IPA RETREAT
CANBERRA

Institute of Public Affairs

Energy Security

Stephen Wilson

Visiting Fellow

Energy Security

Outline

- Where are we?
- The journey ahead of us
- How our work will move us to success

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November 9th 1989


water level
Brisbane 27 Feb 2022

Antoine Lavoisier, 1743-1794

Latrobe Valley Victoria

Image: **Brian Yap** 'Latrobe valley—making clouds' from Tyers Lookout 1 May 2008
creative commons www.flickr.com/photos/yewenyi/2534899886/in/photostream/

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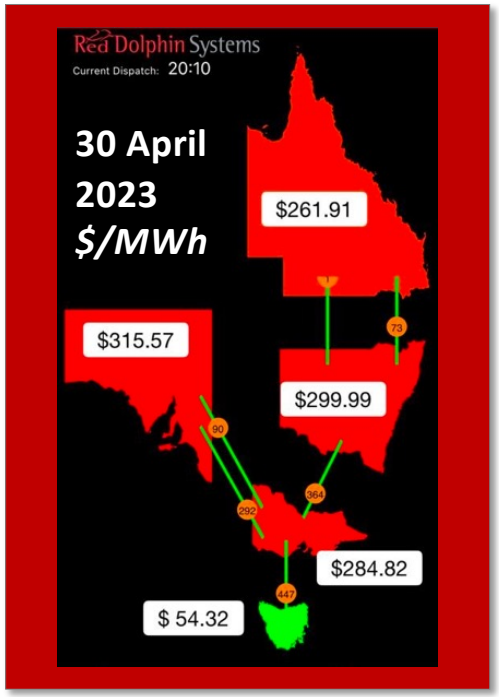
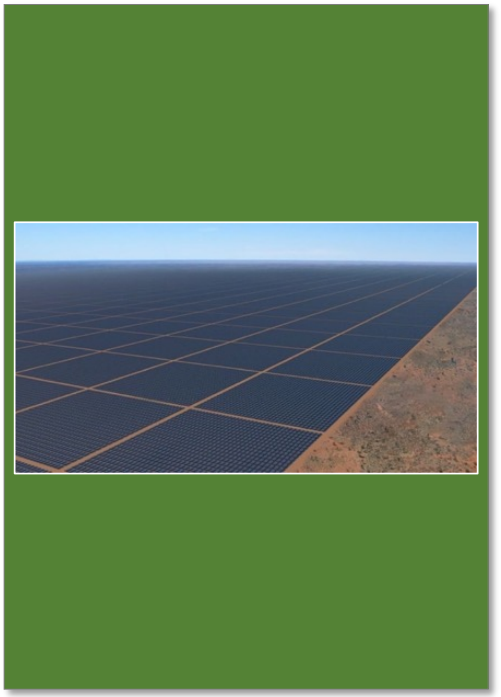
Were we are





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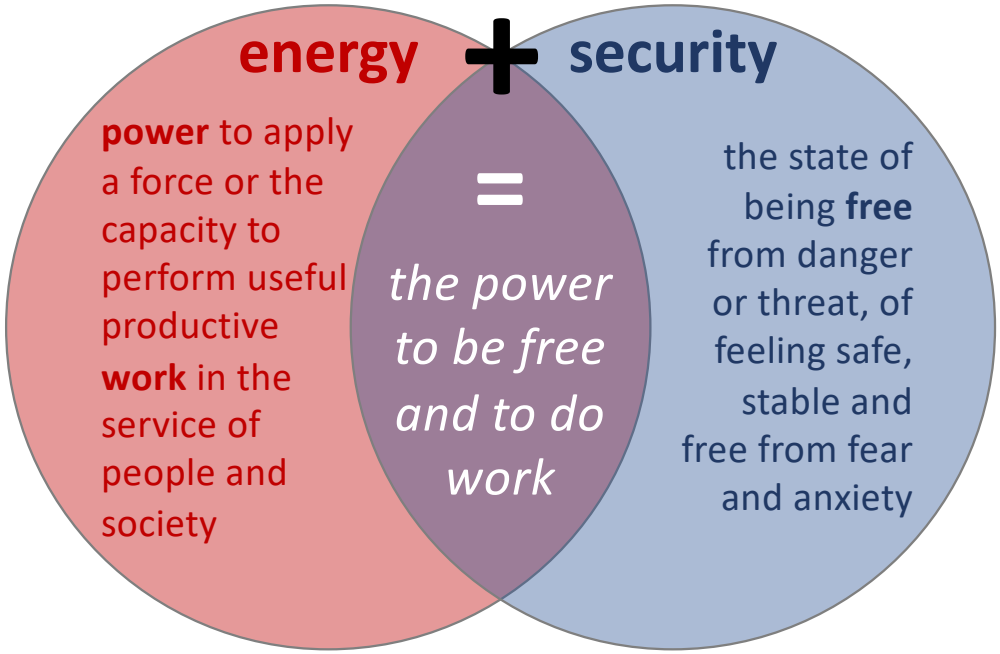
...what is it?



