



**Asia-Pacific
Economic Cooperation**

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Agenda Item: 12ci

Progress Towards Renewable Energy Doubling Goal

Purpose: Information
Submitted by: APERC



57th Energy Working Group Meeting
Manila, Philippines
23-24 May 2019

12.c.i. Progress toward Renewable Energy Doubling Goal

The 57th Meeting of APEC Energy Working Group (EWG)
Taguig City, Philippines, 23-24 May 2019

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Renewable share doubling goal milestones

- 1. EWG 47 (May 2014)** - US proposed the APEC aspirational goal of doubling the share of renewable energy by 2030 and noted that it interacted with APEC's aspirational energy intensity goal.
- 2. EMM 11 (Sep 2014)** - "Doubling the share of renewables in the APEC energy mix, including in power generation, from 2010 levels by 2030."
- 3. EWG 54 (Nov 2017)** - EWG decided that traditional biomass will not be counted; IRENA's definition of renewable energy is recommended; APEC data should be used for monitoring progress; and the goal should be monitored on both the supply and demand side.

Renewable doubling goal calculation methods

Question	Options	EWG54 decision
Renewables	Definition	IRENA recommended
Biomass	All v. modern	Traditional excluded
Hydro	All v. small	All, per IRENA
Geothermal	In v. out	In, per IRENA
Measurement point	Supply v. demand	Both FED and TPES
Data	IEA v. APEC	APEC

Renewable share mostly fails to meet the goal

Measure	Period	Data	Result
Renewable Share Doubling	2010-2030	Supply	Extrapolation
			Projection
		Demand	Extrapolation
			Projection

Renewable energy supply and consumption

Primary energy supply

	2010	2016
Non-renewables	6,879,538	7,288,967
Coal	2,772,299	2,796,678
Oil	2,167,399	2,327,589
Gas	1,475,367	1,714,262
Other non-renewables	464,473	450,437
Traditional biomass	112,193	106,470
Modern renewable energy	352,484	496,374
Modern biomass	100,588	121,013
Hydro	153,386	200,181
Geothermal	35,785	38,790
Solar	3,752	18,747
Wind	13,981	46,083
Other renewables	44,993	71,561
Total	7,344,215	7,891,811
Modern RE share	4.80%	6.29%

