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Agenda Item: 12di

Progress Towards Renewable Energy Doubling Goal

Purpose: Information
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Lima, Peru, 5-7 November 2018

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

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Renewable doubling goal milestones

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.
EMM 11 2014 (Sept 2014)	"Doubling the **share** of renewables in the APEC energy mix, including in power generation, from 2010 levels by 2030."
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 scorecard

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

Source: Key conclusions of EWG54

Renewable energy supply and consumption

Primary Energy Supply

Unit: ktoe

	2010	2016
Non-renewables	**6,879,439**	**7,287,557**
Coal	2,771,654	2,795,278
Oil	2,167,343	2,327,579
Gas	1,475,971	1,714,262
Other non-renewables	464,471	450,438
Traditional biomass	**112,193**	**107,614**
Modern renewable energy	**352,468**	**495,640**
Modern biomass	100,588	120,277
Hydro	153,370	200,181
Geothermal	35,786	38,790
Solar	3,752	18,747
Wind	13,981	46,083
Other renewables	44,991	71,562
Total	**7,344,100**	**7,890,811**
Modern RE share	**4.80%**	**6.28%**

Final Energy Consumption

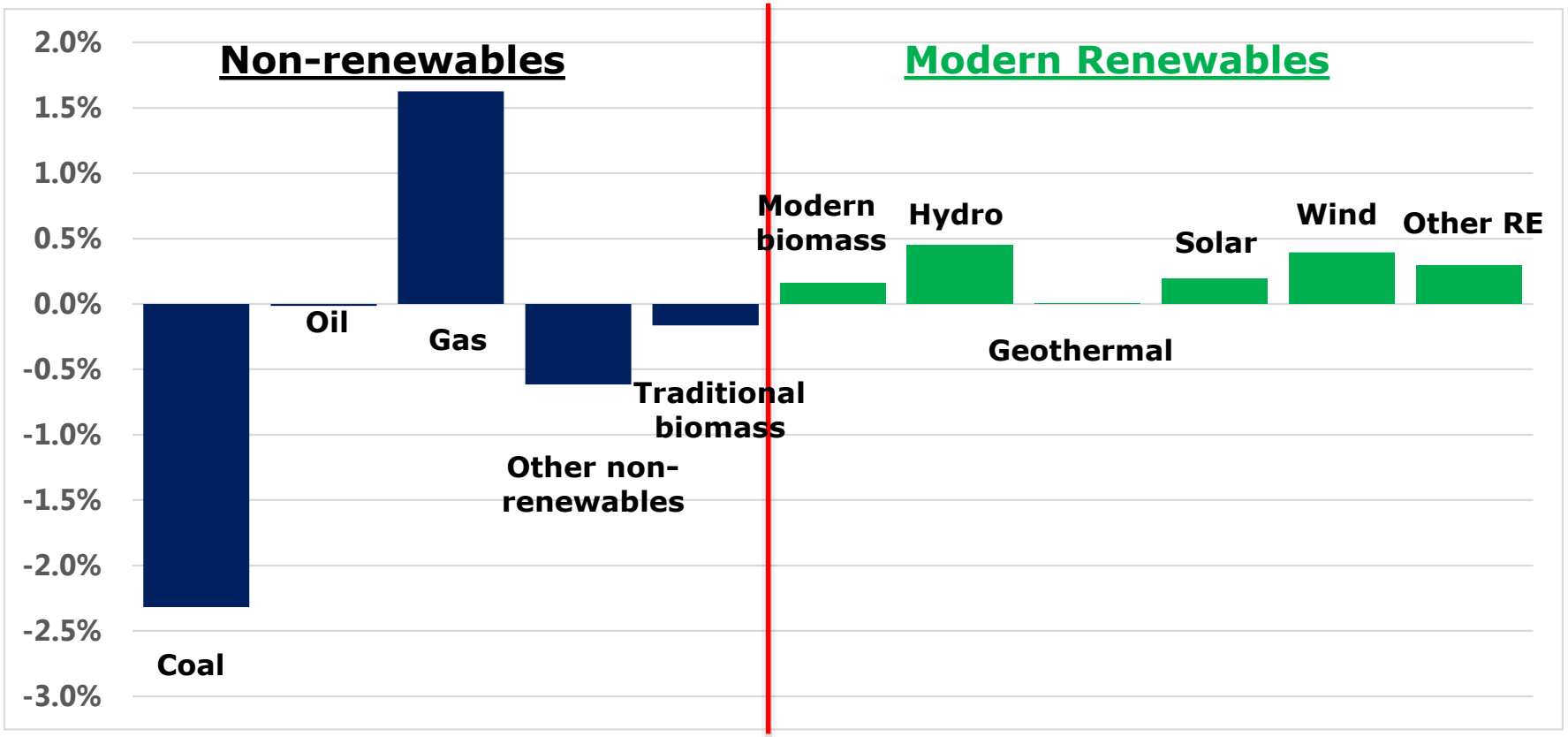
	2010	2016
Non-renewables	**3,918,091**	**4,260,854**
Coal	733,837	764,641
Oil	1,544,940	1,664,595
Gas	628,785	706,677
Electricity	819,975	913,677
Heat	186,897	206,428
Other non-renewables	3,658	4,836
Traditional biomass	**112,193**	**107,614**
Modern renewable energy	**264,999**	**368,303**
Electricity	156,900	235,388
Heat	1,681	1,600
Modern biomass	68,997	67,021
Other renewables	37,421	64,295
Total	**4,295,283**	**4,736,772**
Modern RE share	**6.17%**	**7.78%**

