

PERSPECTIVES ON ENERGY POLICIES AND REGULATIONS

NEW ZEALAND

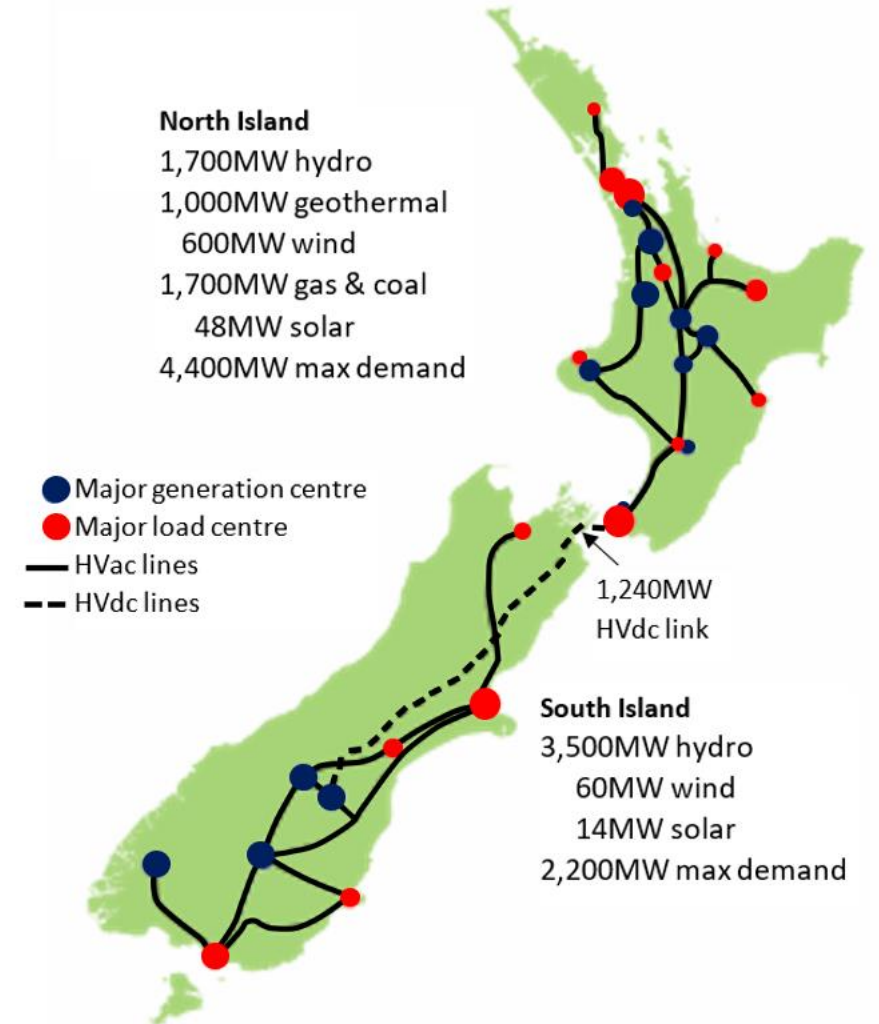
Andy Philpott

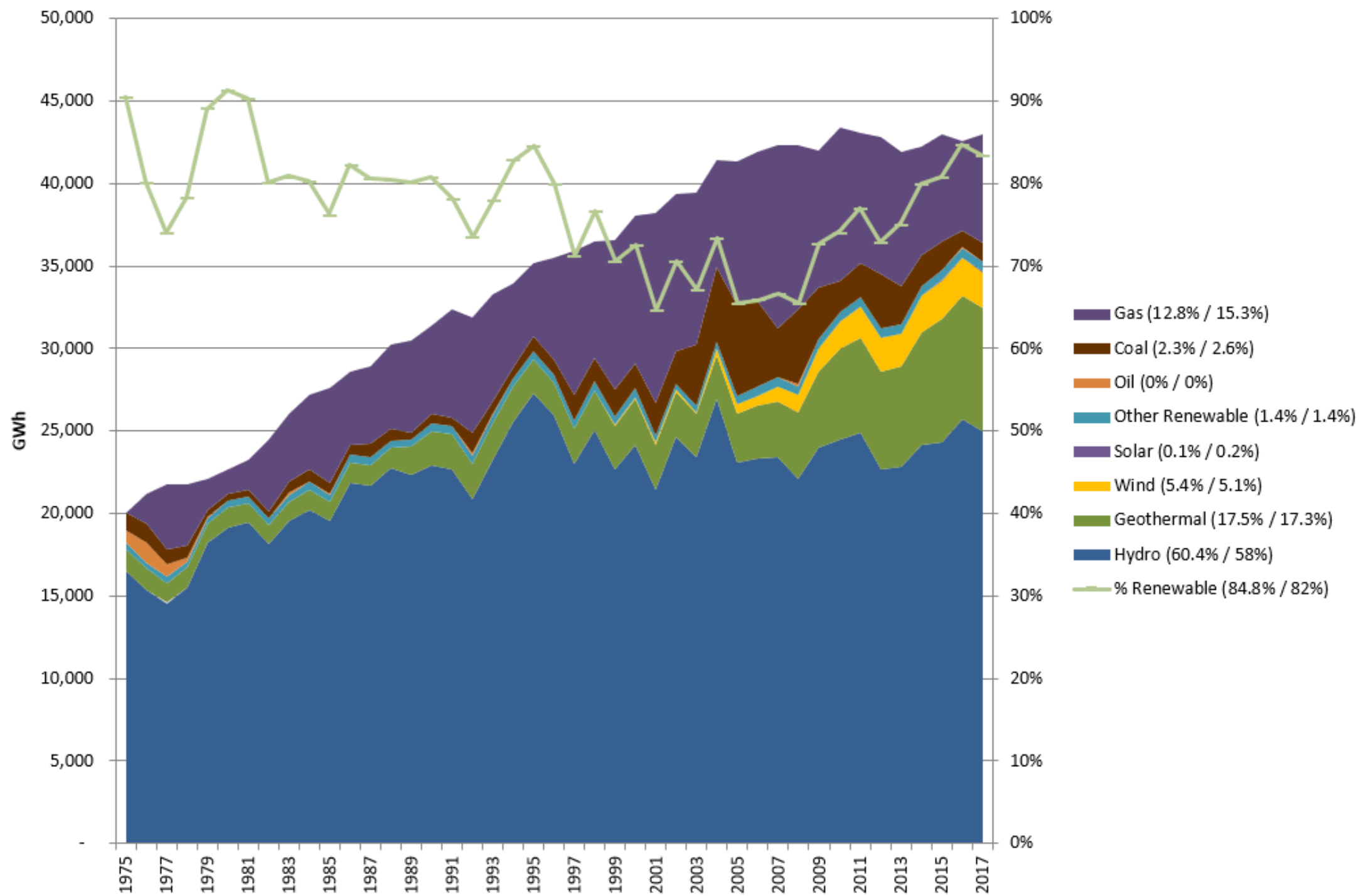
Electric Power Optimization Centre

University of Auckland