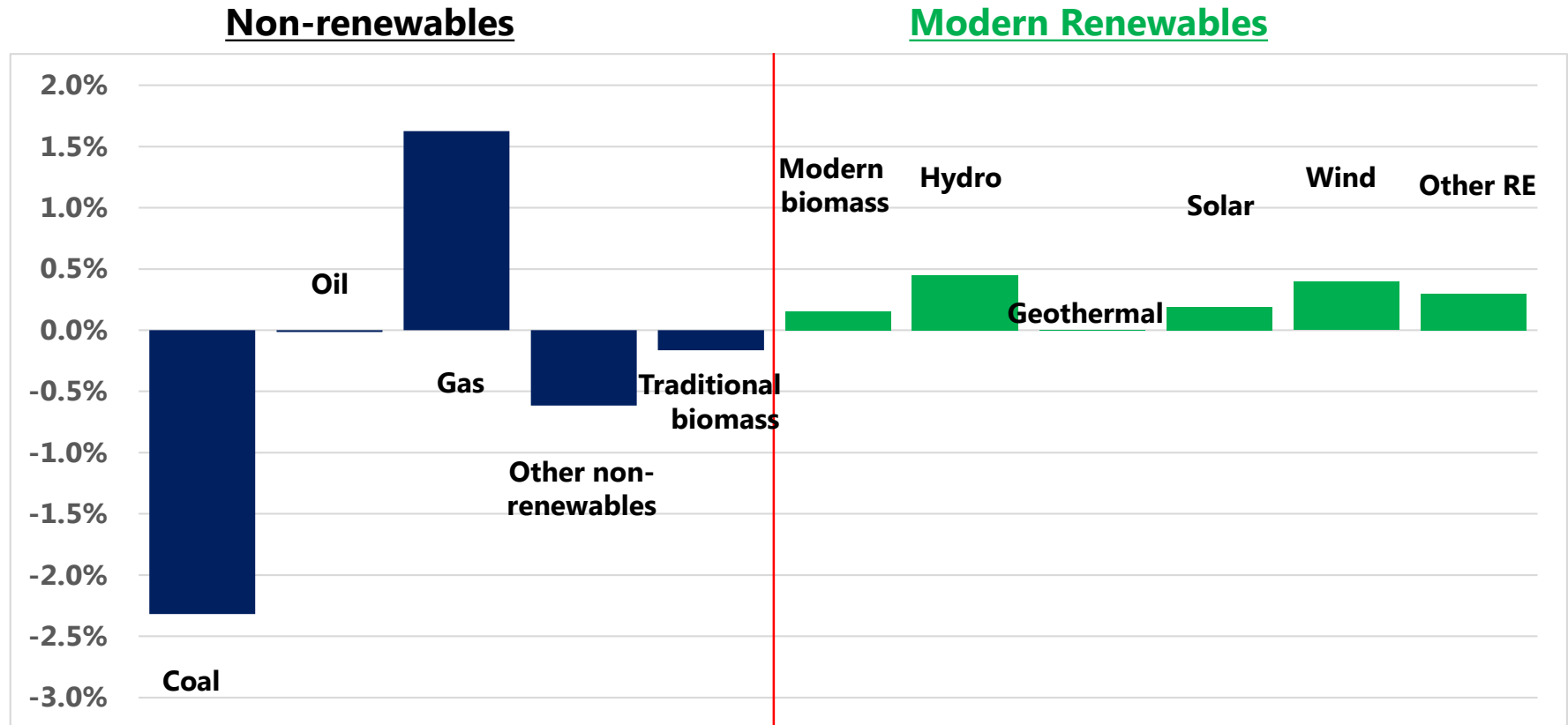
Final energy consumption

	2010	2016
Non-renewables	3,918,075	4,261,114
Coal	733,837	764,643
Oil	1,544,923	1,664,595
Gas	628,786	706,677
Electricity	819,975	913,934
Heat	186,897	206,428
Other non-renewables	3,658	4,836
Traditional biomass	112,193	106,470
Modern renewable energy	264,999	369,023
Electricity	156,900	235,645
Heat	1,681	1,600
Modern biomass	68,997	67,483
Other renewables	37,421	64,295
Total	4,295,267	4,736,607
Modern RE share	6.17%	7.79%

Note: Consumption of electricity and heat from renewables is calculated from the share of total electricity and heat production. China, Malaysia and Papua New Guinea have no data on traditional biomass.
Source: APEC data.

Coal and other energy lost shares to gas and renewables

Percent change in fuels in supply (primary energy supply), 2010-2016



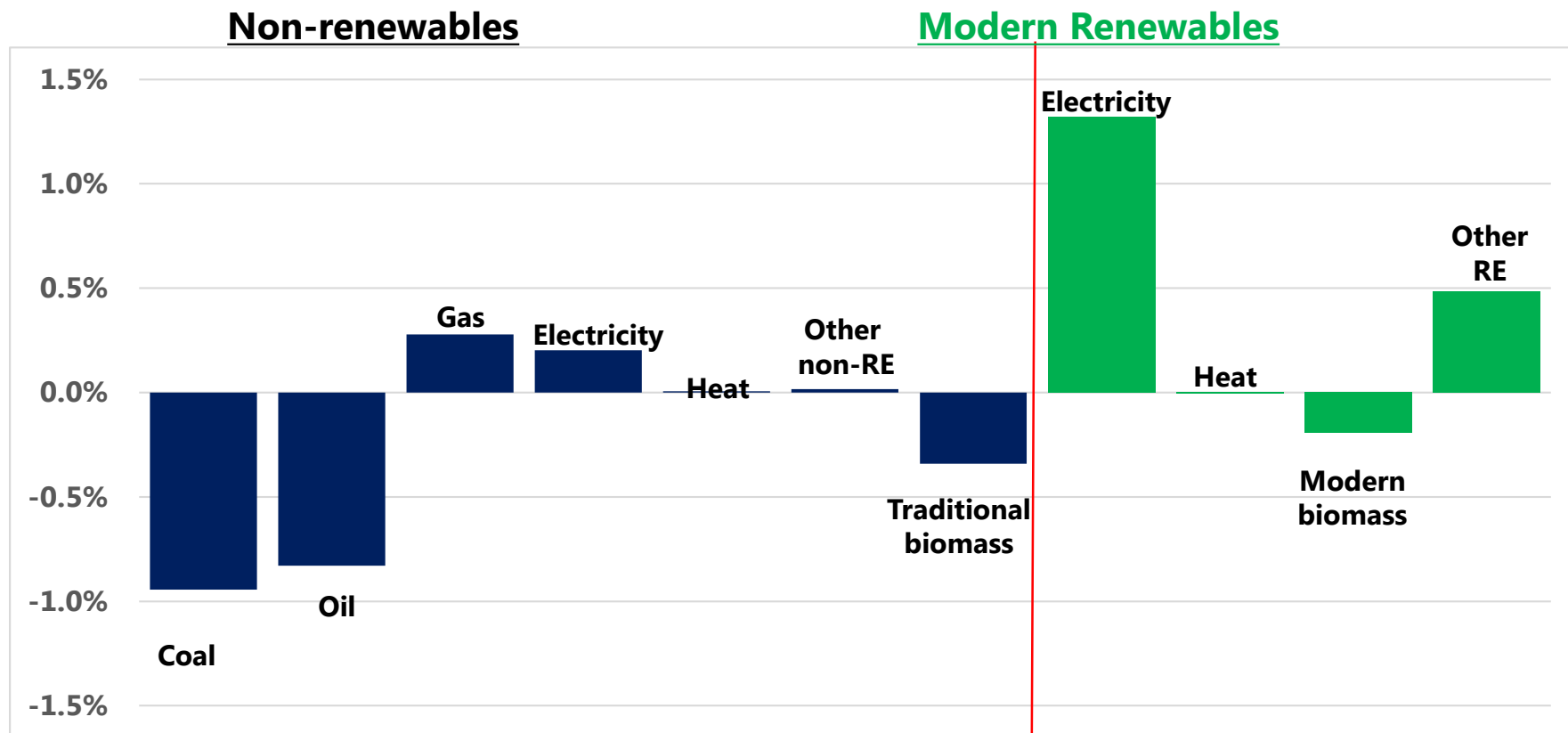
Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data

From 2010 to 2016, the renewable share increased only 1.49 percentage points, just 31.1% of the way to the goal.