The definitions of energy and security are drawn from *The Oxford English Dictionary*
The definitions of power, work and energy are consistent with engineering science

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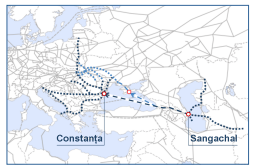
White Stream

White Stream™ will transport Caspian gas across the Black Sea directly to markets in Central and Eastern Europe, firstly to and via Romania, and later Ukraine



White Stream gas pipeline routes and supply corridors

Developer
The White Stream Consortium is assembling a permitted commercial package, to prepare for the financing and construction the pipeline, with project management and preliminary engineering being undertaken by the White Stream Pipeline Company Limited of the UK

Target gas markets
White Stream will land Caspian gas in Romania for delivery to the EU single gas market, diversifying and strengthening supply to South-East Europe and Central and Eastern Europe. White Stream also opens several real options for direct Caspian gas supply to Ukraine

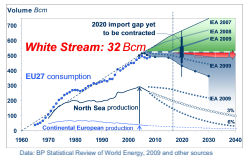
Security of supply
European gas production is in decline. The EU single gas market needs new gas sources via independent routes to balance increasing dominance of the market's major external supplier. The European Commission's Southern Corridor strategy reflects this need

'several projects make up the Southern Corridor, including Nabucco, the interconnector between Turkey, Greece and Italy (ITGI) and White Stream'
– Günther OETTINGER, Energy Commissioner

Remarks at the Turkmenistan Gas Conference, Ashgabat, 14 April 2010

White Stream is a Priority Project of the EU and an integral component of Europe's Southern Corridor: White Stream and Nabucco are 'mutually reinforcing'

Market need
White Stream is needed to replace declining production. Its flexible scalability responds to the uncertain timing of the market's future demand growth. Source and route diversity helps restore gas as Europe's preferred fuel



Data: BP Statistical Review of World Energy, 2009 and other sources

Gas supply
The Caspian basin gas resource is enormous. Initial gas can be supplied from offshore fields under development. **Azerbaijan** aspires to export 50 Bcm/y. Shah Deniz 2 capacity will be 16 Bcm/y, double Stage 1 of White Stream. Trans-Caspian reserves offer large upside for subsequent increased supply. **Turkmenistan** has the potential for an exportable surplus of 150 to 190 Bcm/y by 2030 and is seeking an initial agreement with Europe for at least 30 Bcm/y. **Kazakhstan** plans to increase its gas production from 30 Bcm to over 70 Bcm by 2015, with much of the 40 Bcm/y increase available for export.

Current status
The company's studies — supported with co-funding from the European Commission's TEN-E programme with the official sponsorship of the governments of Romania, Poland and Lithuania — confirm the legal, technical, economic and commercial viability as well as the security of supply benefits of White Stream

White Stream has an MOU in place with the Government of Georgia, signed in March 2009

Official support and public statements
The European Commission
Romania, Poland, Lithuania
Ukraine, Georgia, Azerbaijan, Turkmenistan

Project pipeline characteristics
There are no legal barriers to crossing the Black Sea

Technology:	proven in operation in the Black Sea
Diameter:	onshore Ø42" / offshore Ø28"
Water depth:	maximum approx 2150m
Length of offshore section (direct to Romania)	1100km
Capacity:	8 initially, expanding to 16 then 32 Bcm/y
Flexibility:	built up in stages, first 8 Bcm is viable alone
Optionality:	inherent in route and timing of each stage

Development schedule

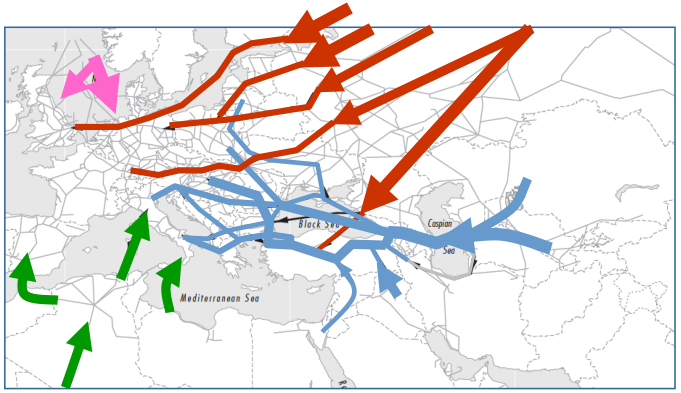
Seed capital invested	2007-10
Route reconnaissance, scoping and agreements	2011
Route survey, ESIA, permits and consents	2012
Permitted package	
Design, contracts, final investment decision	2013-14
Construction of 1st 8 Bcm/y capacity	2014-16
Commissioning and commercial operation	2017

White Stream Pipeline Company Limited

contact: **Ray Tomkins**
Director of Commercial Development

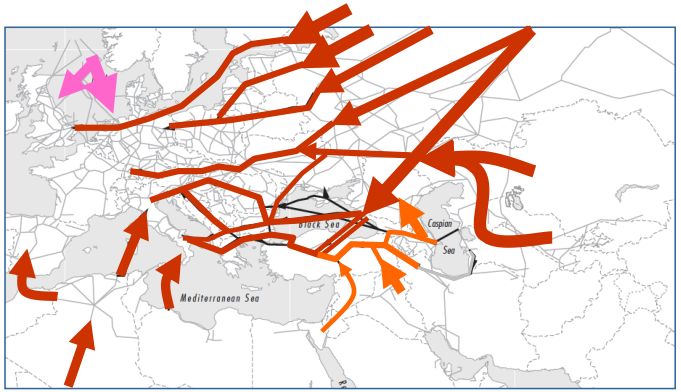
Information current as of April 2010

The EU Southern Corridor vision



- A mutually reinforcing set of pipelines in the Southern Corridor diversifies gas sources *and* routes
- This helps balance the dominant supplier's commercial position, particularly in Central and Eastern Europe
- Along with North African and North Sea gas plus LNG, the security of supply is bolstered and EU gas market competitiveness is enhanced

The dominant supplier strategy



- The dominant supplier controls all sources and pipeline routes to Europe from the east
- Monopoly transit from the south-east severely limits the flows from the Caspian via Turkey
- Central and Eastern Europe 100% dependent on the dominant supplier for gas imports
- The dominant supplier leverages involvement in North African gas (eg Sonatrach asset swap, Trans-Sahara pipeline)
- Fully independent sources become limited to declining indigenous and North Sea gas plus LNG, which are least effective in providing diversity for Central and Eastern Europe

Energy Security

The Russia-Germany gas trade

Former German Chancellor Gerhard Schroeder loses his entire staff after refusing to resign from Russian energy company boards