New Zealand is different

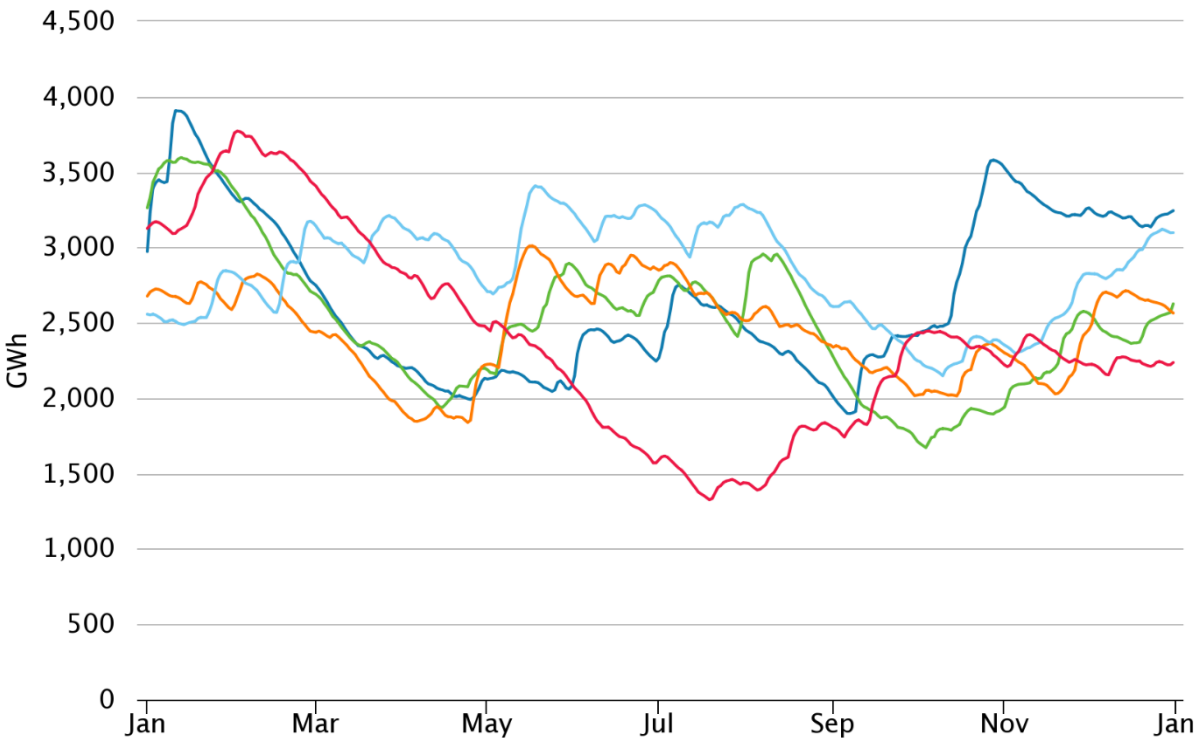
- Remote islands
- Hydro dominated
- Long thin transmission system
- Small government
- Well-connected business community
- 85% renewable electricity generation