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

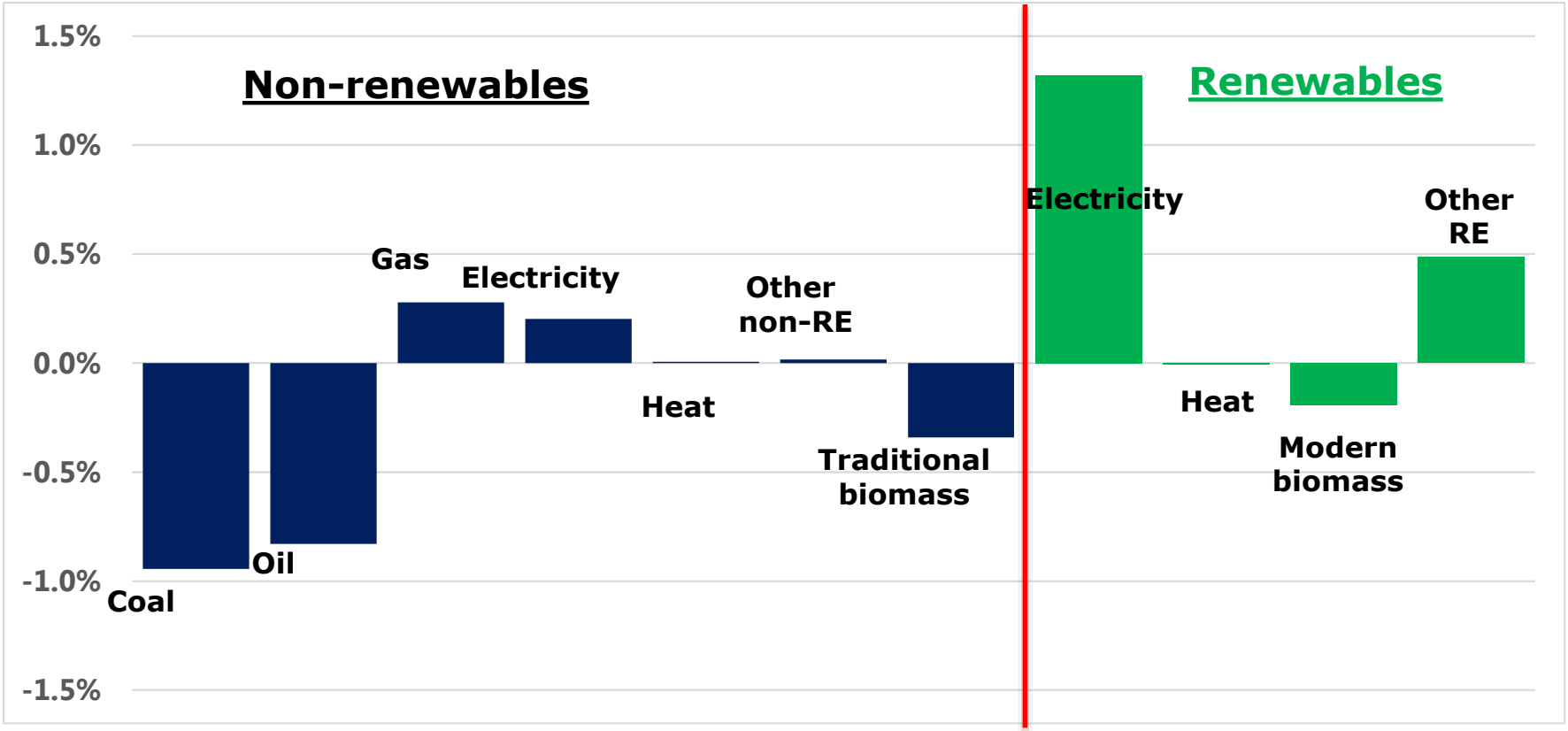


From 2010 to 2016, the renewable share increased only 1.48 percentage points, just 30.8% of the way to the goal

Source: APEC data.