Source: Globe and Mail 1 Mar 2022, also reported by Reuters

Vladimir PUTIN
President
7 May 2000 – 7 May 2008
Prime Minister
8 May 2008 – 7 May 2012
President
7 May 2012 – present

Gerhard SCHRÖDER
Chancellor
27 Oct 1998 – 22 Nov 2005
Nord Stream Chairman
Nov 2005 – 21 May 2022
Gazprom board
4 Feb 2022 – 21 May 2022
Rosneft board
16 Feb 2022 – 21 May 2022

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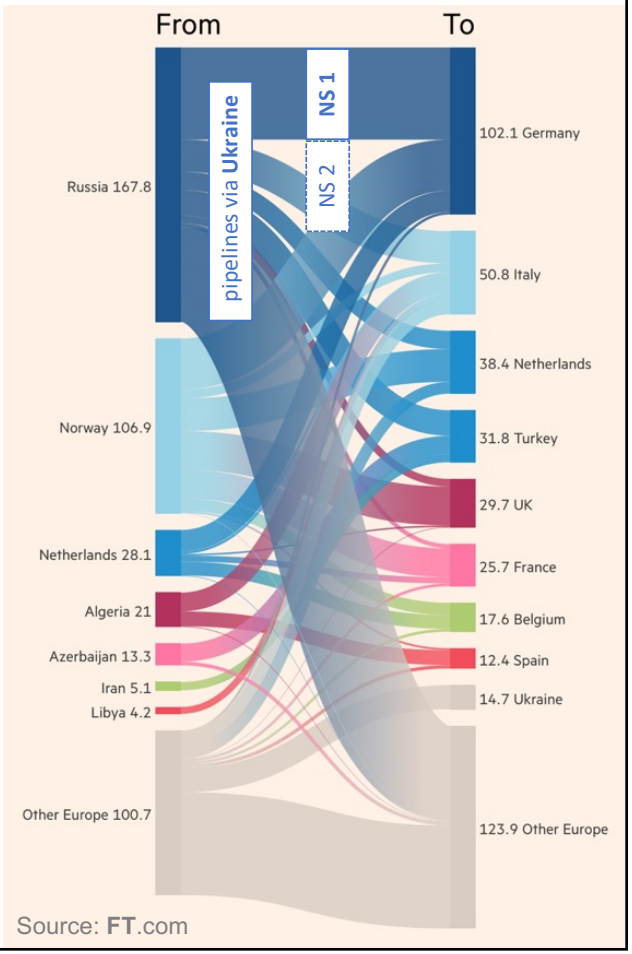
European natural gas trade movements by pipeline, 2020



Three major policy blunders

GERMANY

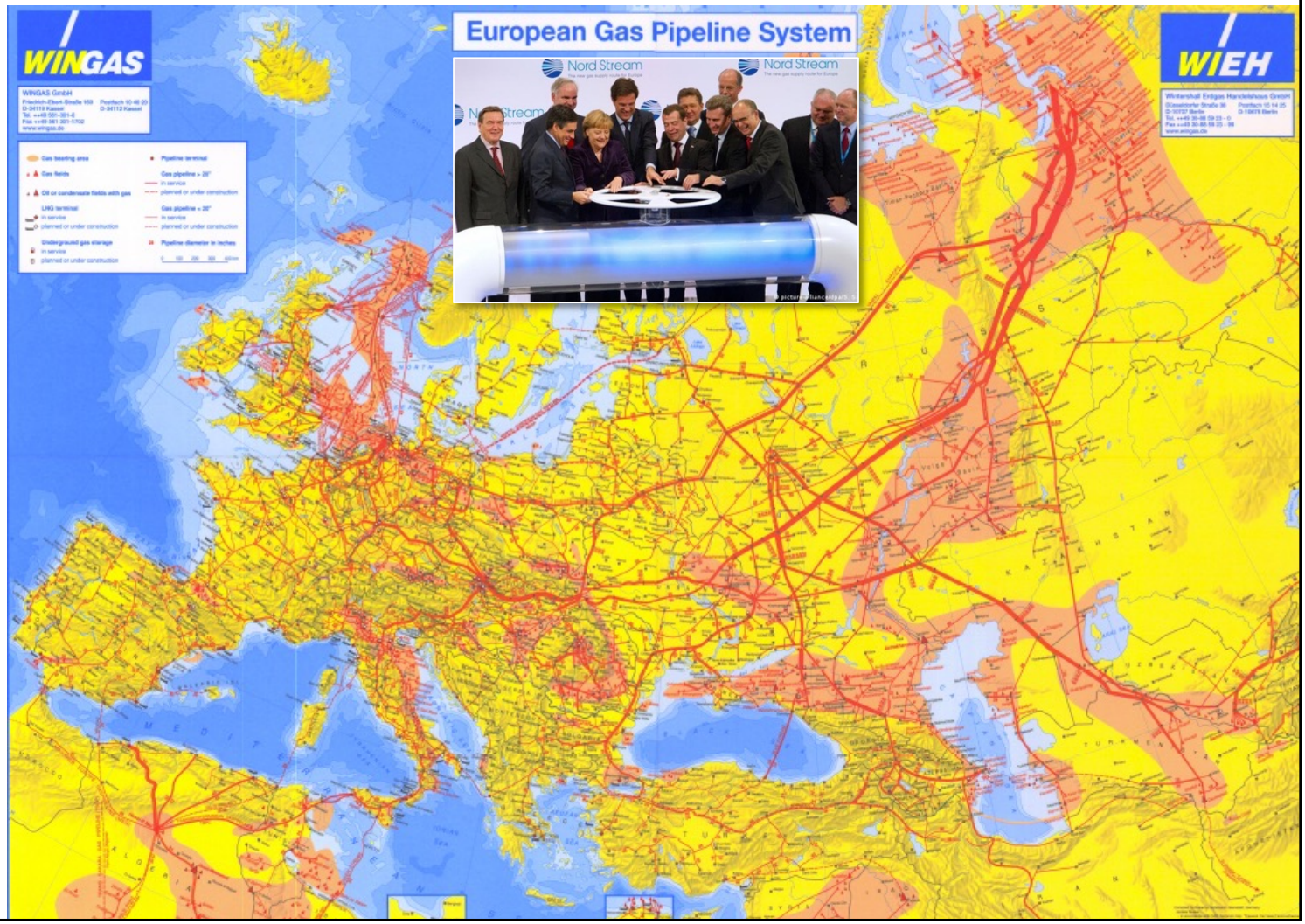
1. **Renewables**: naïve over-reliance on wind and solar
2. **Gas**: neglecting importance of security of supply
3. **Nuclear** energy rejected

