to 2022 CO_2 emissions have remained relatively constant.*

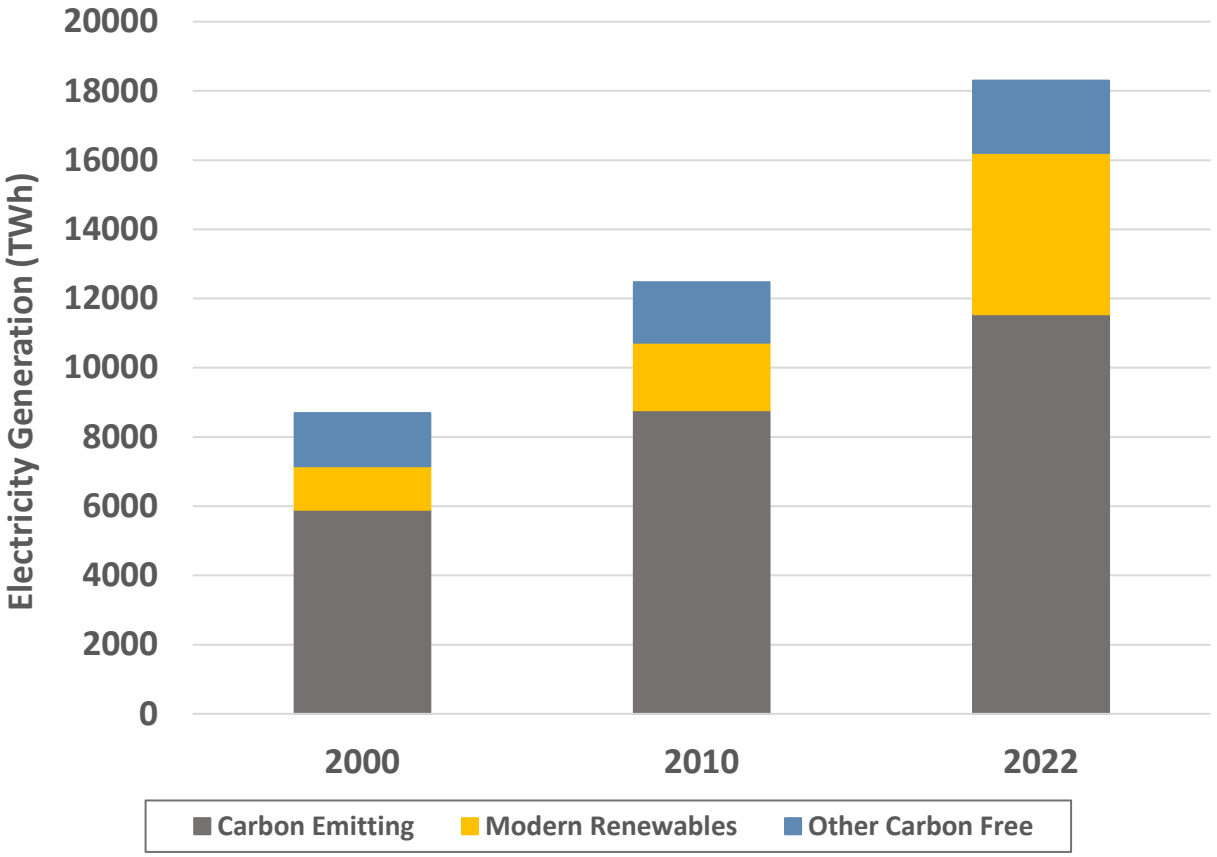
CO_2 emissions track carbon emitting generation



- *Although carbon free generation is accelerating, carbon emitting generation continues to grow steadily.*
- *CO_2 emissions are strongly correlated with carbon emitting generation.*