Coal and oil lost shares to renewables in electricity

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

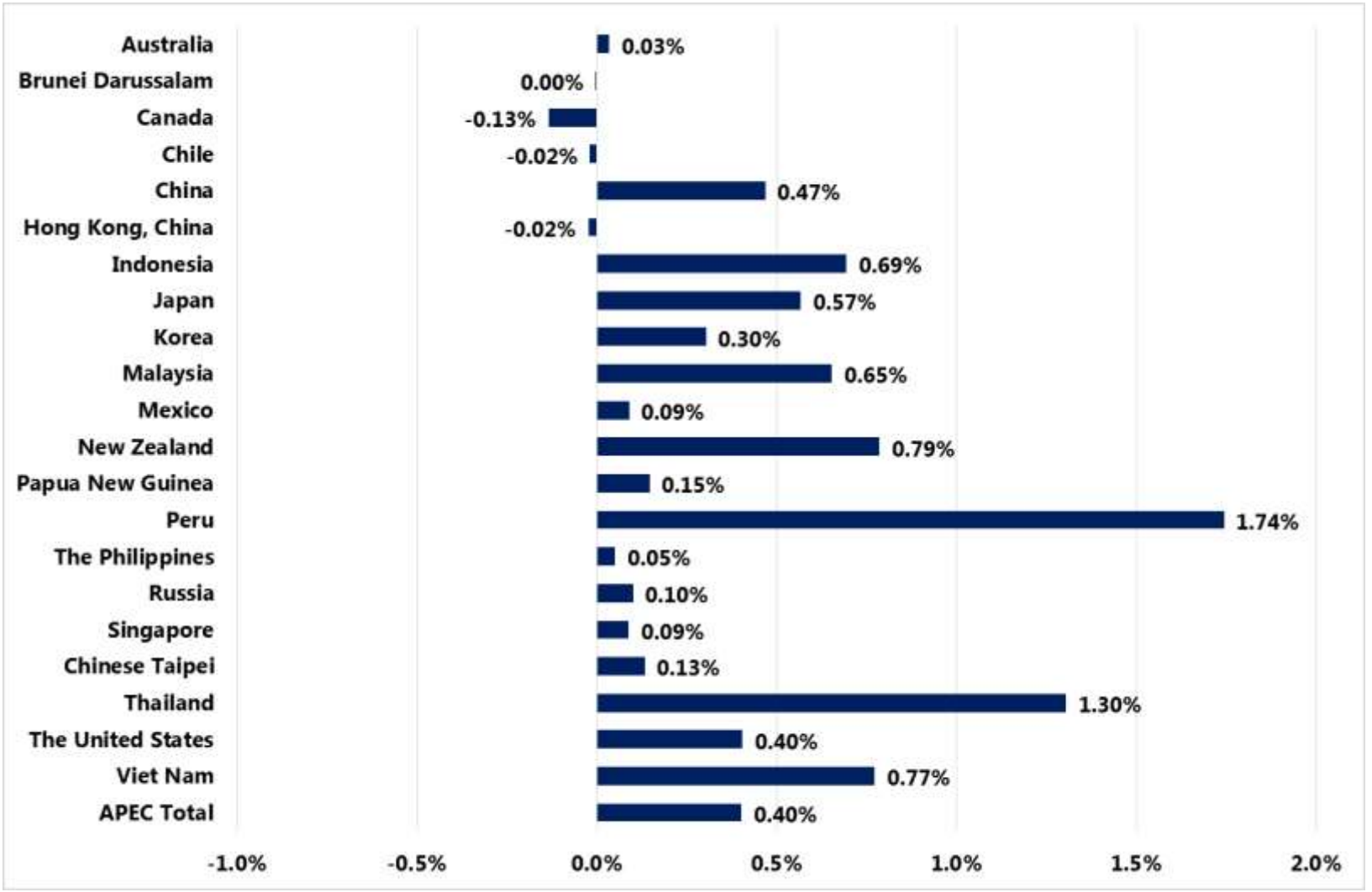


From 2010 to 2016, the renewable share increased only 1.61 percentage points, just 26.0% of the way to the goal