Two big natural **disadvantages**:

- Major energy IMPORTER
- Lower QUALITY renewables

Two big inherent **advantages**:

- Huge INTERCONNECTIVITY
- Very strong NETWORKS



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AUSTRALIA

1. **Renewables**: naïve over-reliance on wind and solar
2. **Gas**: neglecting importance of security of supply
3. **Nuclear** energy rejected

Two big inherent **disadvantages**:

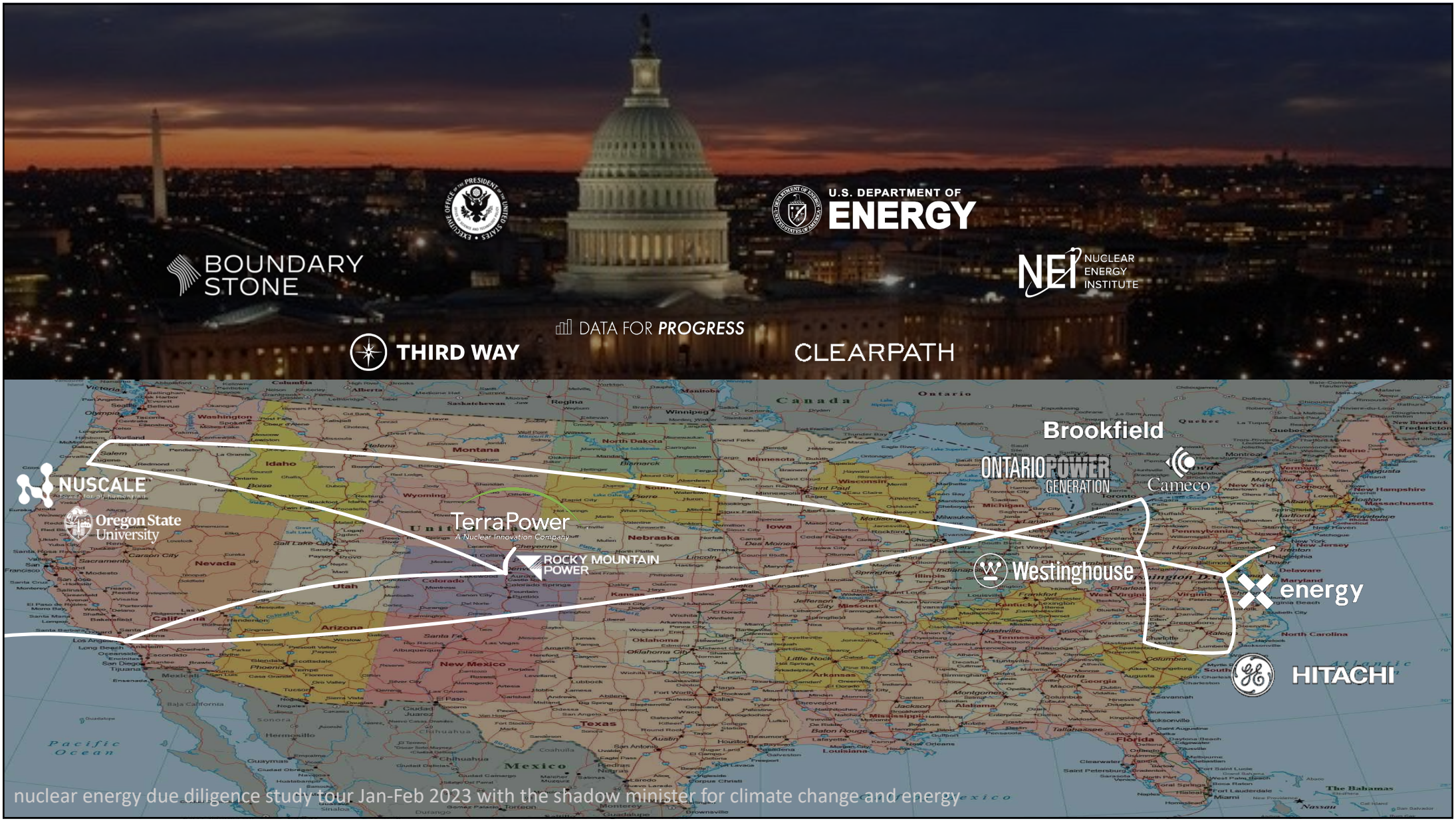
- No INTERCONNECTIVITY
- Very weak NETWORKS

Two big natural **advantages**:

