

4th APEC Energy Demand and Supply Outlook : Investments

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Asia-Pacific
Economic Cooperation

Outline

1. Genesis

APERC's approach to the energy investments outlook

2. Scope and structure

descriptions by supply chain, by energy, by region

3. Pro's and con's

APERC's strong points and [not yet] missed opportunities

O Reminder – Demand drives supply [so, the energy investments uncertainty is...]

'Flaw' show Greenspan



Alan Greenspan, former chairman of the Federal Reserve, admitted in testimony to a congressional committee yesterday that there had been a 'flaw' in his governing ideology that had been exposed by the credit crisis.

'I had been going for 40 years with considerable evidence that it was working very well,' he said. 'The whole intellectual edifice, however, collapsed in the summer of last year.'

Report, Page 4

Reuters

Alan Greenspan, former chairman of the Federal Reserve

“I had been going for 40 years with considerable evidence that it was working very well. The whole intellectual edifice, however, collapsed in the summer of last year.”

Financial Times, October 24, 2008

Henry M. Paulson, Jr. then US Treasury Secretary



We have not in our lifetime dealt with a financial crisis of this severity and unpredictability

**[Testimony before the
USA House Committee on
Financial Services]**

<http://clipsandcomment.com/wp-content/uploads/2008/11/paulson111808.pdf>

1

Previous projections

- 2002 – Investment chapter with energy estimations for APEC member economies in 2020, and discussion on issues and challenges
- 2003 report “Energy Investment Outlook for the APEC region” – inspired by 2002 Energy D&S outlook; which comes simultaneously with IEA’s “World Energy Investments Outlook: Insights”
- 2006 Energy D&S Outlook for the APEC region contain investments for coal, oil, gas, and electricity supply for each member economy and regions within APEC

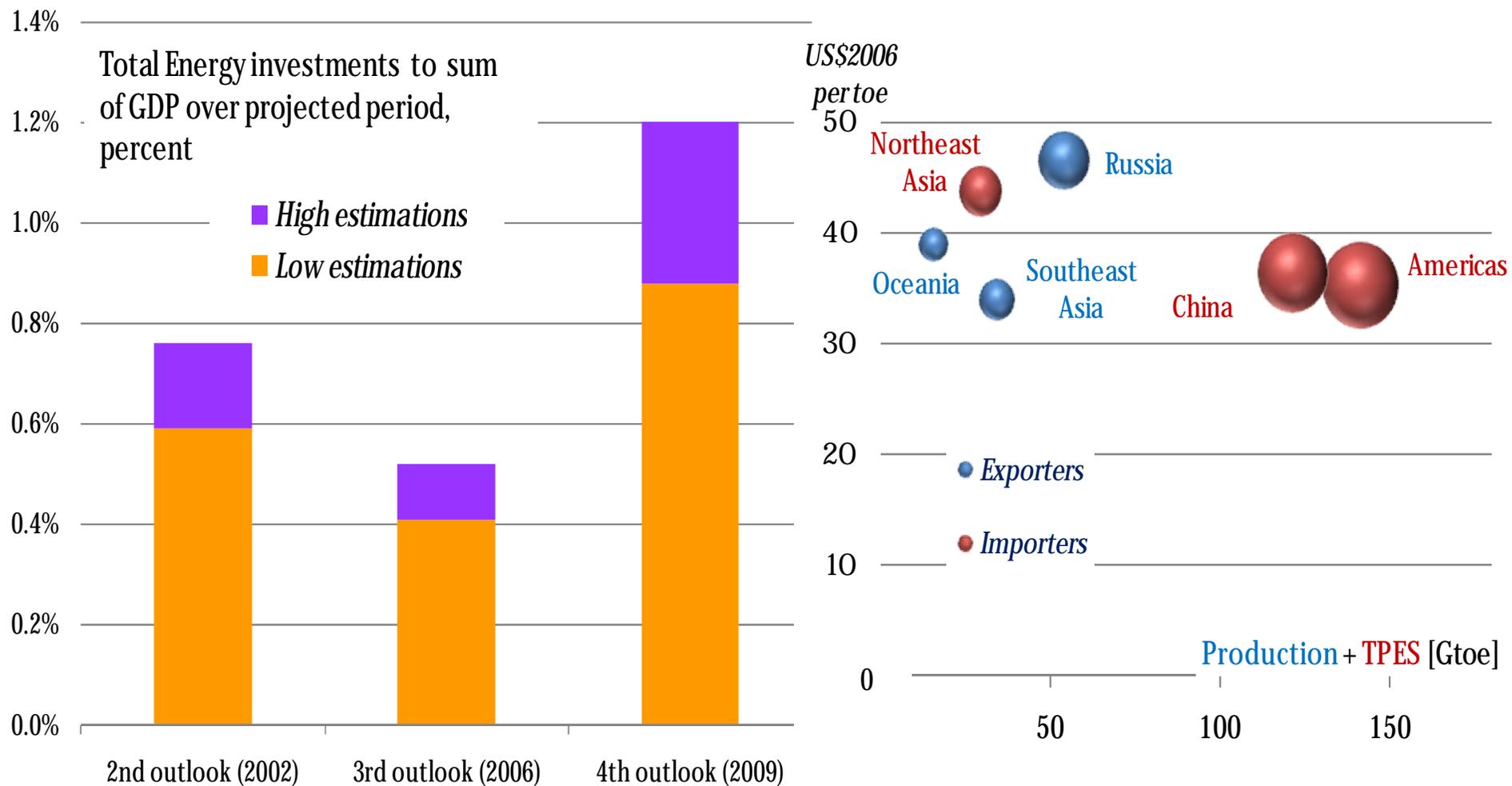
1

Methodology

- Calculate total investments for 2006-2030 time frame, utilising macro approach
- Conversion to US\$2006 at exchange rate base from local currencies
- Compatible costs with individual economy's amendments where possible
- Range approach (low and high assumptions) to address uncertainties along supply chain
- *For each circle chart: inner circle stands for low, and outer – for high cost assumption; the investments range is located in centre. Units are billions of US\$2006*

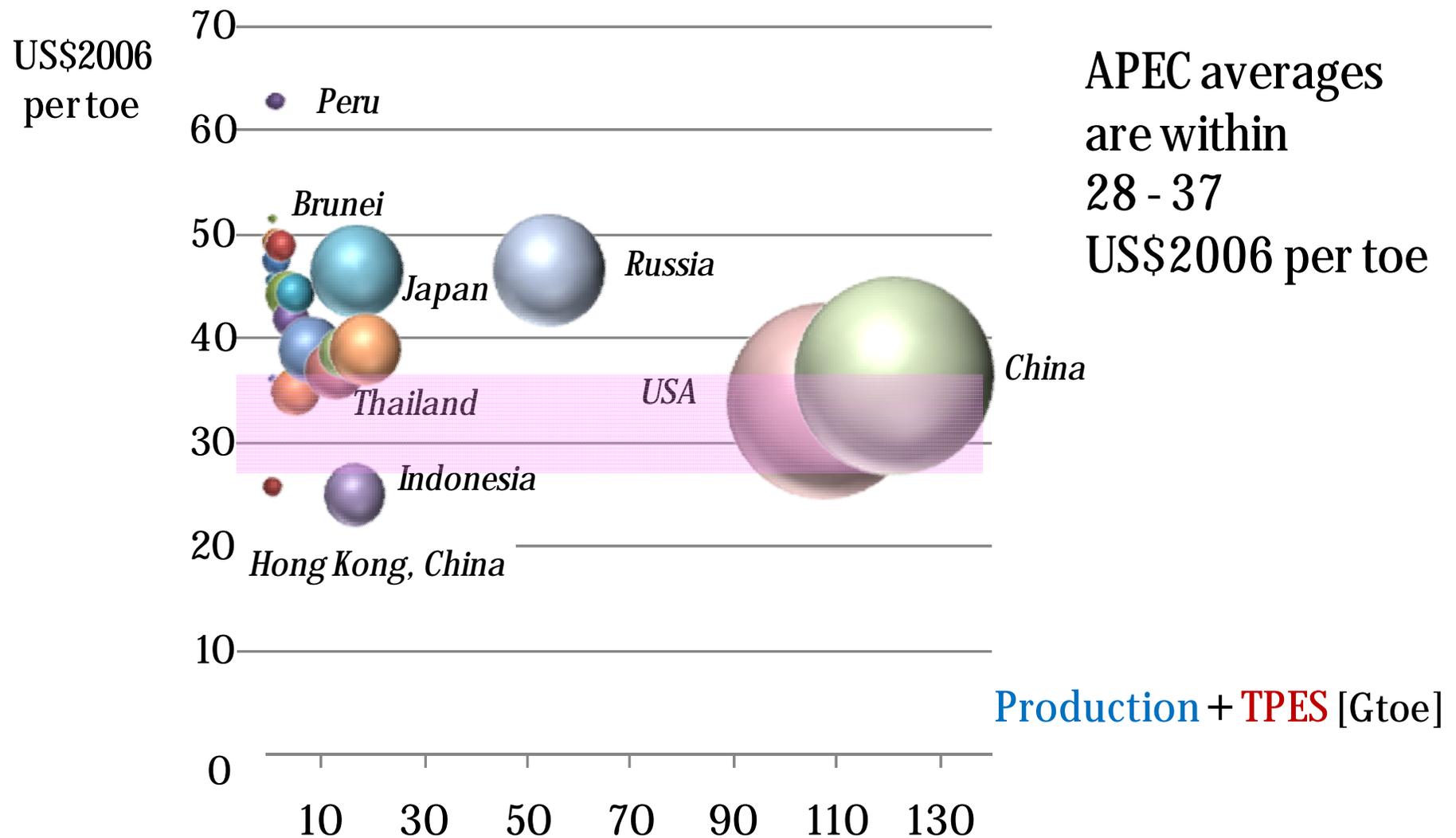
1 Range of energy investments identified