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

One-year renewables supply changes are mostly positive

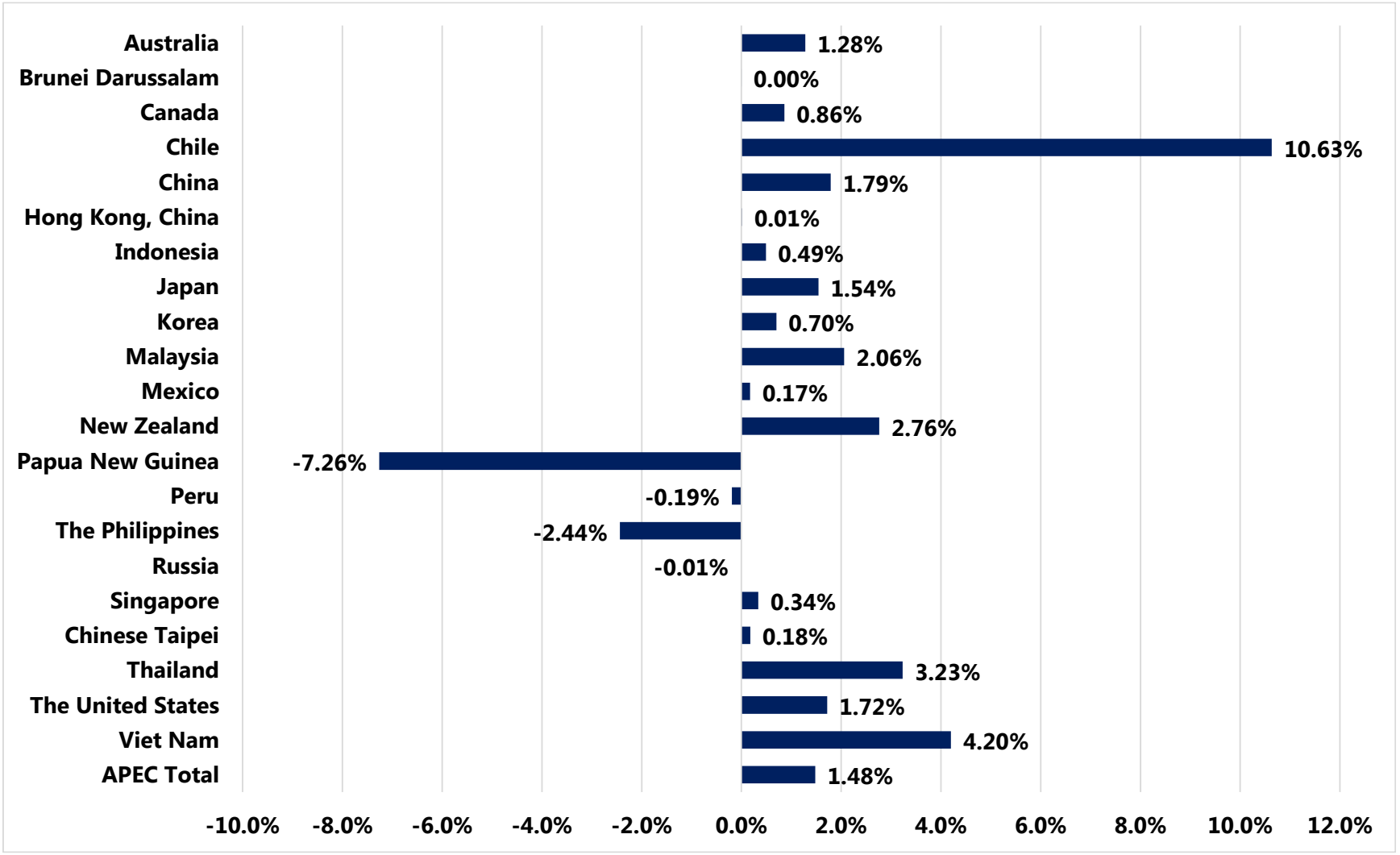
Changes in modern renewables share in TPES by economy, 2015-2016



Source: APEC data.