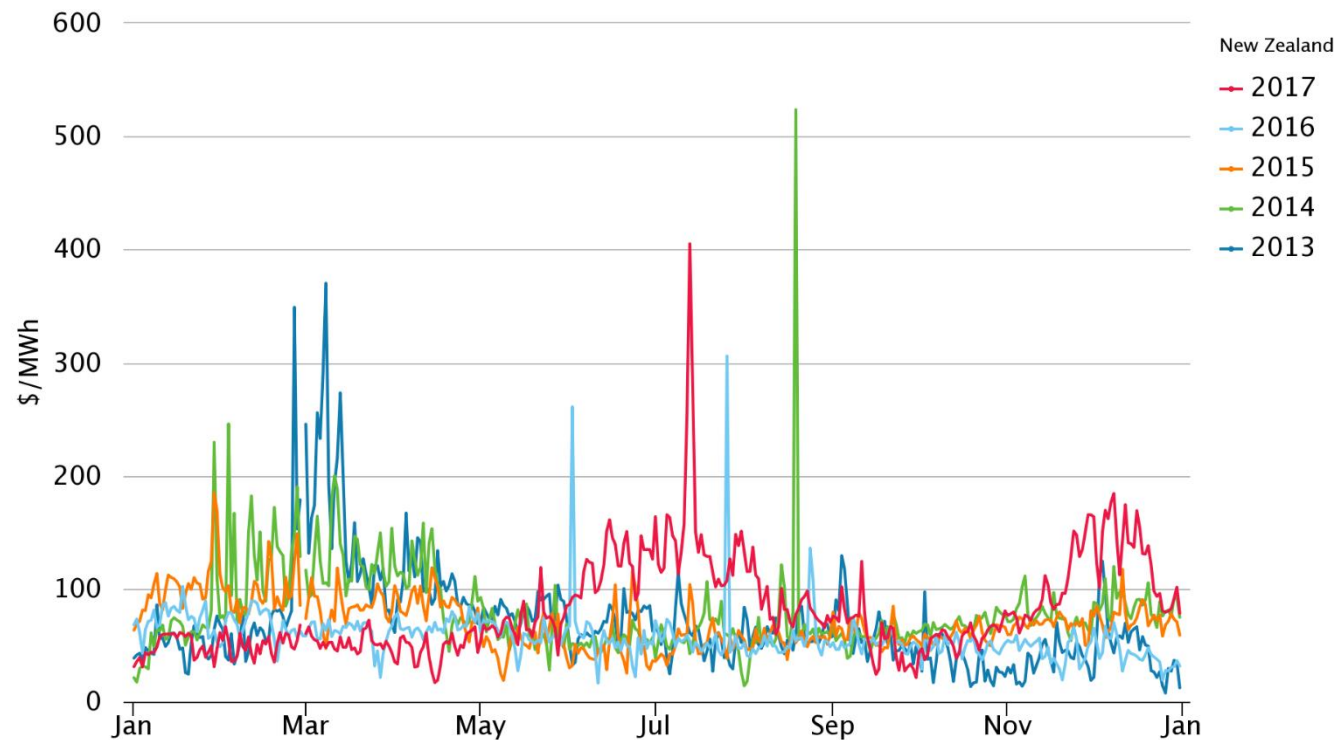


The dry-winter adequacy challenge

National stored hydro energy (GWh)