- Major energy EXPORTER
- Higher QUALITY renewables


Dr Adi Paterson
Founder and Principal: Siyeva Consulting
The Hon Anthony Albanese MP
Prime Minister
Parliament House
CANBERRA ACT 2600
Dear Prime Minister,
ENERGY POLICY
1. Naïve over-reliance on wind and solar power - backed by government policies and supported, until recently, by overconfident advice. For example, the Fraunhofer Institute for Solar Energy Research – a body not dissimilar to CSIRO Energy research groups – has disclosed poor solar output in formal reports.
2. Neglecting/ misunderstanding the importance of the security of supply of gas in the
3. Premature removal of 17 nuclear plants from electricity supply
Germany & Australia
Making the same big blunders:
1. Renewables: naïve over-reliance on wind and solar
2. Gas: neglecting importance of security of supply
3. Nuclear energy rejected
and we could also add:
4. Coal demonisation
5. Industrial neglect
6. Blinkered environmentalism
Yours sincerely,
Dr Adi Paterson
BSc, PhD (Cape Town), Hon DSc (Wollongong), FSTE, Hon FIEAust,
Encl.
"…a growing number of experienced engineers and power system experts in Australia who are deeply concerned about the current activities and plans for deep penetration of intermittent renewable sources in the eastern grid."
"We propose prudent and urgent preparation of PLAN B, including SMRs, to anchor reliable, and predictable provision of electrical energy to consumers."


"Energy security *IS* national security."



nuclear energy due diligence study tour Jan-Feb 2023 with the shadow minister for climate change and energy


NUCLEAR
ENERGY
INSTITUTE
Maria, what would be your advice for Australia?
“Well! First: stop blowing up your coal plants — you’re not ready to live without them yet!”
— Maria Korsnick, CEO of NEI, highly experienced engineer

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COAL CLOSURES DARK AGE

Kevin You

AUSTRALIA'S RIGHTFUL PLACE

Scott Hargreaves

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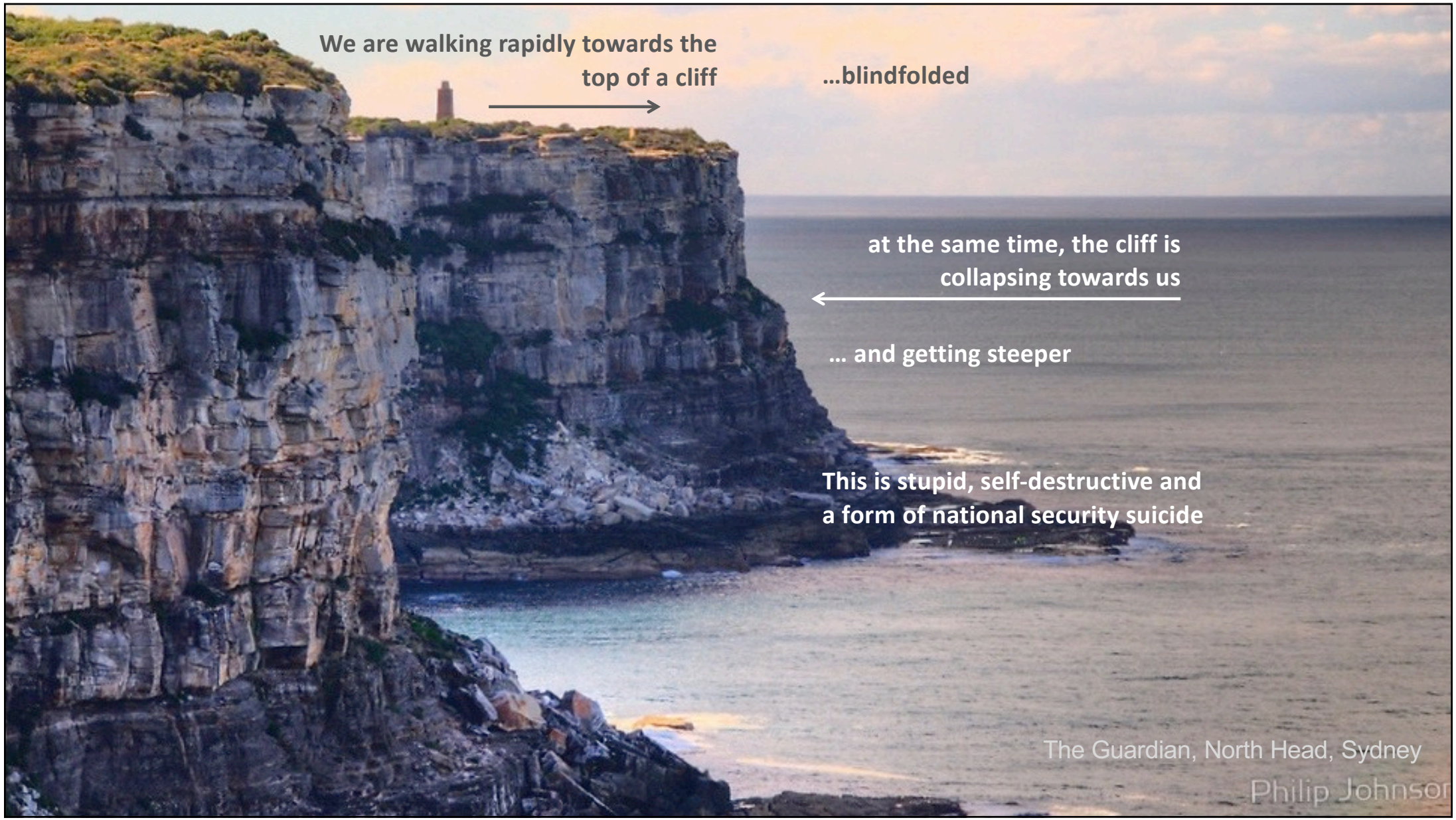
Playford A 1954-1985 decommissioned, demolished 2018 — 6 x 15 MW = **90** MW
Playford B 1963-2012 mothballed, decommissioned 2015 — 4 x 60 MW = **240** MW
Northern 1985-2016 (9:30am 9th May) — 2 x 260 MW = **520** MW

Australia’s burning platform


We are walking rapidly towards the top of a cliff
…blindfolded
at the same time, the cliff is collapsing towards us
… and getting steeper
This is stupid, self-destructive and a form of national security suicide
The Guardian, North Head, Sydney
Philip Johnson