Six-year renewables supply changes are mostly positive

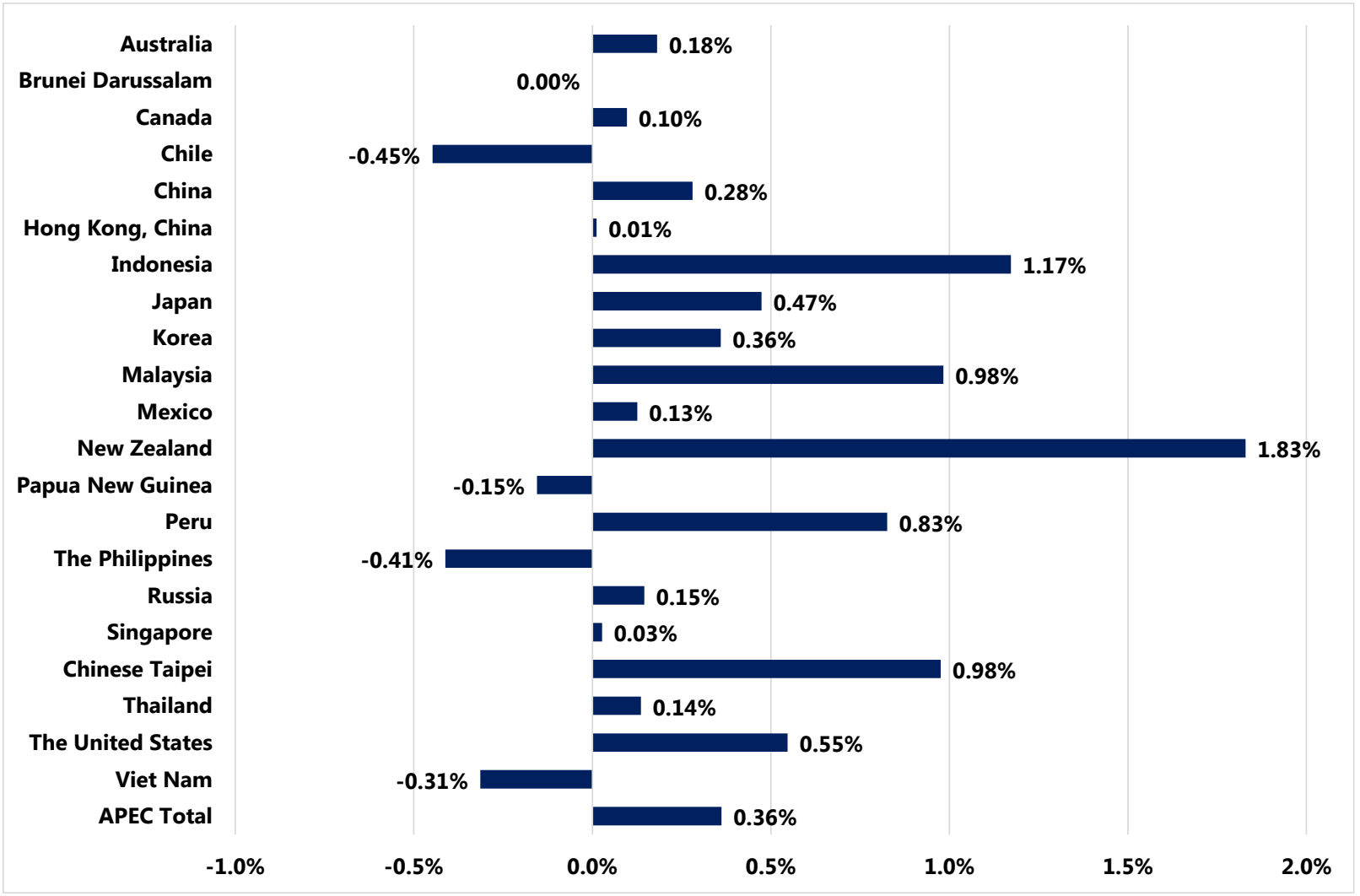
Changes in modern renewables share in TPES by economy, 2010-2016



Source: APEC data.