Coal and oil lost shares to renewables in electricity

Percent change in fuels in consumption (final energy consumption), 2010-2016



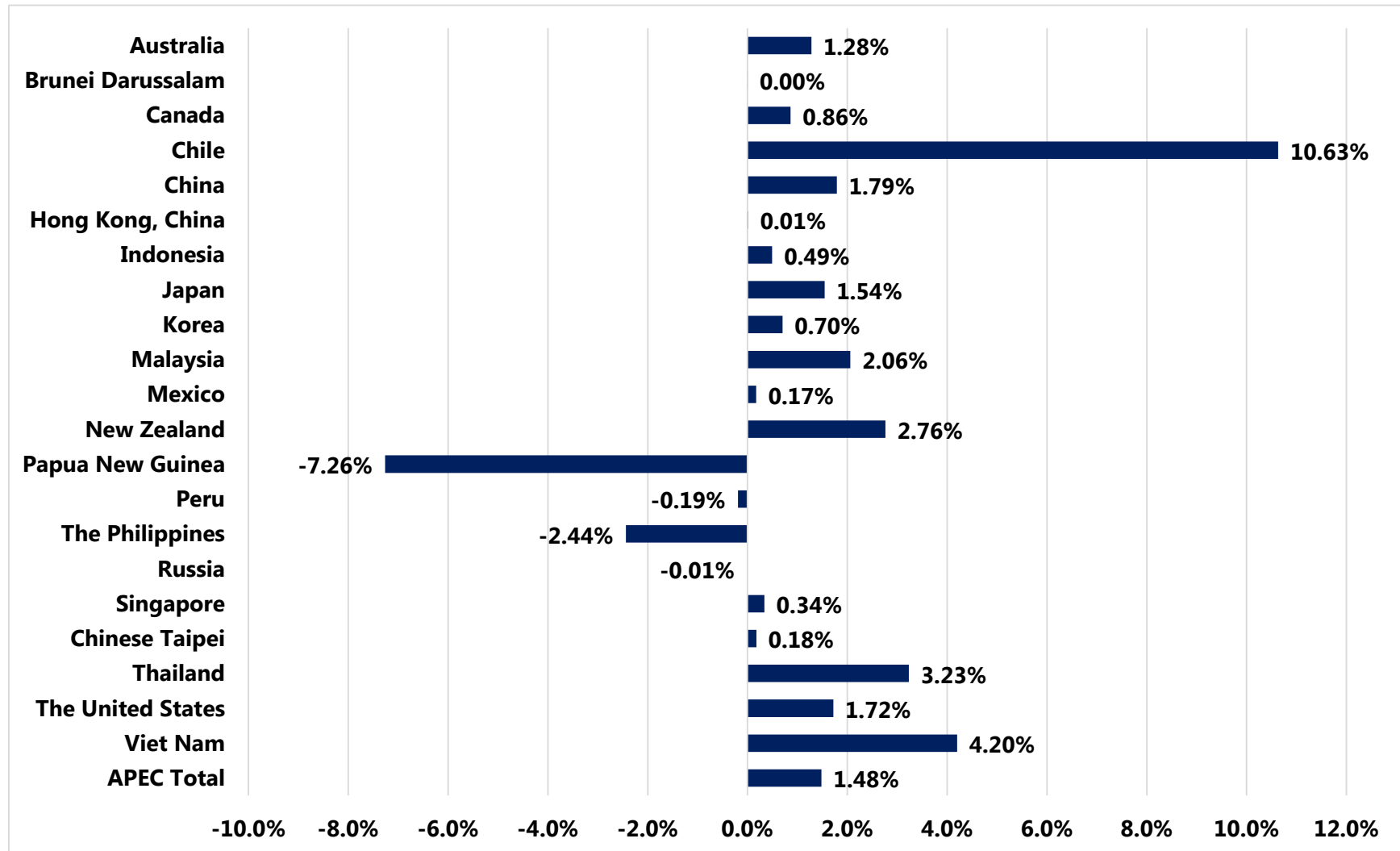
Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data.

From 2010 to 2016, the renewable share increased only 1.62 percentage points, just 26.3% of the way to the goal.