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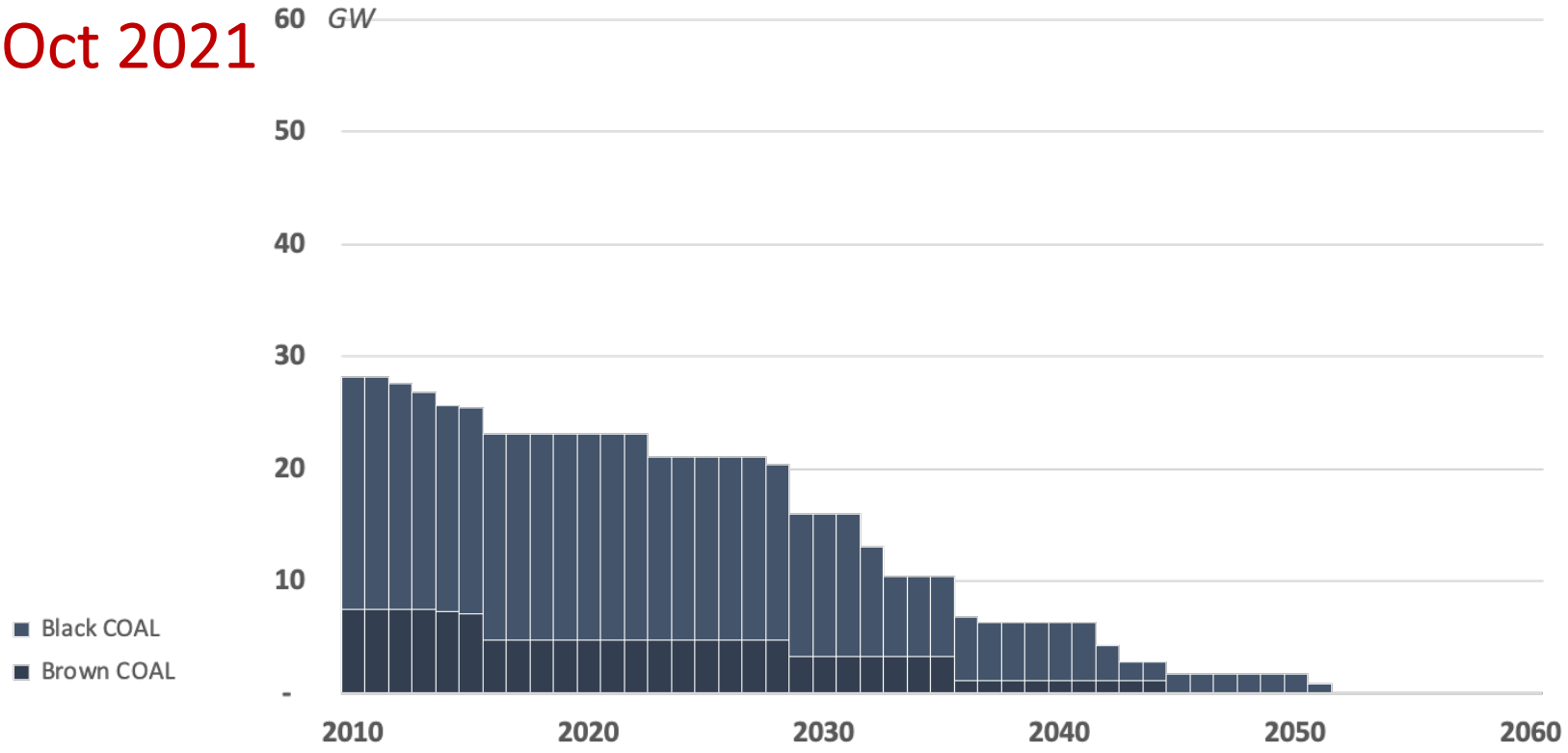
CONTEXT

Oct 2021



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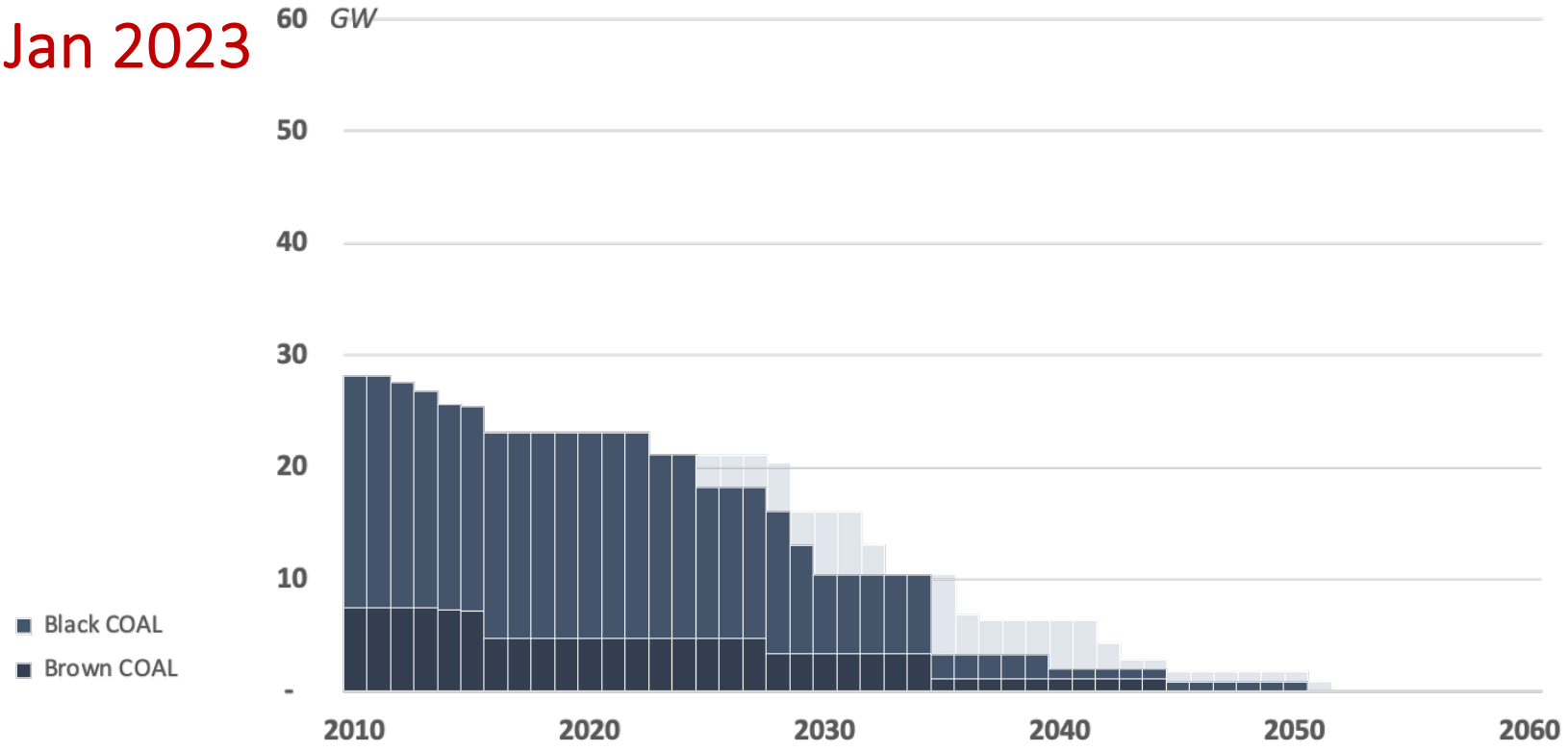
CONTEXT