One-year renewables consumption changes vary

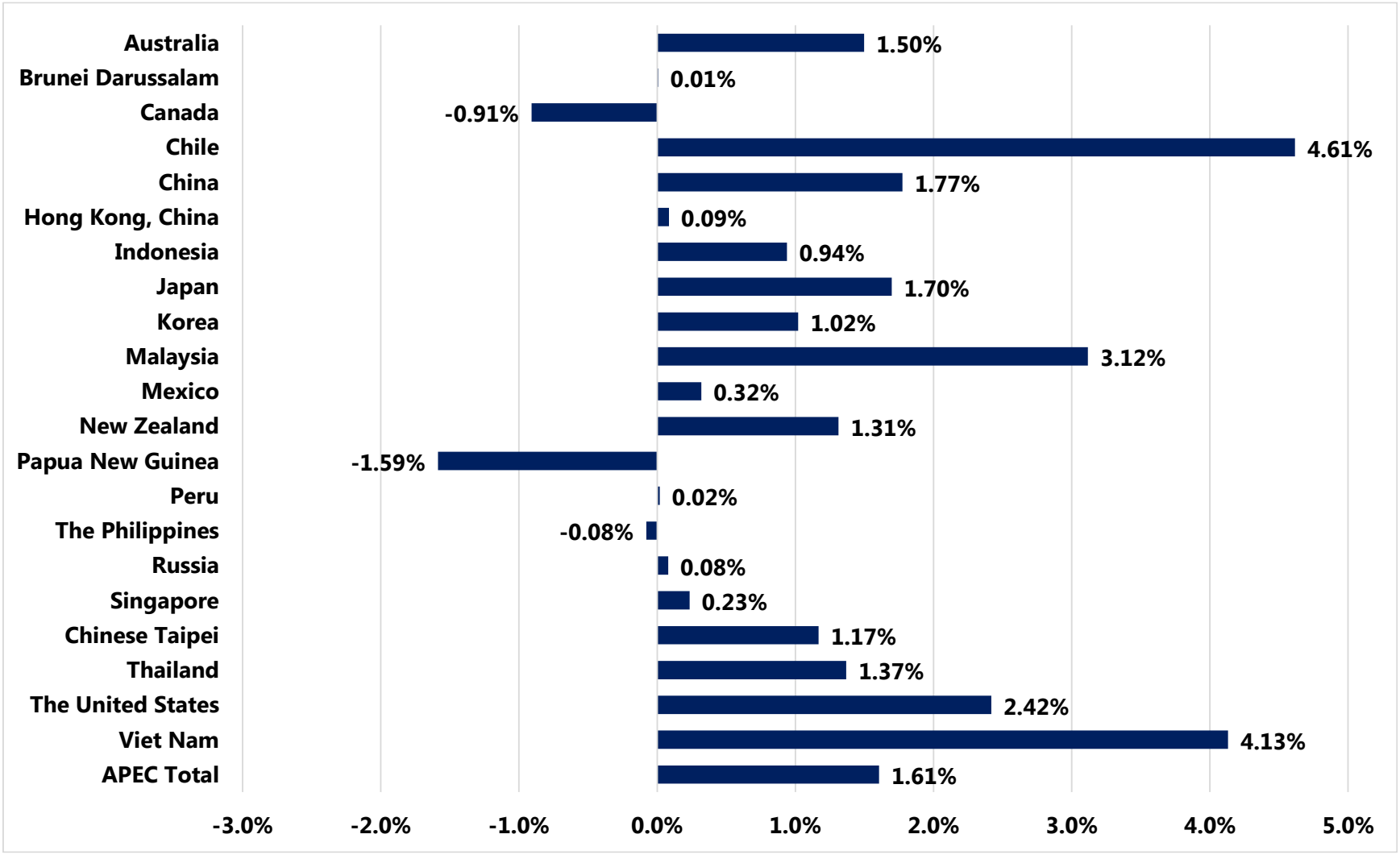
Changes in modern renewables share in FED by economy, 2015-2016



Source: APEC data.