Generation weighted average price (\$/MWh)



New Zealand
2017
2016
2015
2014
2013

Market structure and regulation

- State-owned independent ISO/transmission grid owner
- Regulated distribution companies
- No capacity market
- No day-ahead market
- Intra-day market is a nodal pool with 250 LMPs computed every 5 minutes.
- Ex-post prices settled for each 30 minutes trading period
- Vertically integrated retail and generation
- Some independent retailers and industrial loads.
- Forward contract market with (arguably) limited depth
- Historically light-handed regulation of EA motivated by workable competition
- Short-term exercise of market power tolerated by regulator

Regulatory timeline

- 1996: Wholesale spot market goes live
- 2001, 2003, 2008: Dry-winter electricity shortages
- 2009: Wolak report
- 2010: Electricity Industry Act sets up Electricity Authority
- 2012: Privatization of 50% of Government generation assets
- 2017: Jacinda Ardern becomes PM in coalition
- 2019: Electricity Price Review
- 2019: Climate Change Response (Zero Carbon) Amendment Bill



**ELECTRICITY
PRICE REVIEW**

HIKOHIKO TE UIRA

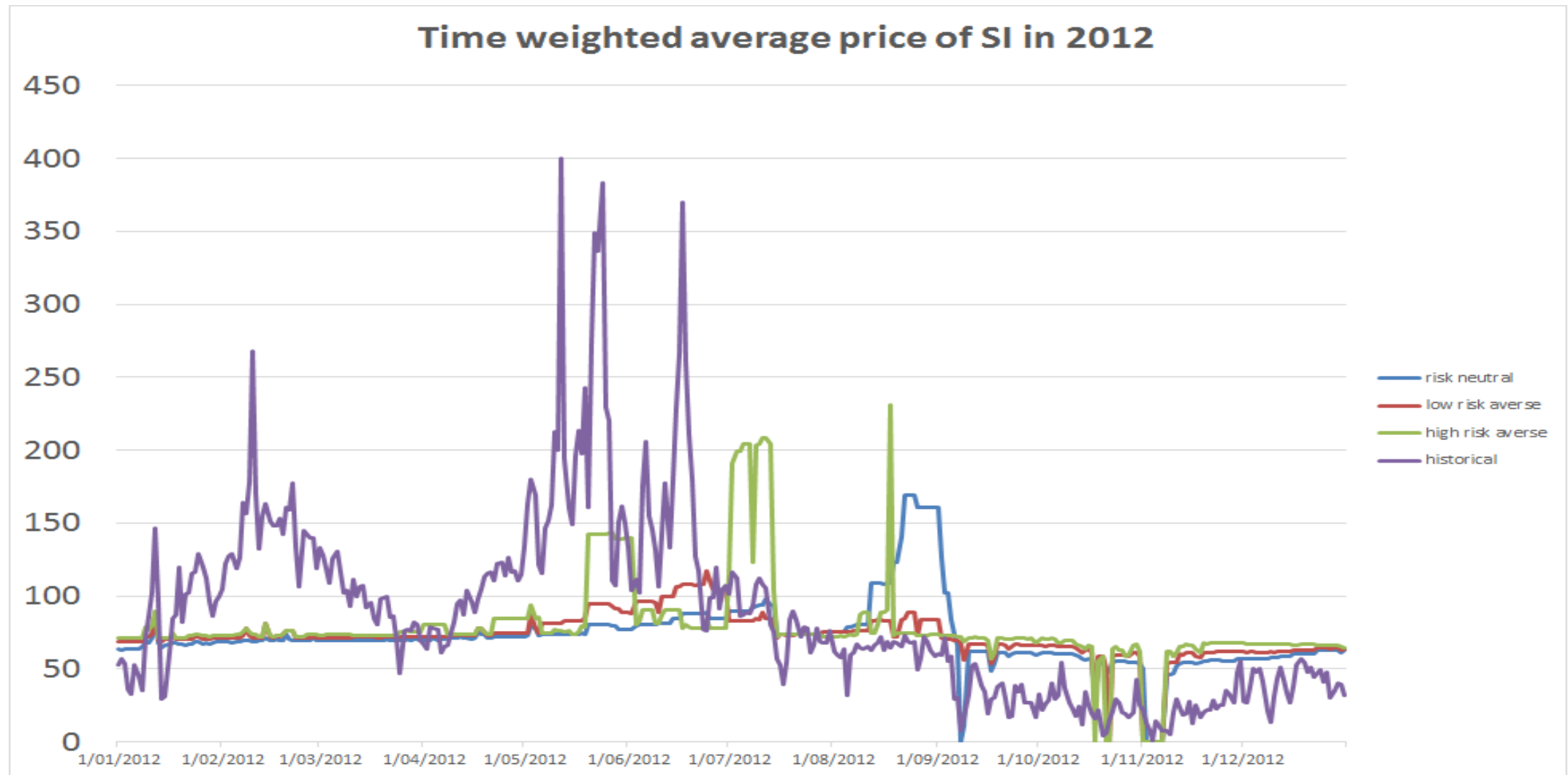
OPTIONS PAPER
for discussion

18 February 2019

New Zealand Government

- Retail competition and energy hardship
- Liquidity in contract markets
- Wholesale market deemed workably competitive

Workable competition and perfect competition



New Zealand

New Zealand introduces bill for zero carbon emissions by 2050

Jacinda Ardern says law will address climate change but faces opposition from farmers over plans to reduce methane emissions



▲ The New Zealand National party says methane reduction targets for the country's huge dairy sector are too high.
Photograph: William West/AFP/Getty Images

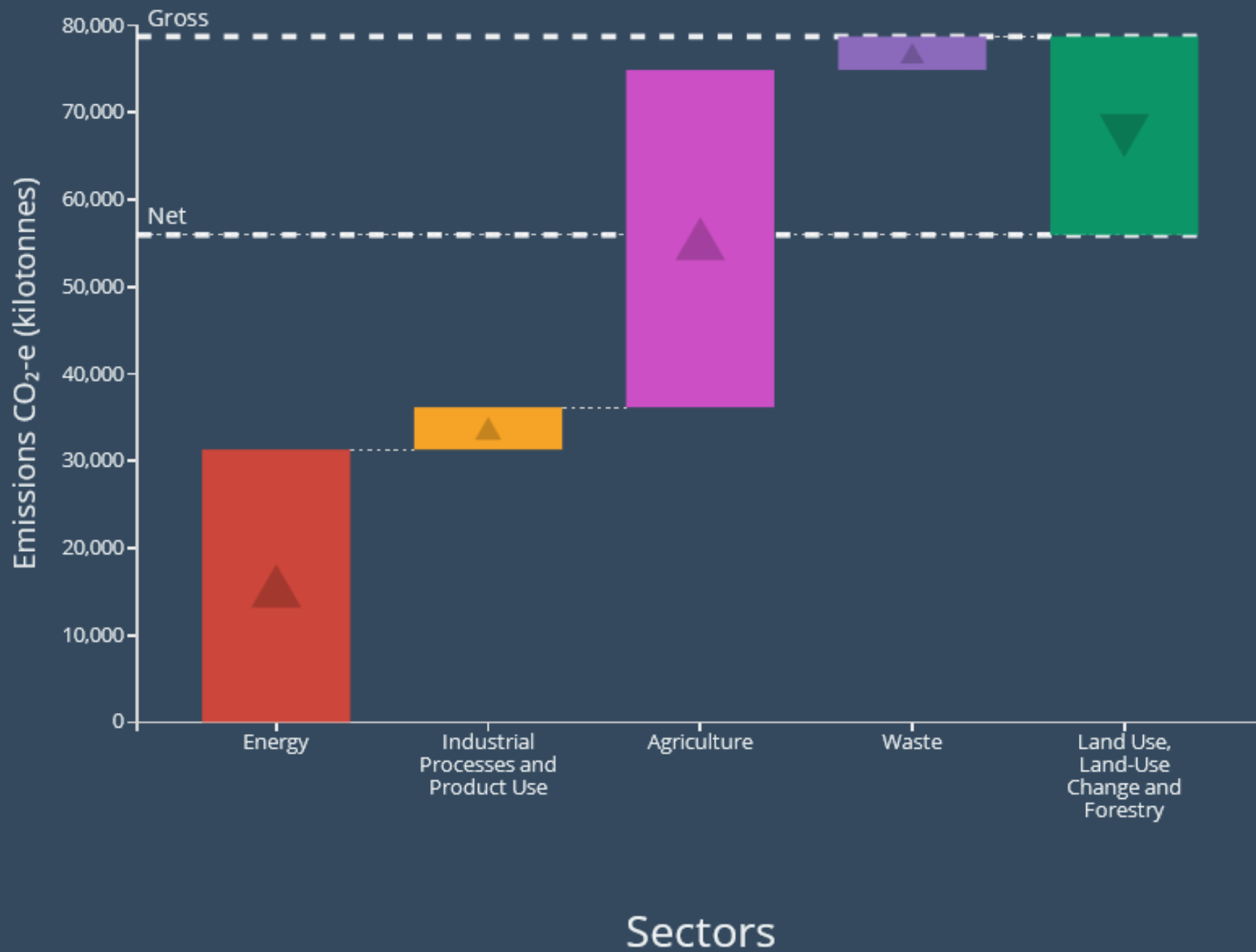
- Net zero CO₂ emissions by 2050
- 10% reduction in methane by 2030
- 24-47% reduction in methane by 2050
- Big challenges for agriculture and process heat (milk drying)