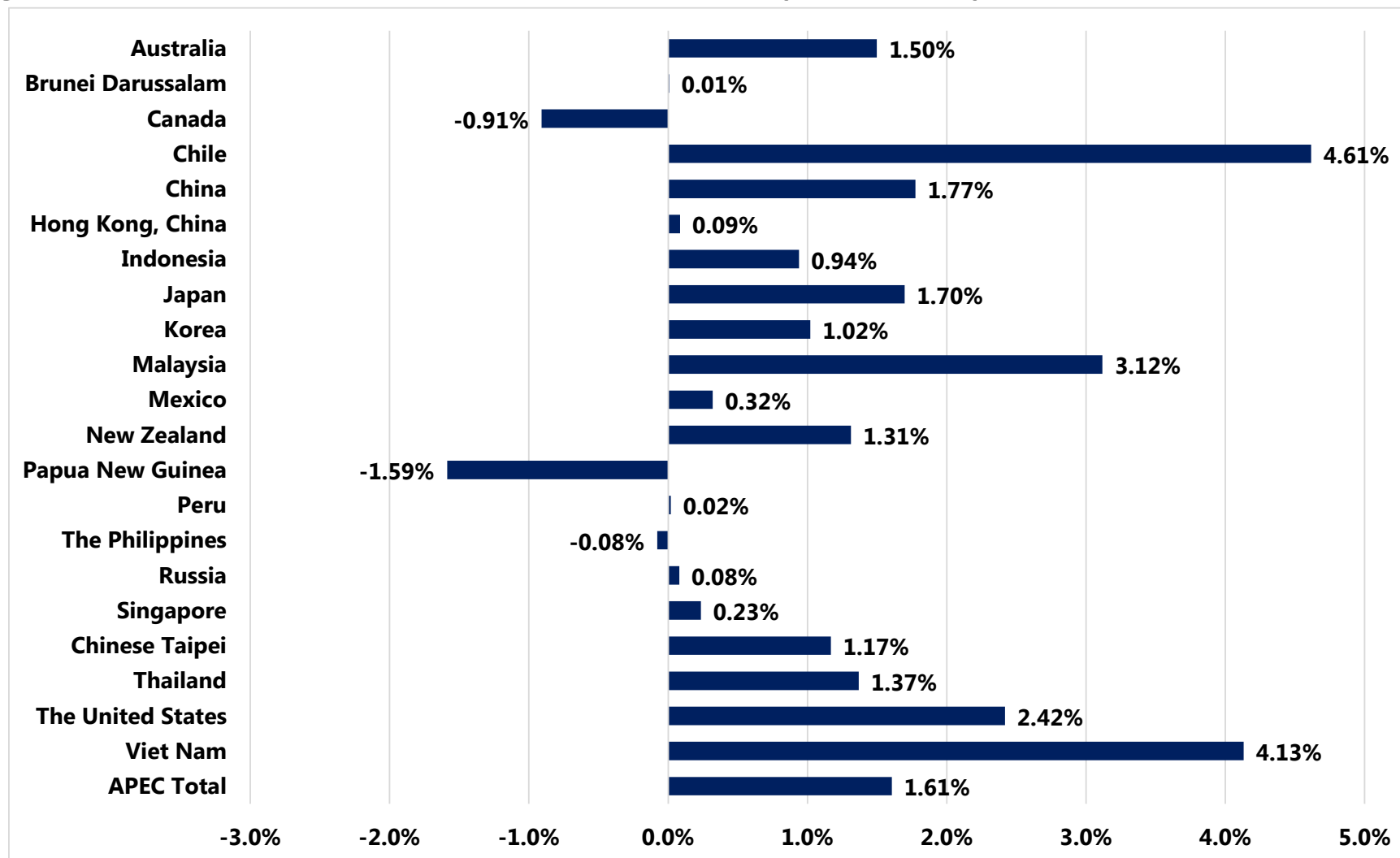
Six-year renewables supply changes are mostly positive