- Energy investments will require from 0.9% to 1.2% of GDP at PPP basis, or 1.2% - 1.6% at exchange rate basis



1 Range of energy investments identified

- Energy production and supply cost for all APEC members are within 25 – 63 US\$2006 per toe

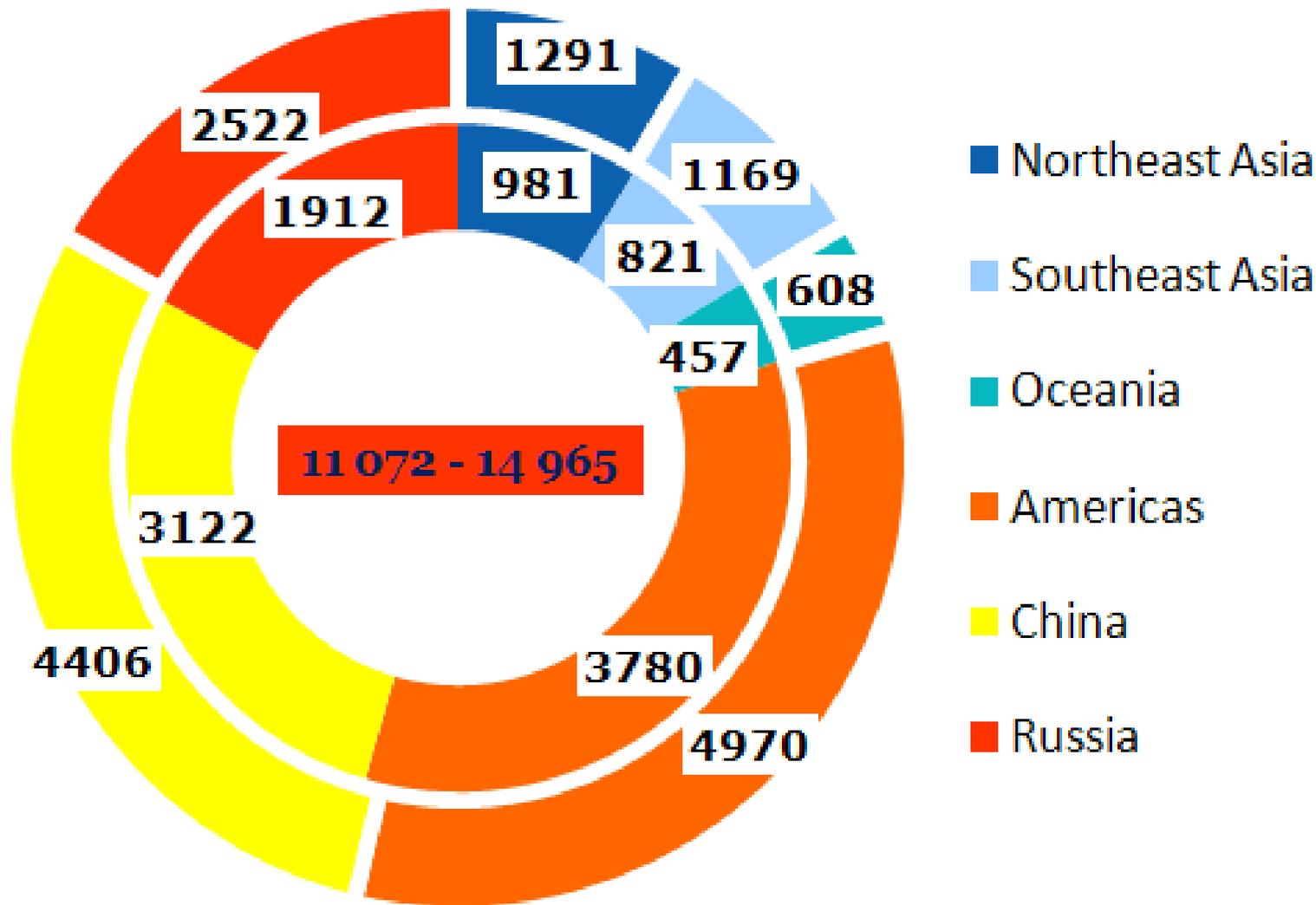


*Assessment of energy investments in the
APEC region for 2006-2030 time frame*

2

Investments by region

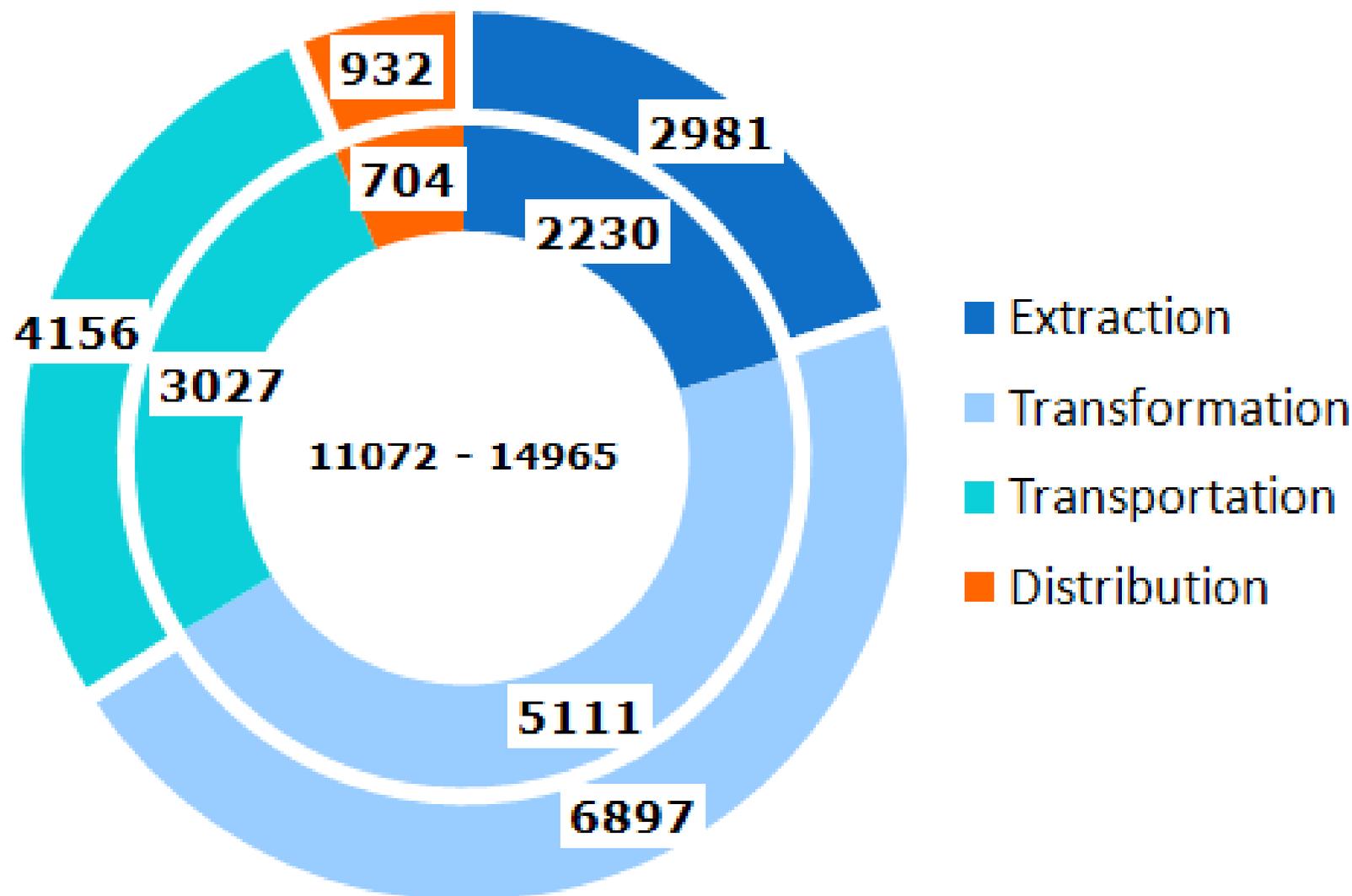
- China, USA and Russia accounts for 70% of total energy investments in the APEC region