Six-year renewables consumption changes mostly positive

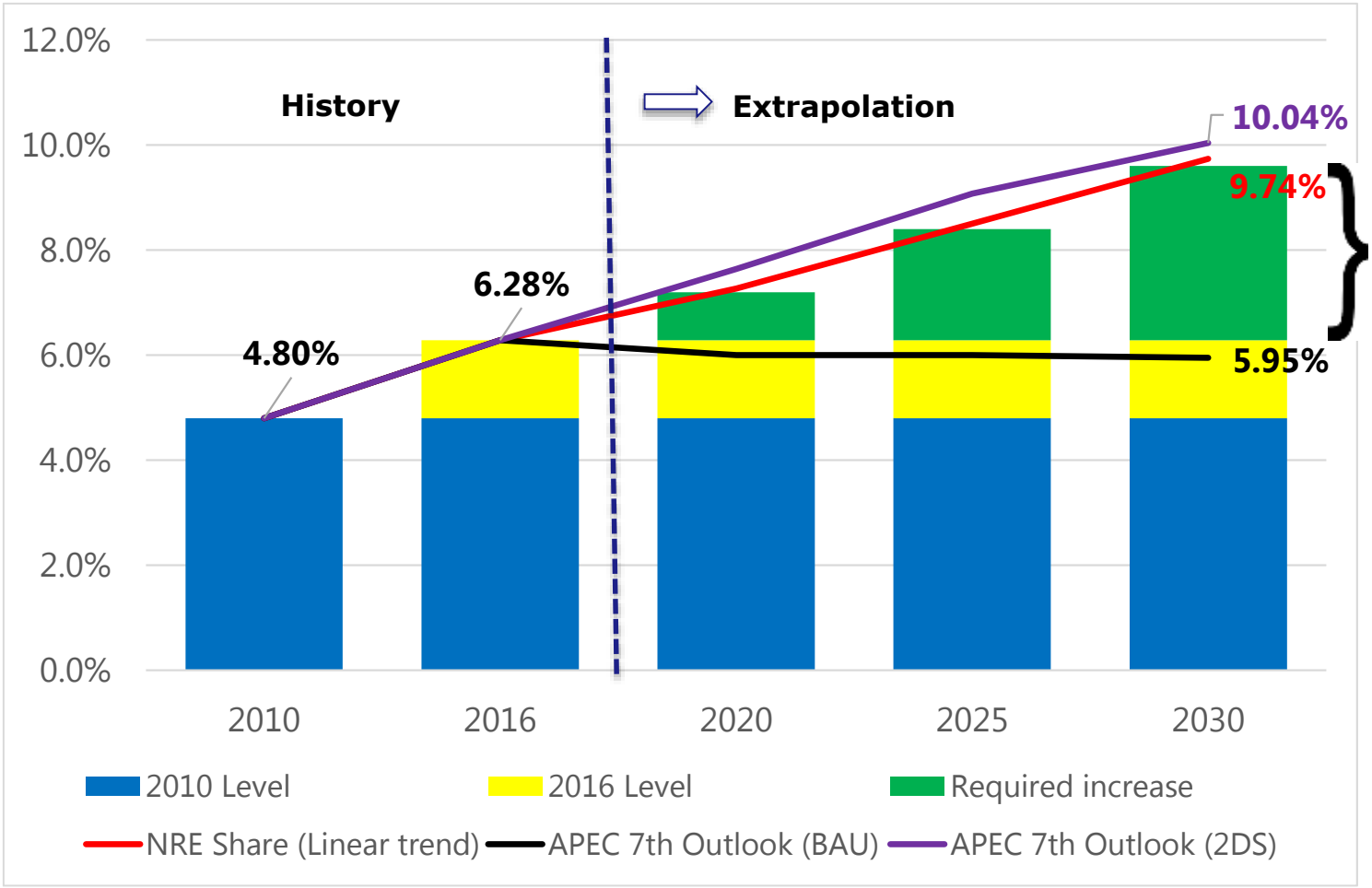
Changes in modern renewables share in FED by economy, 2010-2016



Source: APEC data.