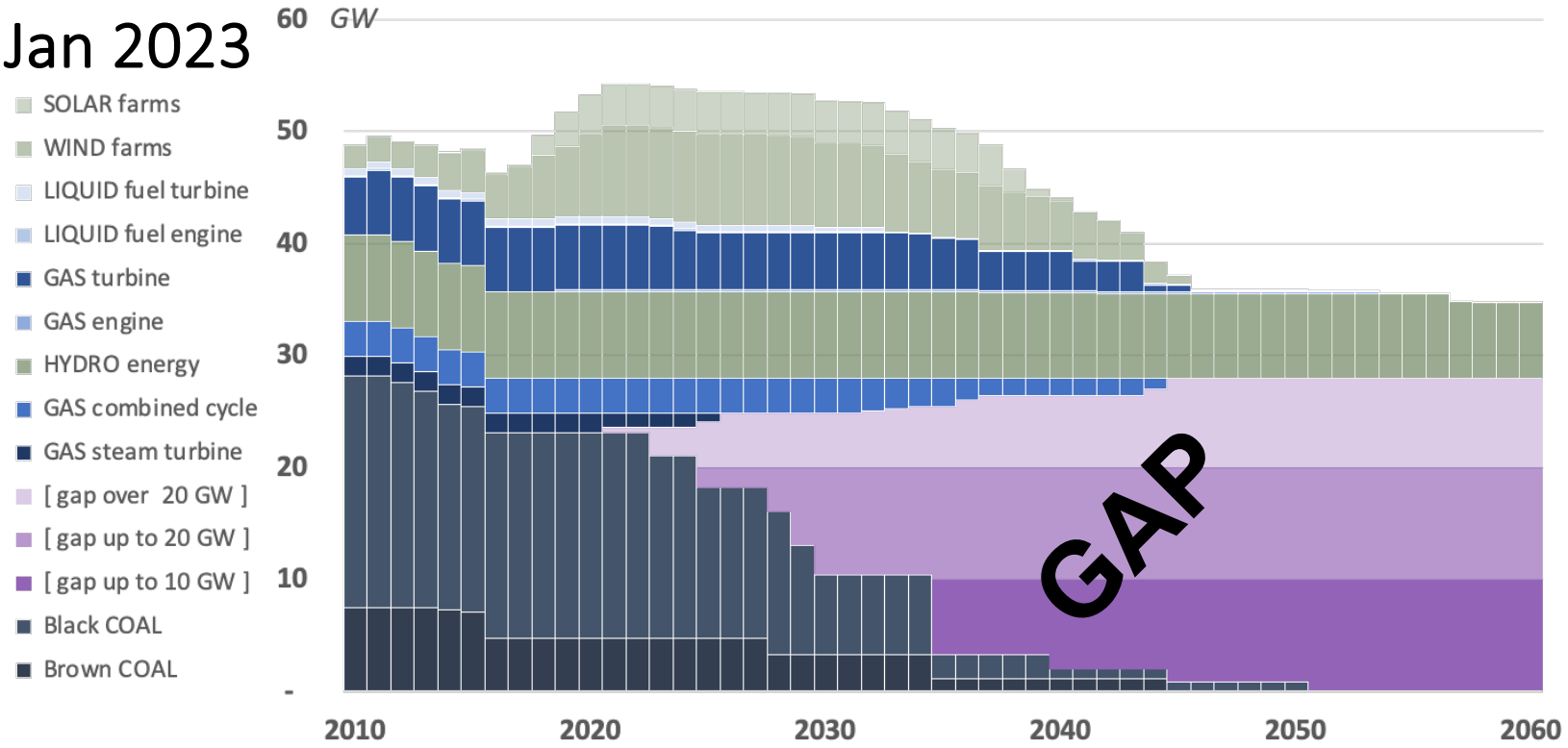
Jan 2023



Energy Security

CONTEXT

Jan 2023



The University Of Queensland
AUSTRALIA

Source: adapted from *What would be required*, Figure 1, with updated data