<https://www.theguardian.com/world/2019/may/08/>

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Emissions from sectors

2016

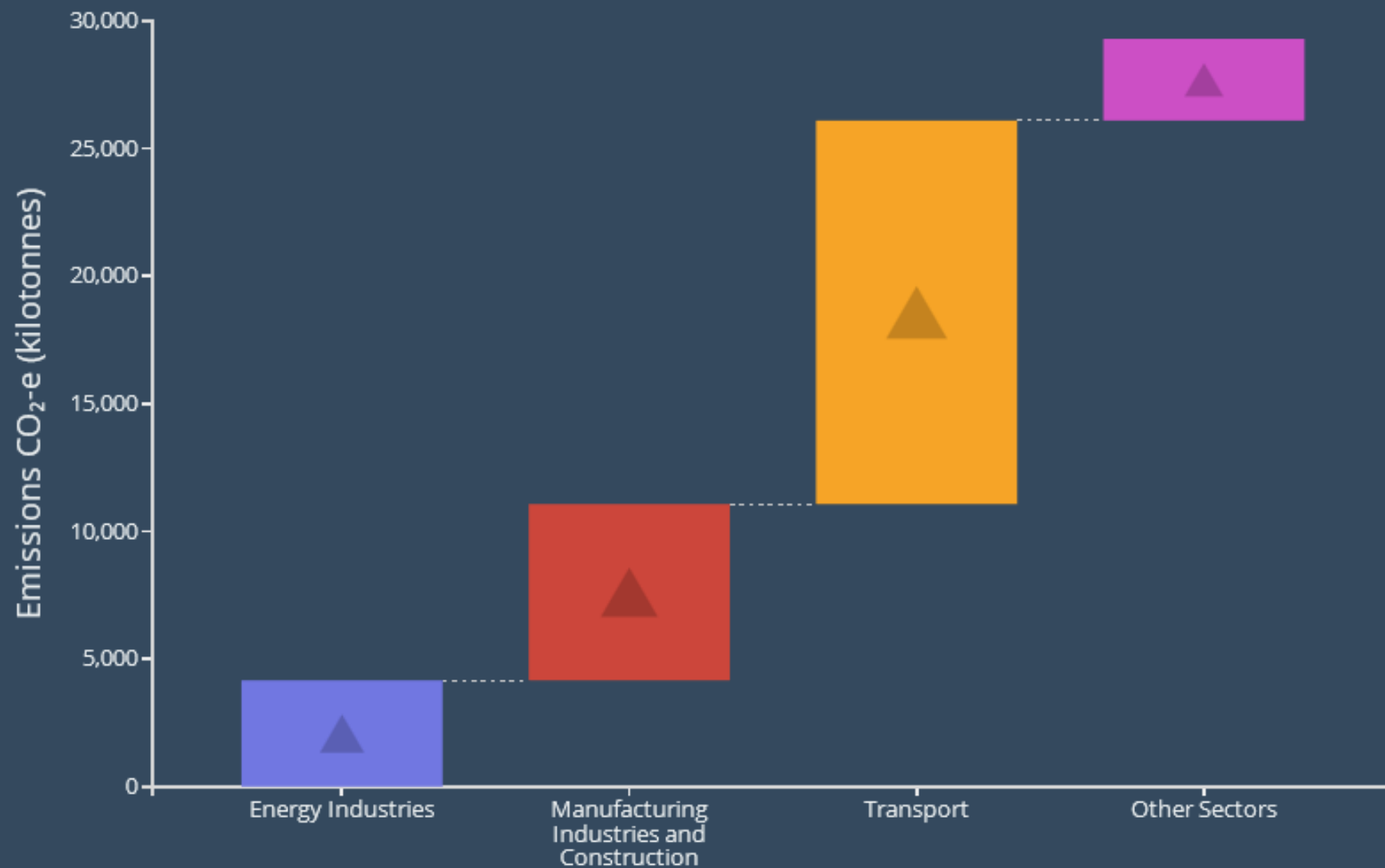


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Emissions from Fuel Combustion - Sectoral approach