Supply intensity outlook is flat, slipping back from 2016

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

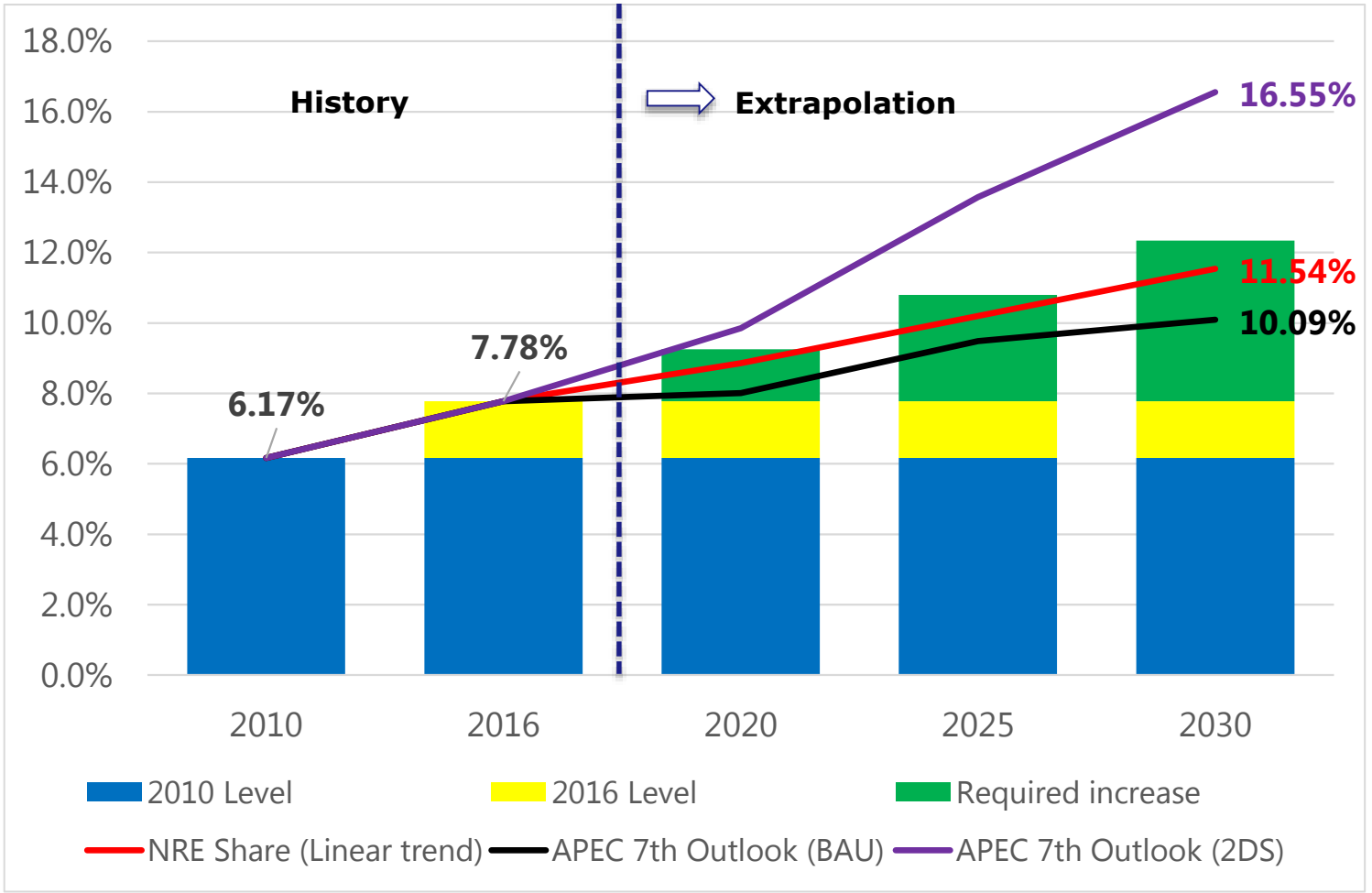


Level of RE share needed to achieve the doubling goal

Source: APEC data and APERC analysis.

Demand intensity almost on trend, falling short of the goal

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



Level of RE share needed to achieve the doubling goal

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.

Thank you for your kind attention

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