Changes in modern renewables share in TPES by economy, 2010-2016



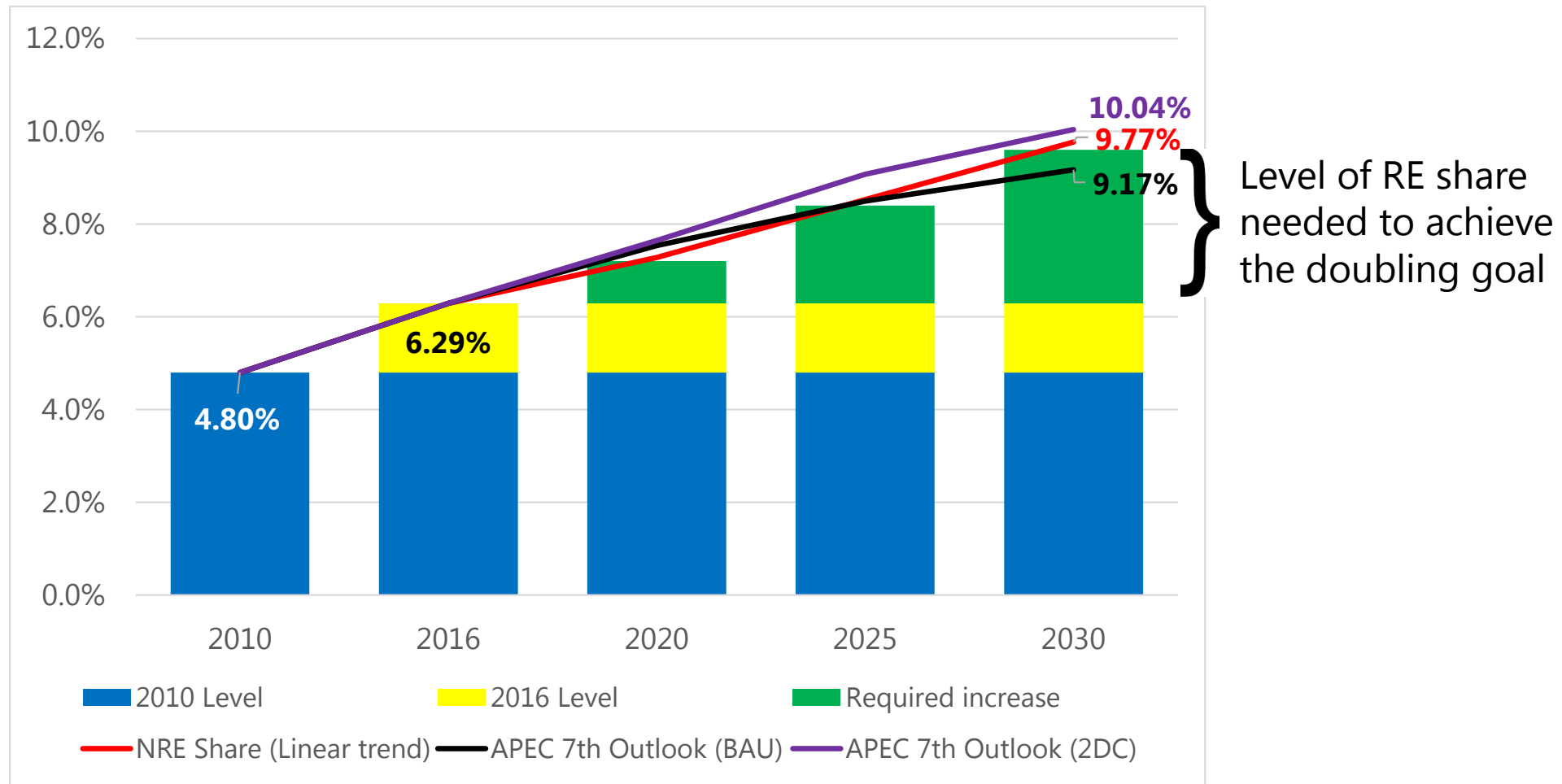
Six-year renewables consumption changes are mostly positive

Changes in modern renewables share in FED by economy, 2010-2016



Supply outlook almost on trend, falling short of the goal

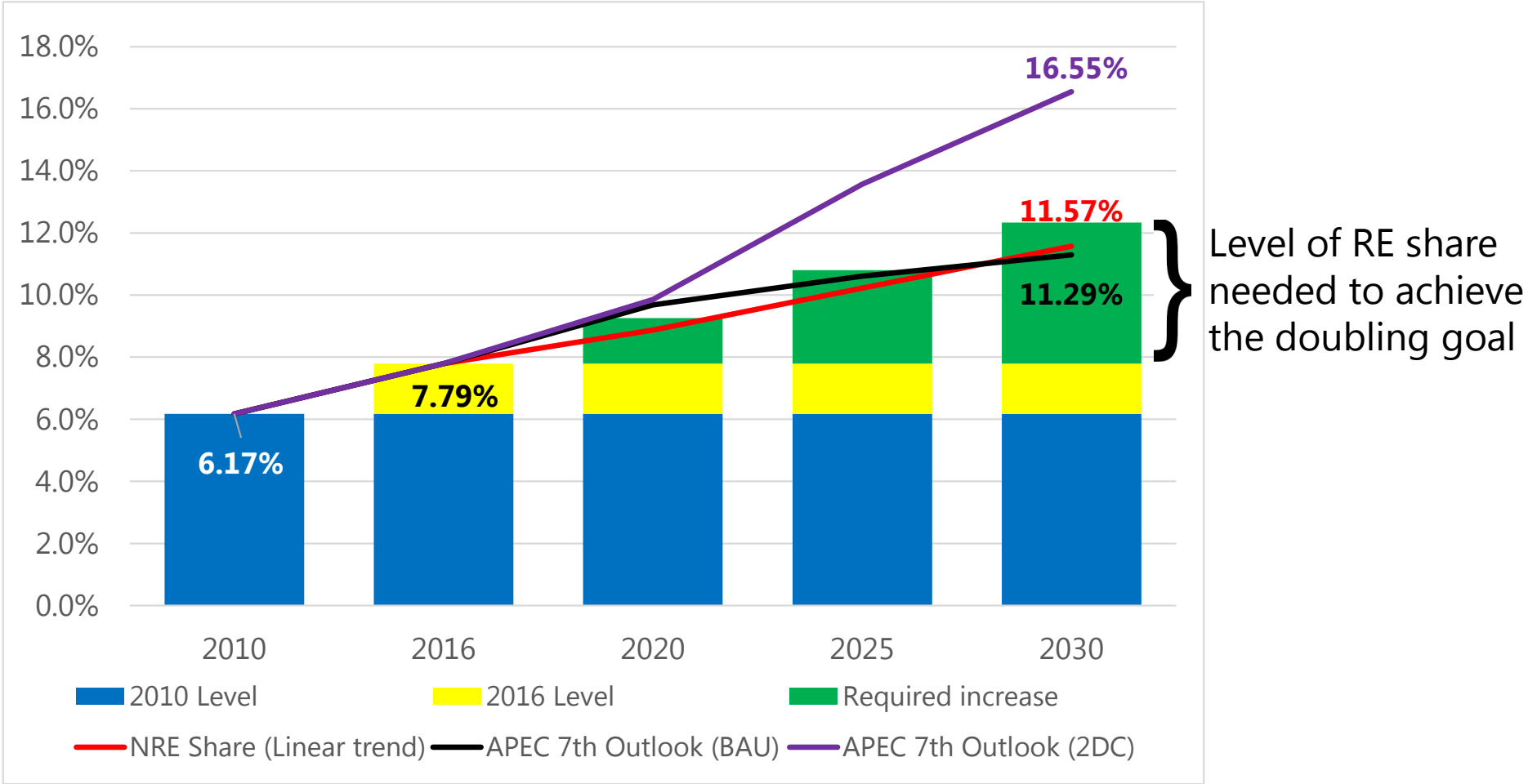
Renewable energy share in total primary energy supply, 2010-2030