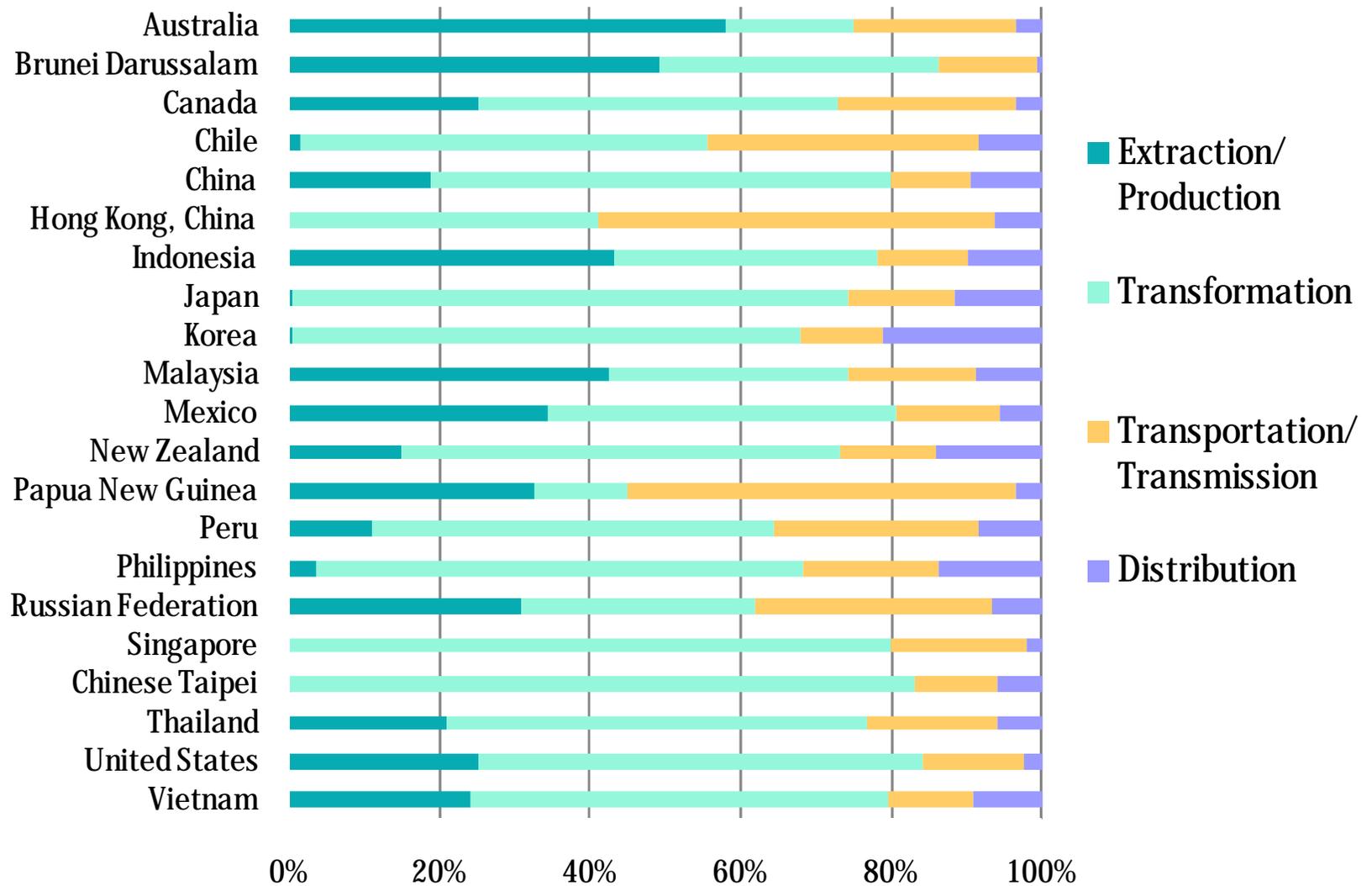
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Investments along supply chain

- Share of transformation and transportation is 46% and 28% of total energy investments



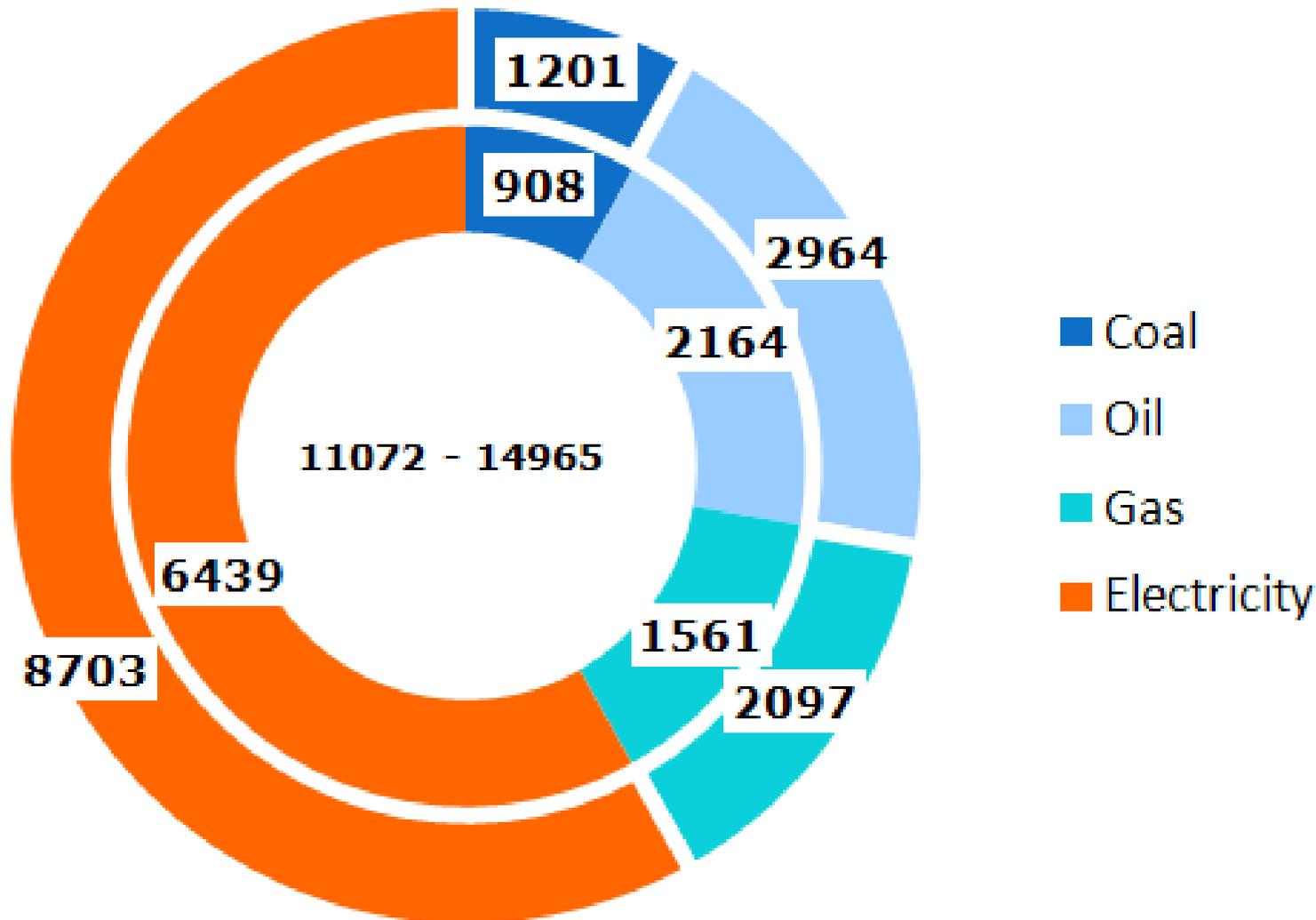
2 APEC member economy's energy investments along supply chain