Electricity Demand Growth & Carbon-Free Generation

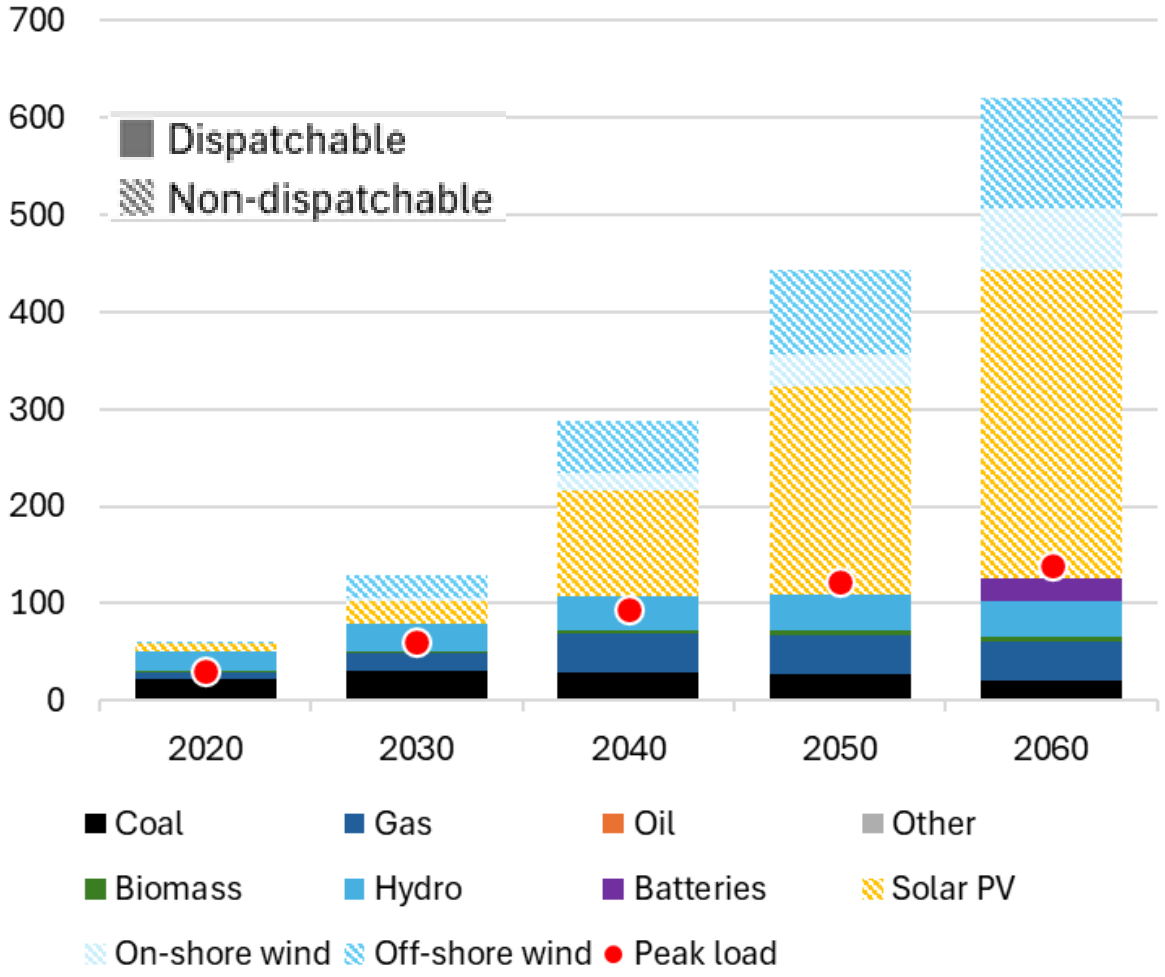




- *Although renewable energy has been accelerating, other carbon free generation has not.*
- *Total APEC electricity demand is increasing more rapidly than carbon free generation.*

Note: Modern renewables is a subset of carbon free generation. Carbon-free also includes nuclear,, biomass, biofuels, low-carbon hydrogen, and fossil-fired generation with CCS.

Grid reliability requires “dispatchable” generation



- Electrical grid reliability will become an increasingly important issue as the share of non-dispatchable energy increases.
- Non-dispatchable energy sources cannot be relied to meet peak load under all conditions.
- Carbon-free generation includes both dispatchable and non-dispatchable energy sources.

Summary

- APEC's energy intensity is declining approximately 2% per year.
- APEC's renewable generation is accelerating.
- Despite being on track to meet or exceed its energy intensity and renewable energy goals, APEC CO2 emissions have been approximately constant since 2012.
- Total electricity demand is growing more rapidly than carbon free electricity generation so CO_2 emissions from the power sector continue to grow.
- Grid reliability requires dispatchable generation.
- Carbon-free generation includes both dispatchable and non-dispatchable energy sources.

Asia-Pacific
Economic Cooperation

APERC
Asia Pacific Energy Research Centre

Thank you.

https://aperc.or.jp