2016



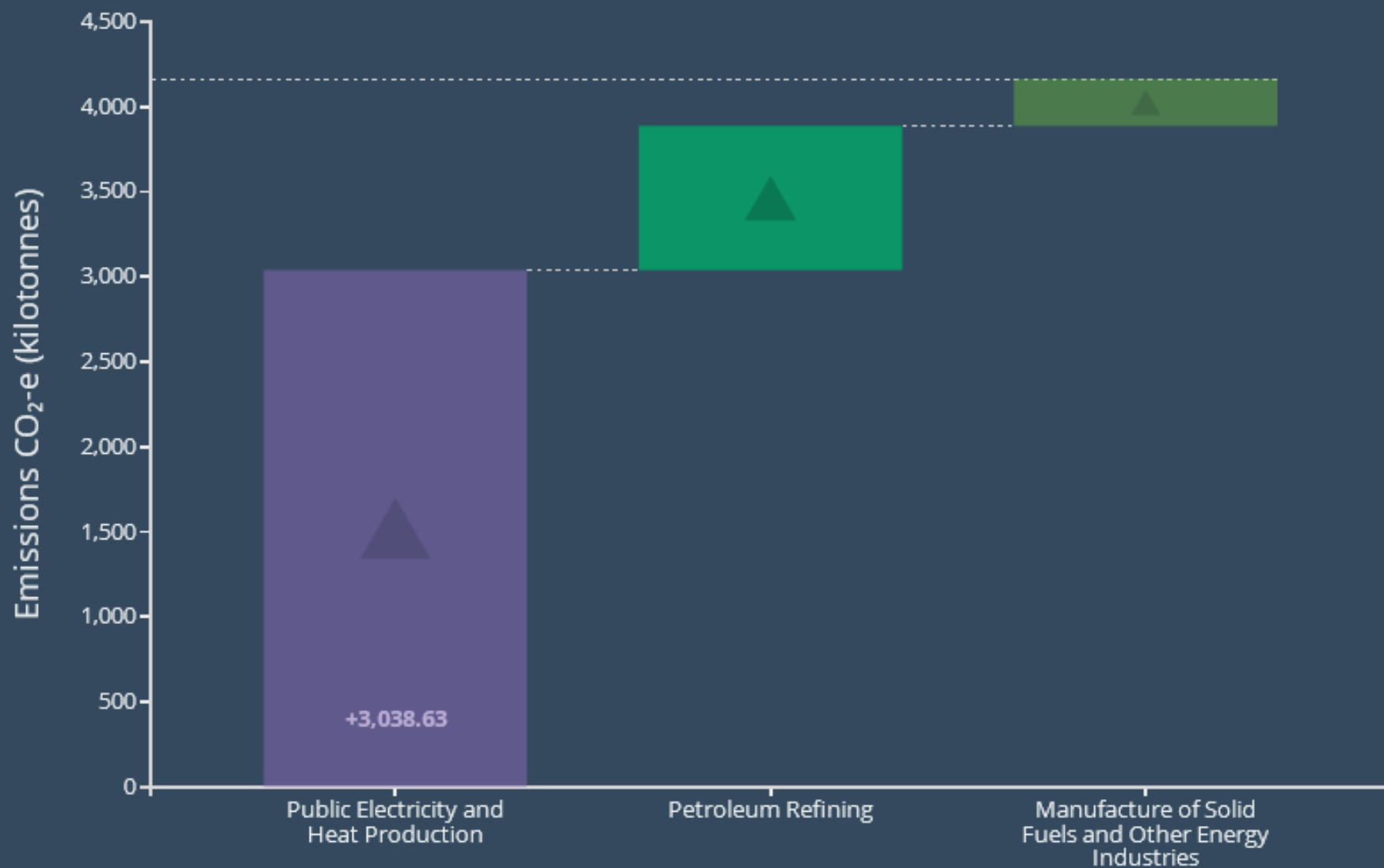
Energy

View Table

Export Data

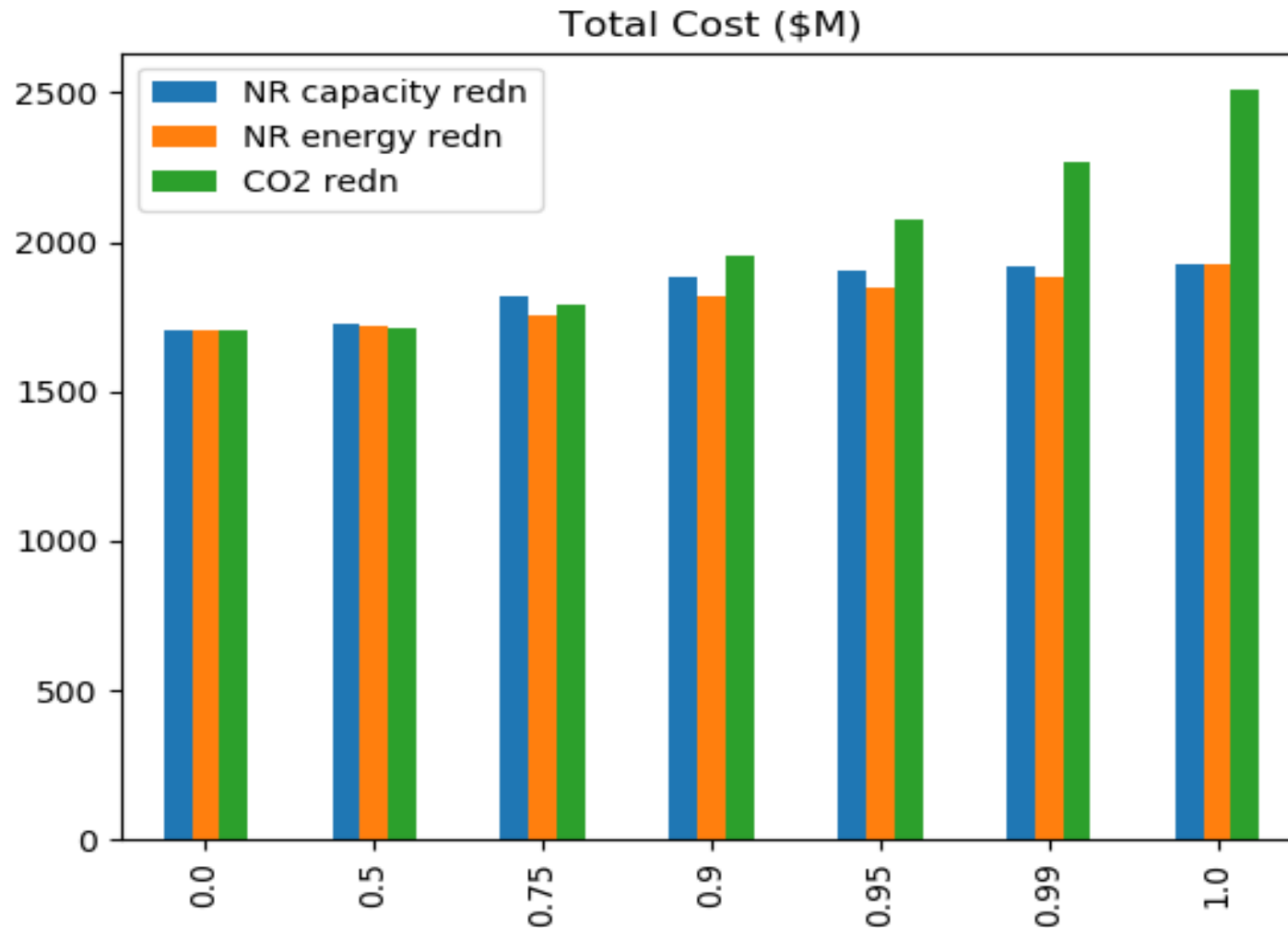
Emissions from Energy Industries

2016



Energy

The annual cost of 100% renewable electricity



Risk aversion: joint operation matters