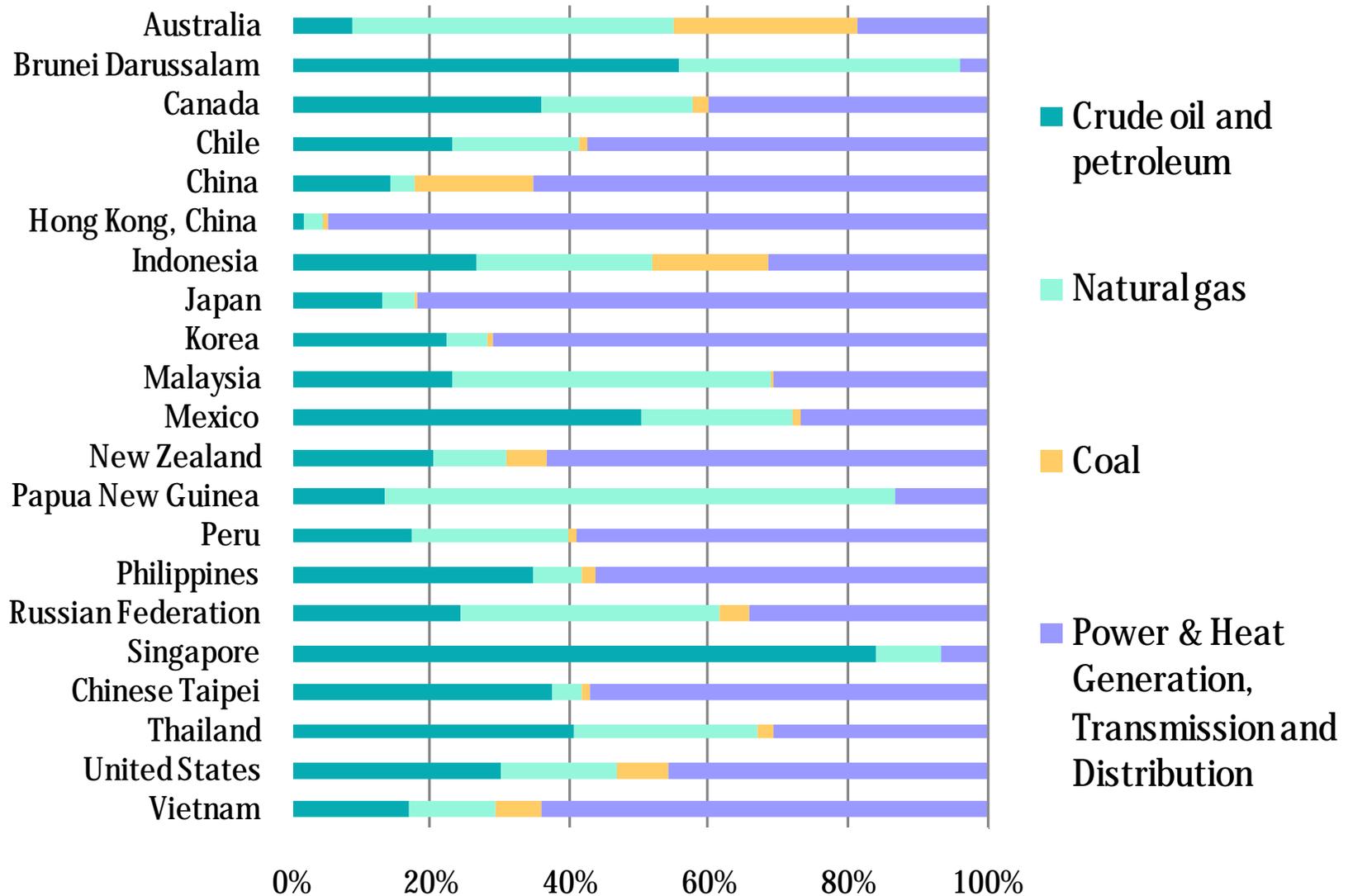
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Investments by energy

- Power and heat supply infrastructure will require 58% of total energy investments

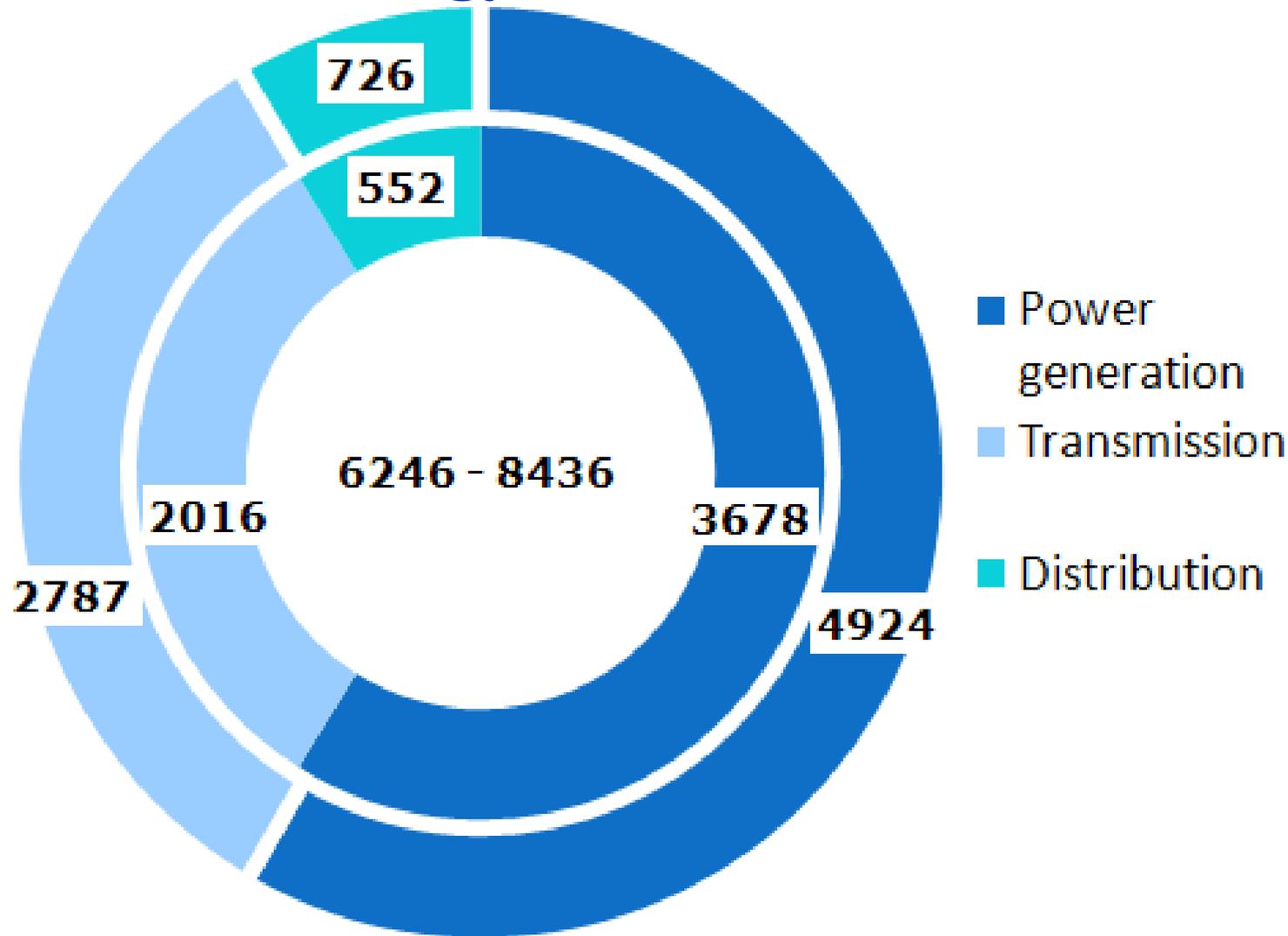


2 APEC member economy's energy investments by energy



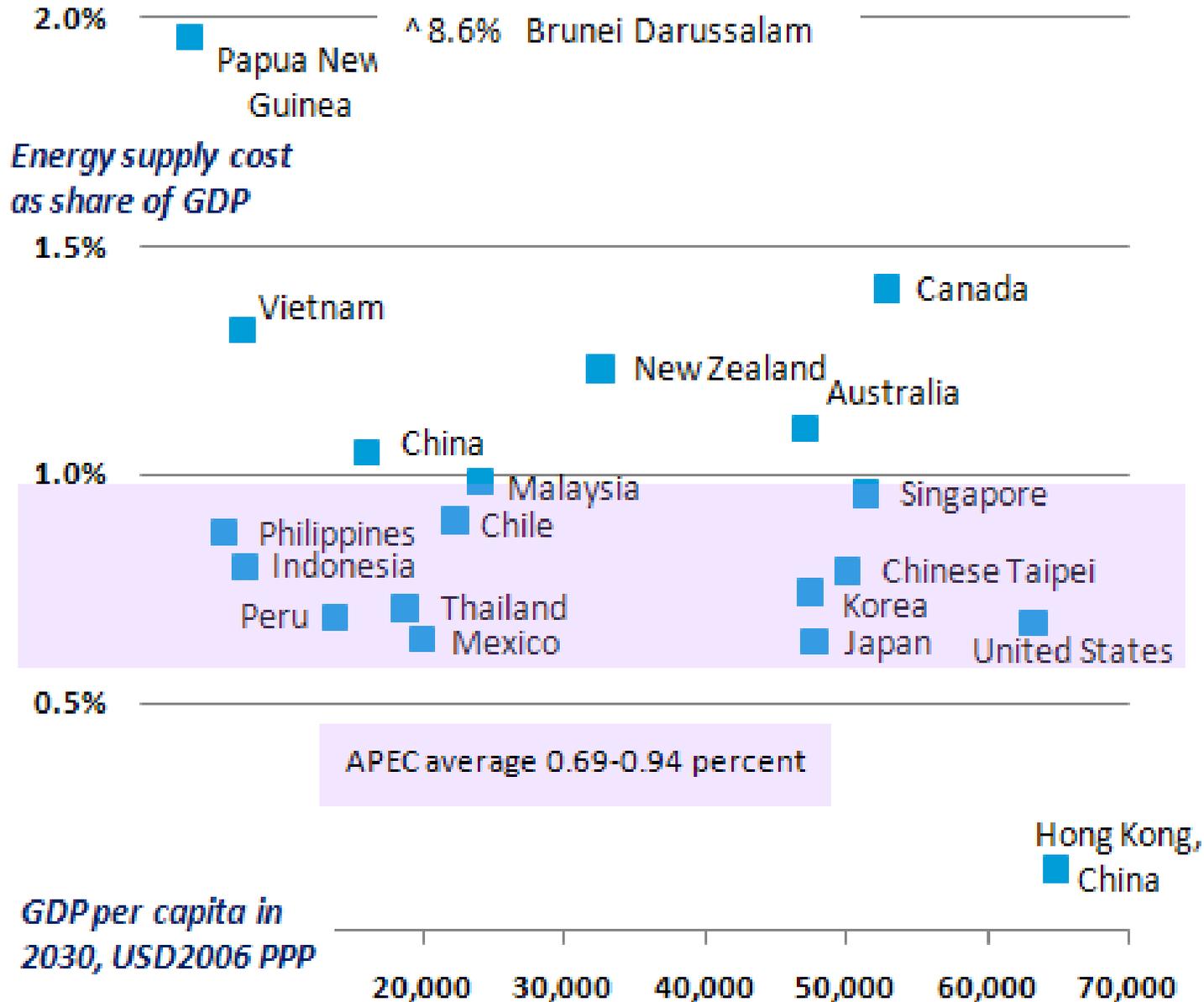
2 Investments structure for Power Generation, Transmission and Distribution