Source: APEC data and APERC analysis.

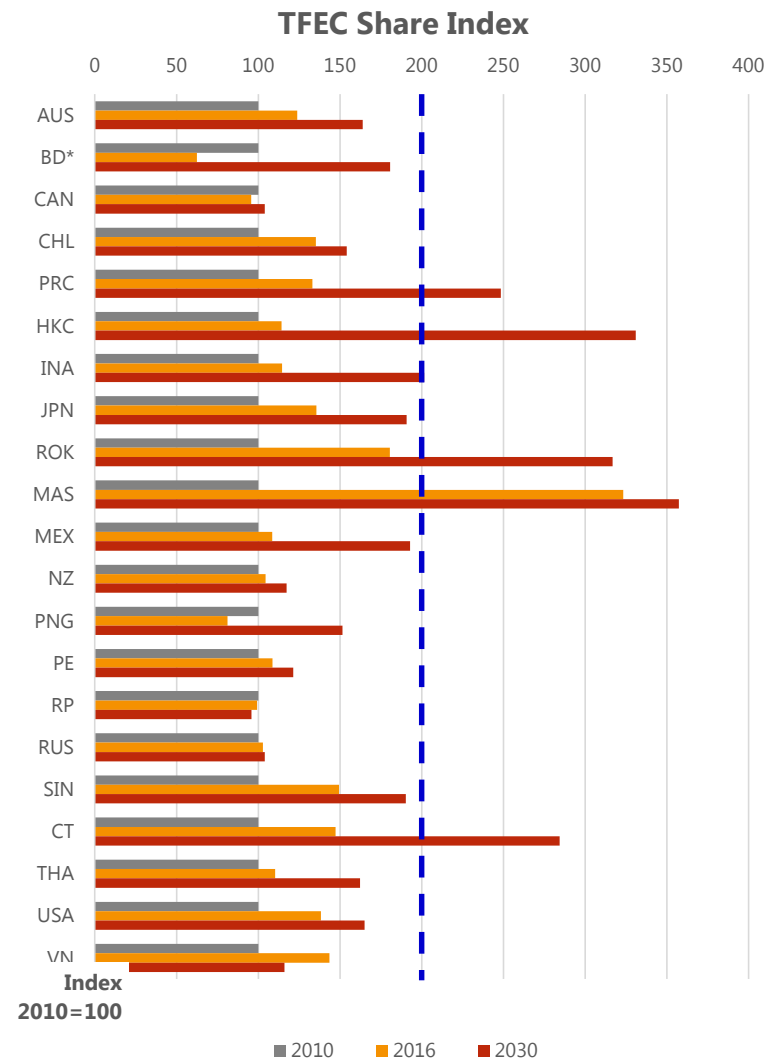
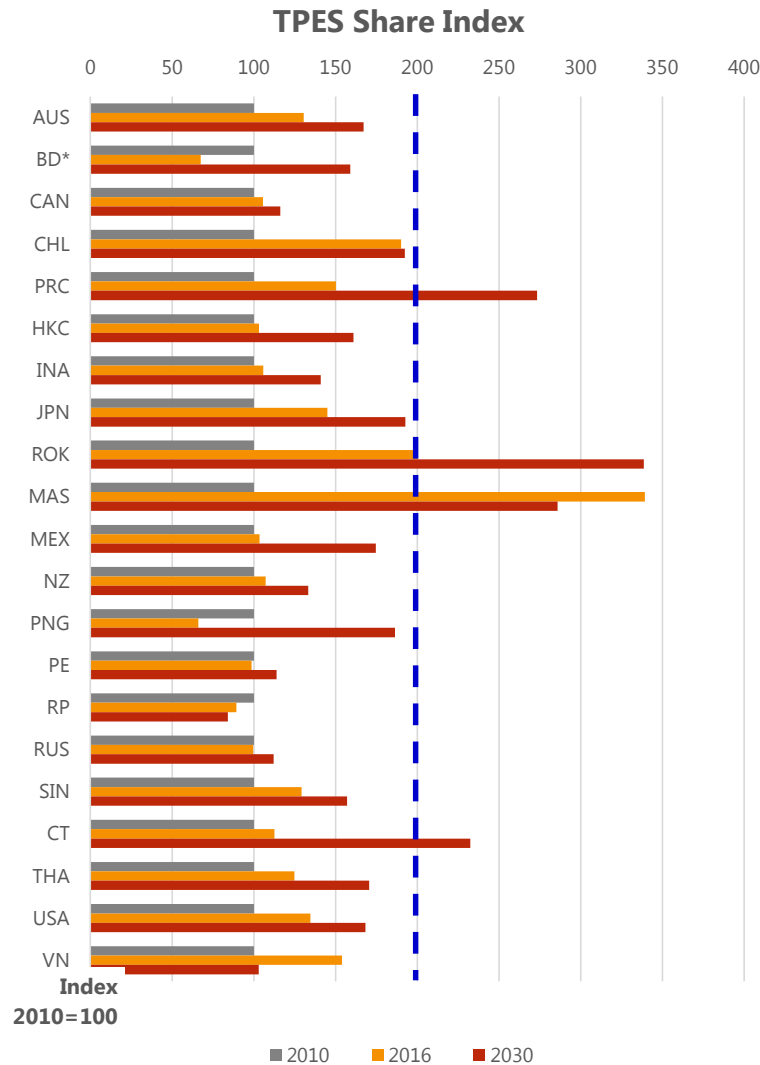
Demand outlook is not as good as supply outlook