- Within Power industry generation will require 58% of energy investments



2

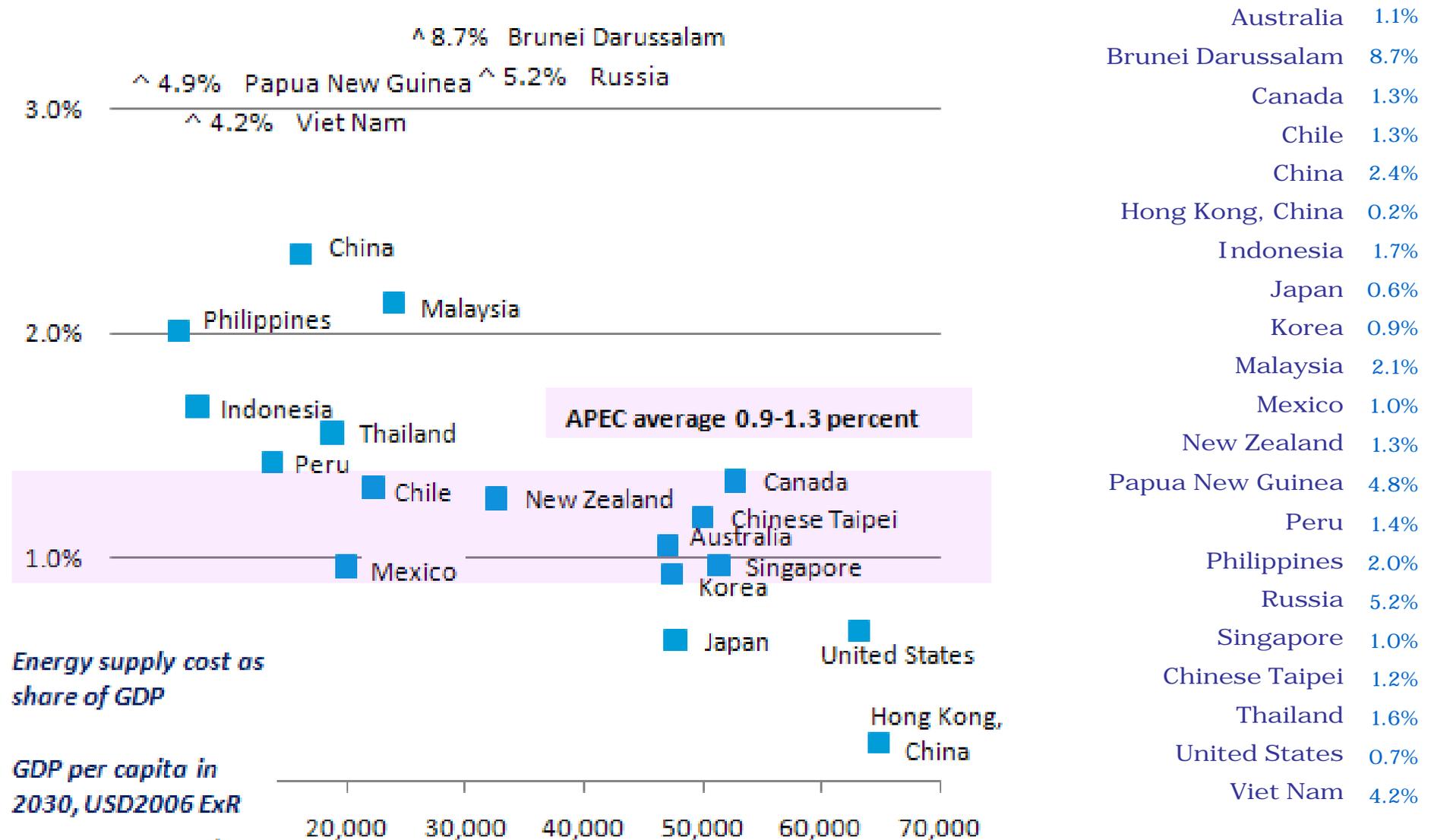
Investments for energy supply as share of APEC member economy's GDP



2

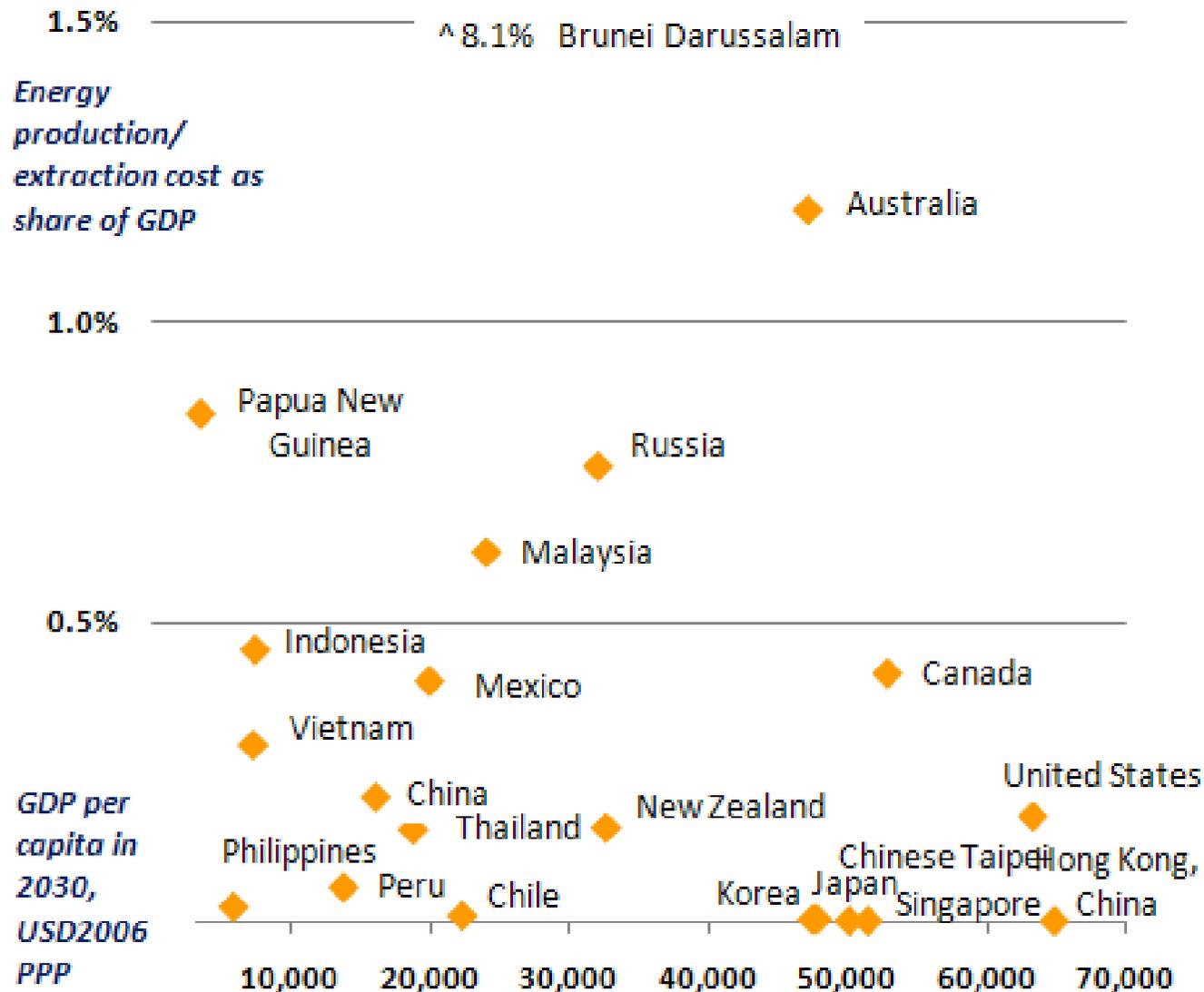
Investments for energy supply as share of APEC member economy's GDP

- GDP calculated at exchange rate basis



2

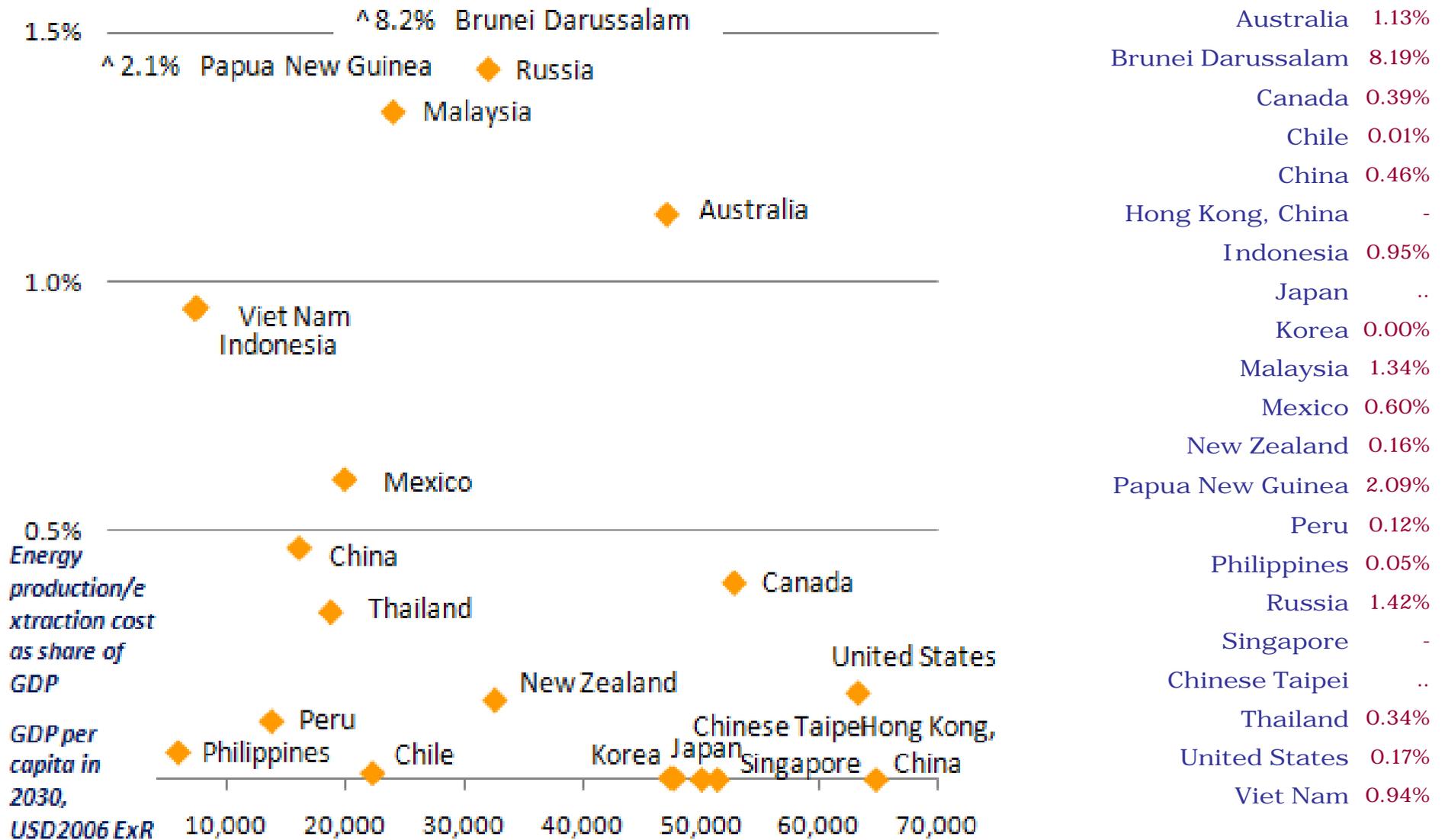
Investments for primary energy production as share of APEC member economy's GDP



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Investments for energy production as share of APEC member economy's GDP