Renewable energy share in total final energy demand, 2010-2030



Source: APEC data and APERC analysis.

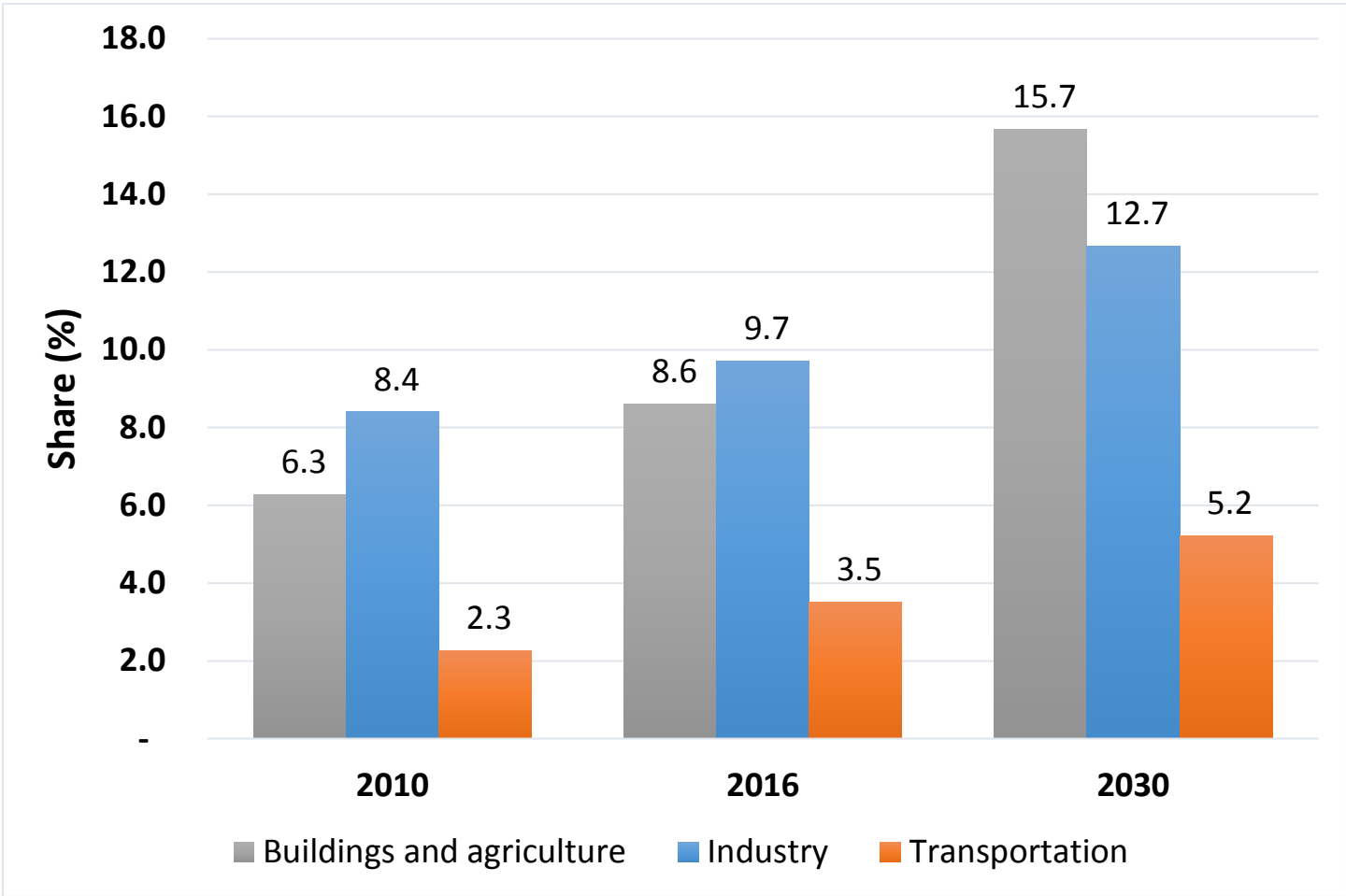
Only few economies double renewable share



Source: APEC data and APERC analysis.