- GDP calculated at exchange rate basis



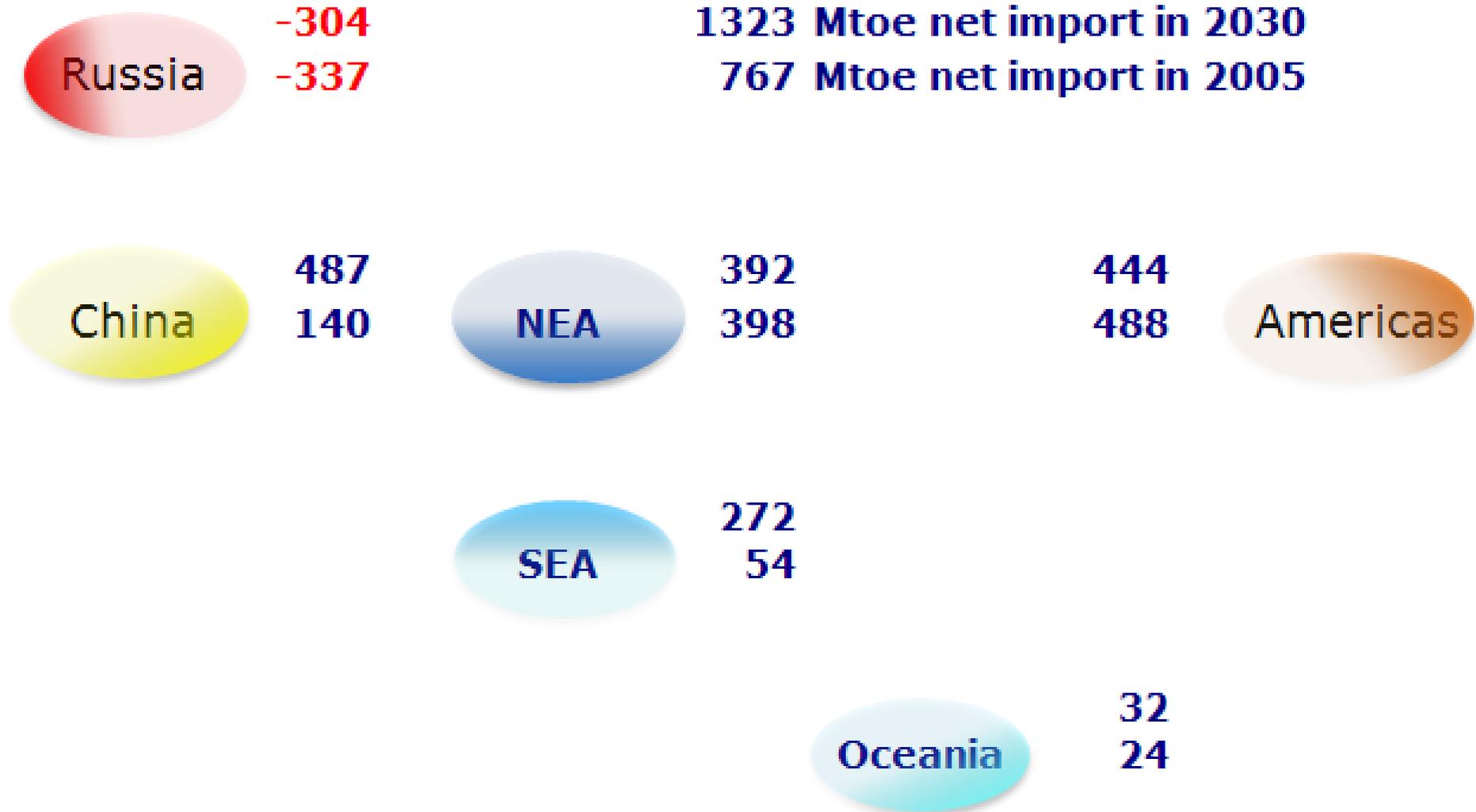
2bis

Intraregional and external energy trade

2_{bis}

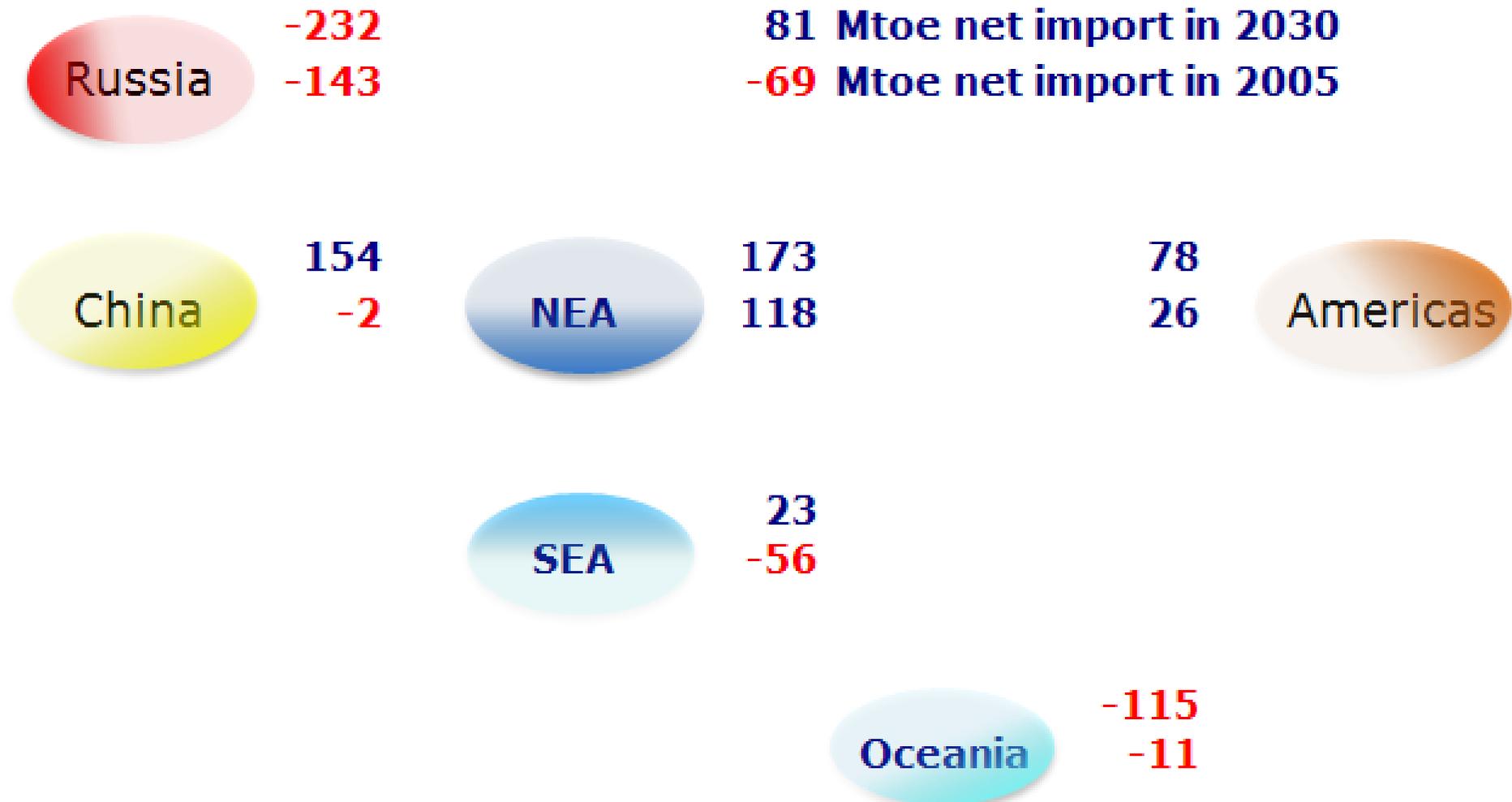
Intraregional oil flow in APEC

- Russian export is ~ 90% outside APEC



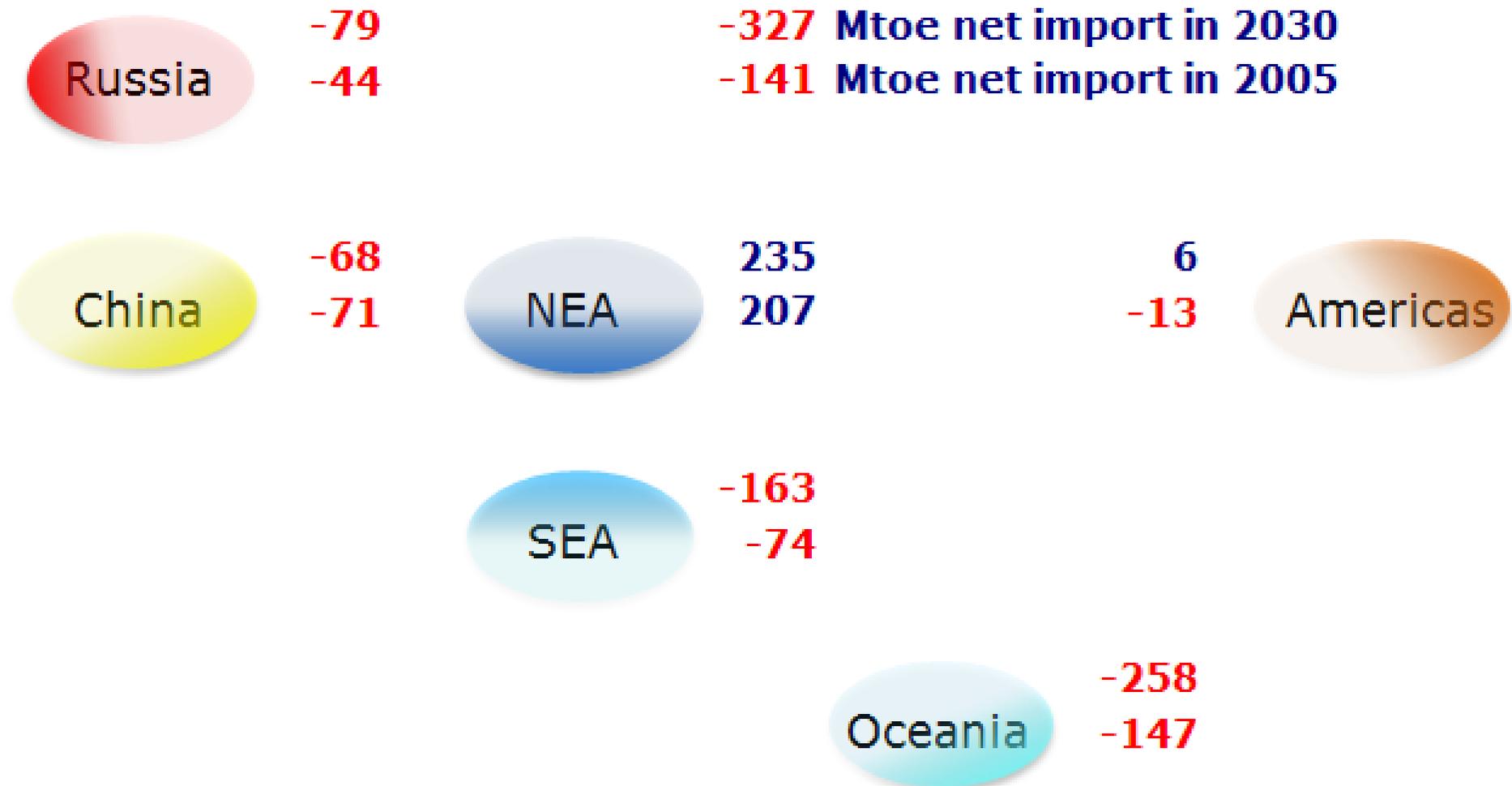
2_{bis} Intraregional gas flow in APEC

- Russian export is 100% outside APEC



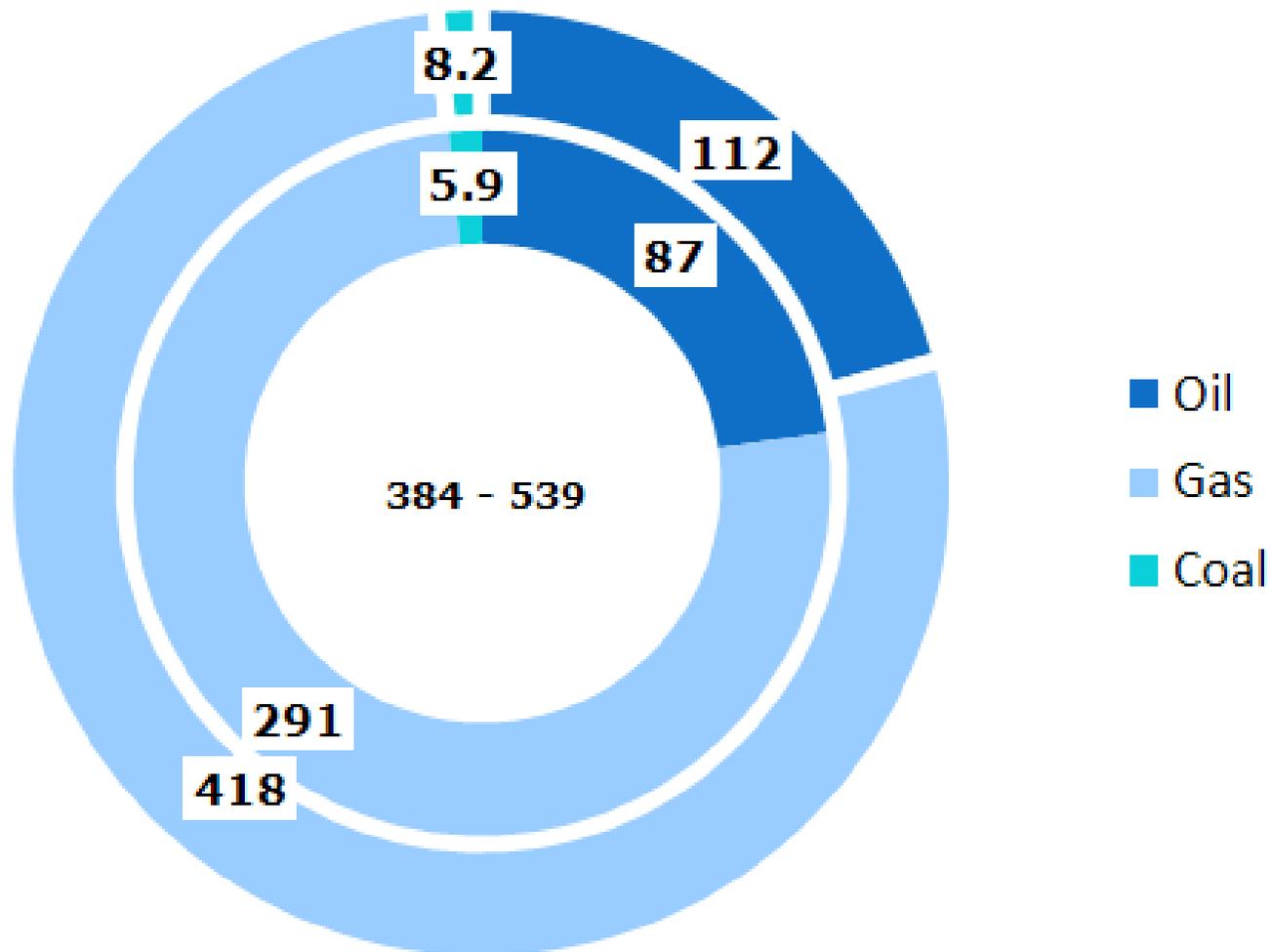
2_{bis} Intraregional coal flow in APEC

- Significant export outside of APEC
- Chinese net export is under question



2^{bis} Investments for intraregional APEC trade by energy

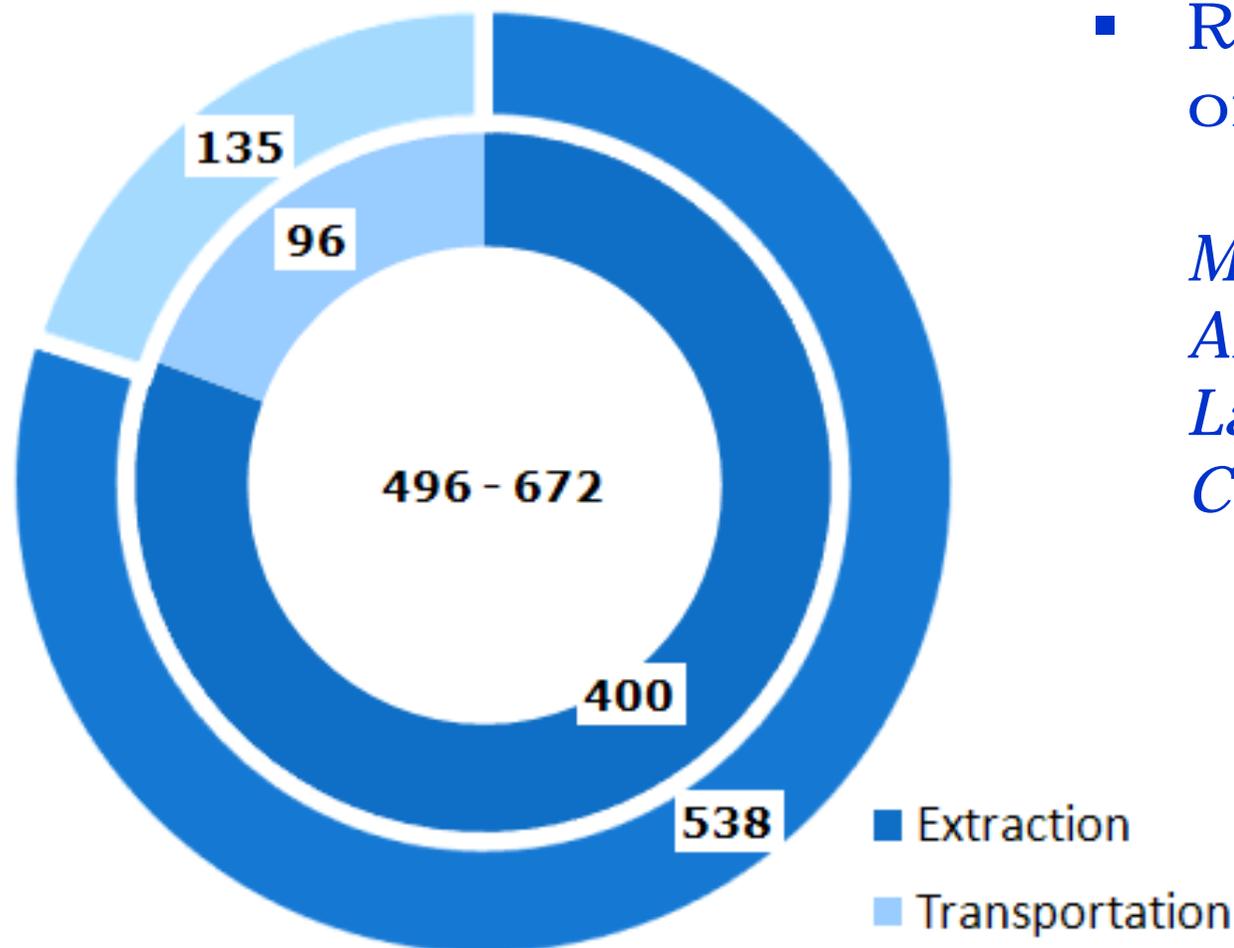
- Gas trade infrastructure account for 78% of international energy transportation investments in the APEC region



2bis

Energy production investments outside of APEC by supply chain

- US\$2006 trln. 0.5 – 0.7 will be required to invest outside of APEC region in order to secure energy supply



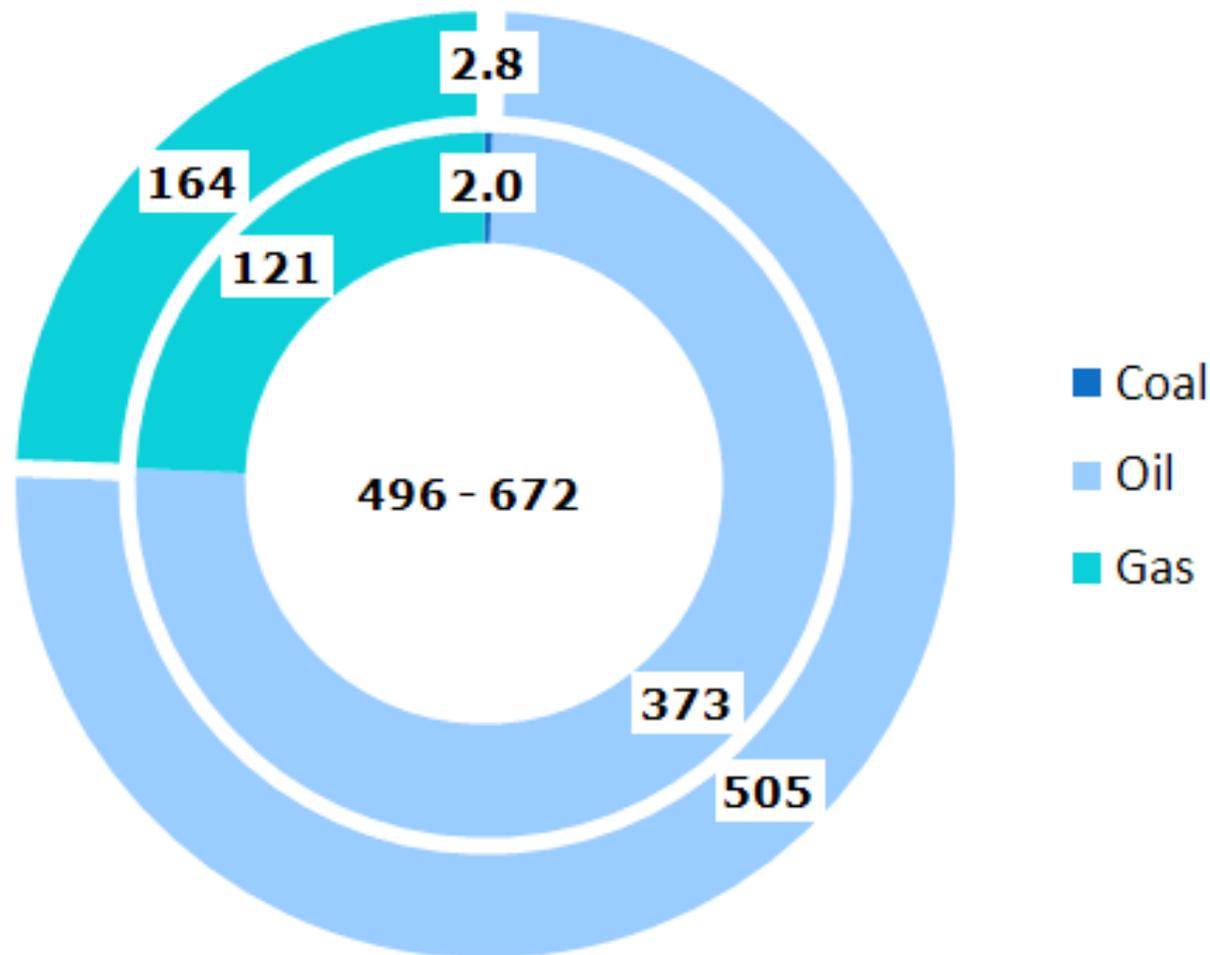
- Regions outside of APEC are

*Middle East,
Africa,
Latin America,
Central Asia*

2bis

Energy production investments outside of APEC by energy

- Natural gas will take 75% of these investments, as LNG trade will grow considerably



Pro's and con's

3 Strong points for energy investments outlook

- *APEREC provides energy investment projections for each member economy, which is not a case for similar annual energy outlooks, for example presented by IEA and EIA.*

3

[Not yet] missed opportunities?

- *Lack of alternative scenarios for comparison, considering various structural assumptions for economic growth and energy supply*
- *Lack of analysis of possible energy investment shortages/excesses within APEC economies and its relationship with energy security and environmental footprints*



Thank you for your attention

<http://www.ieej.or.jp/aperc/>