Buildings and transport meet doubling goal

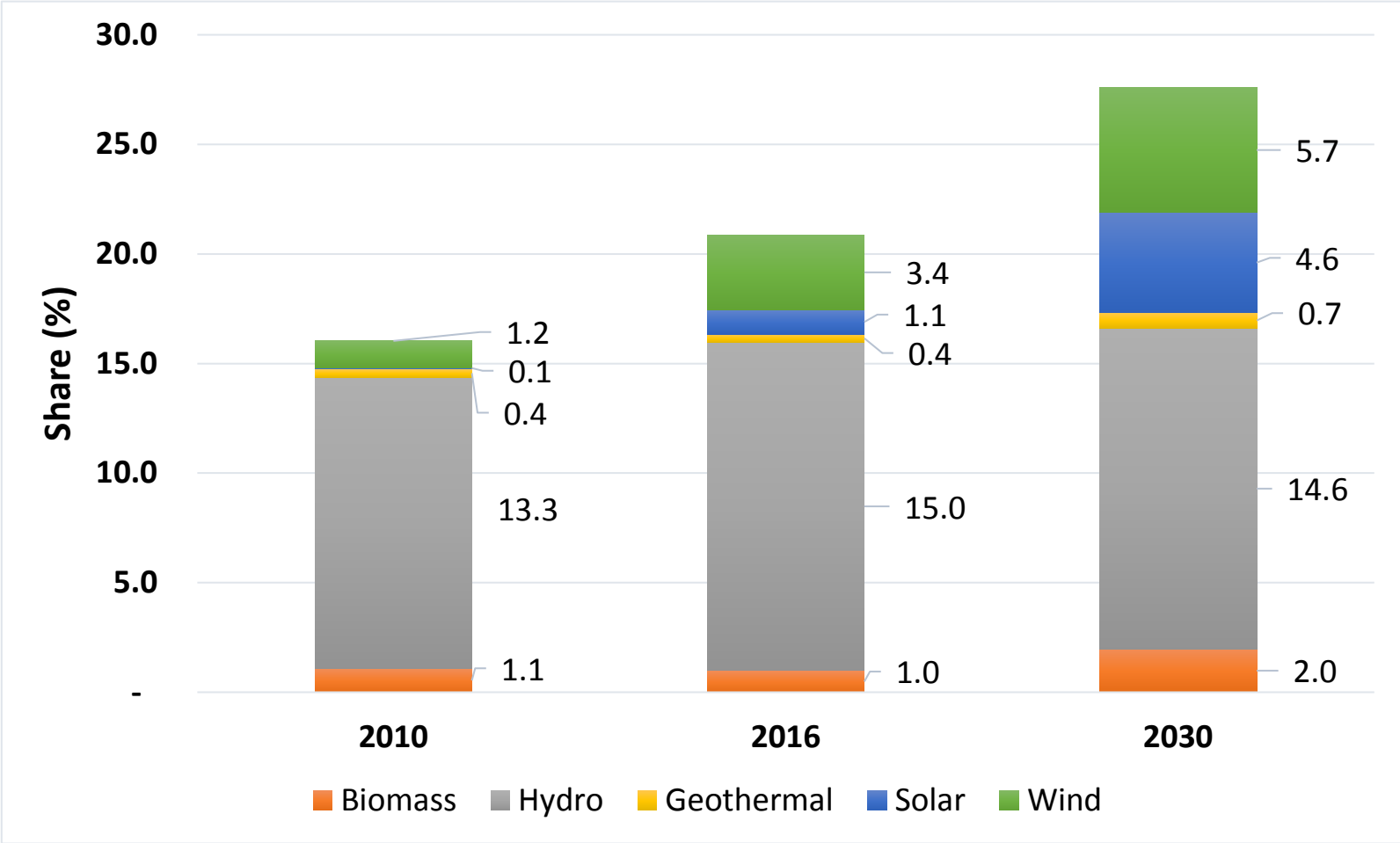
Modern renewables share by end-use sector, 2010, 2016 and 2030



Source: APEC data and APERC analysis.

Electric generation fails to meet doubling goal

Modern renewables share in power generation, 2010, 2016 and 2030



Source: APEC data and APERC analysis.

Closing thoughts

- The use of modern renewables grew rapidly during 2010-2016.
 - Brought about by rapid decline in costs and favourable government policies such as feed-in tariffs, auctions and RPS.
- APERC modelling shows that business-as-usual is unlikely to reach the goal, though a straight line comes close.
- Additional efforts are necessary especially in addressing the barriers to renewable development such as:
 - Effect of intermittency on grid stability
 - Cost of electricity storage
 - Policies persistently favouring fossil and nuclear energy.
- More can be done to identify economy-by-economy barriers and to formulate policy responses as part of a comprehensive road map.
- In the last EGEDA meeting, IRENA mentioned that showing annual variation of renewable energy may not be meaningful as some years' production of hydro are affected by drought.



Thank you for your kind attention.

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