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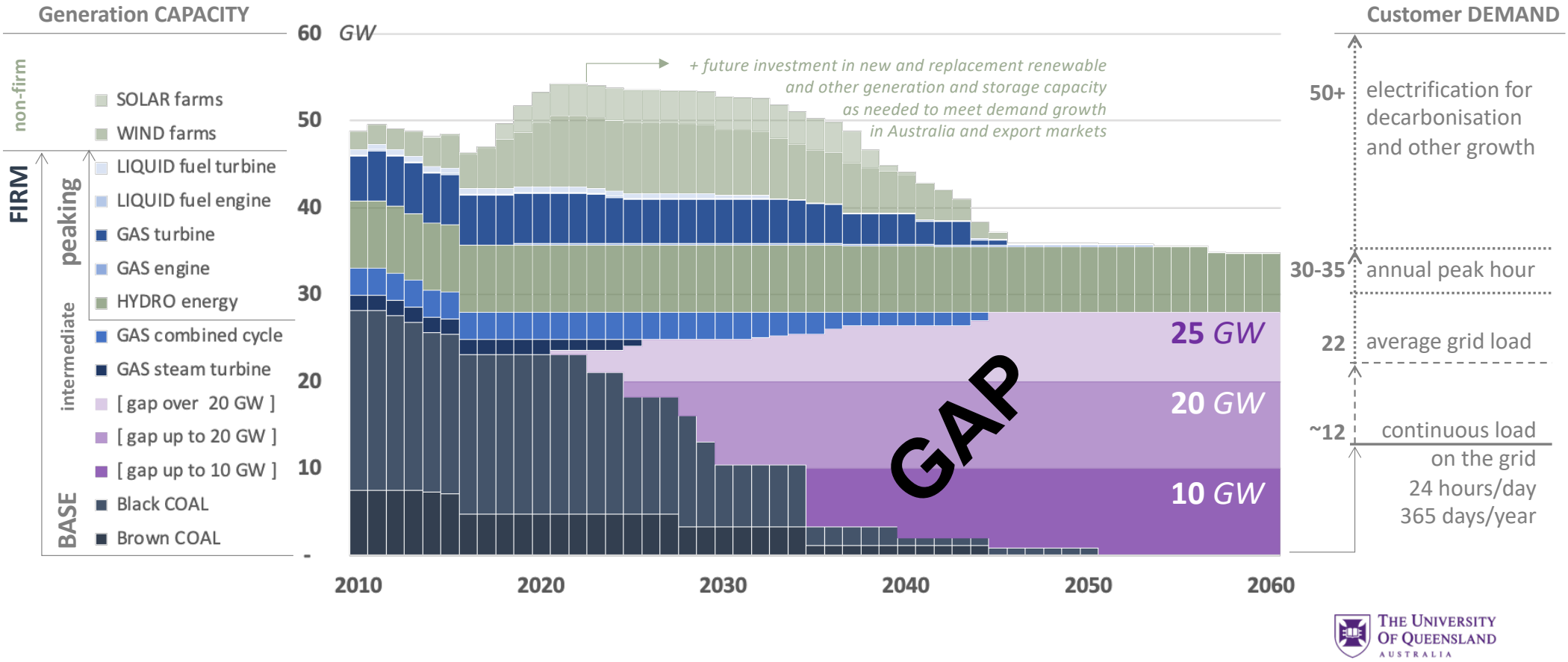

Source: adapted from *What would be required*, Figure 1, with updated data

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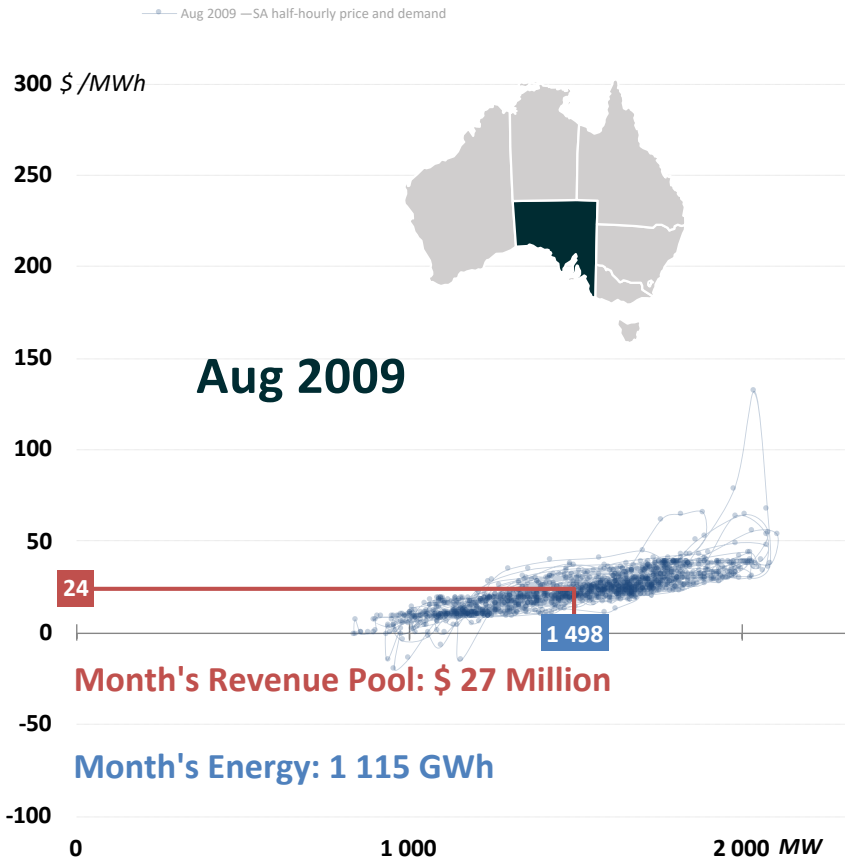
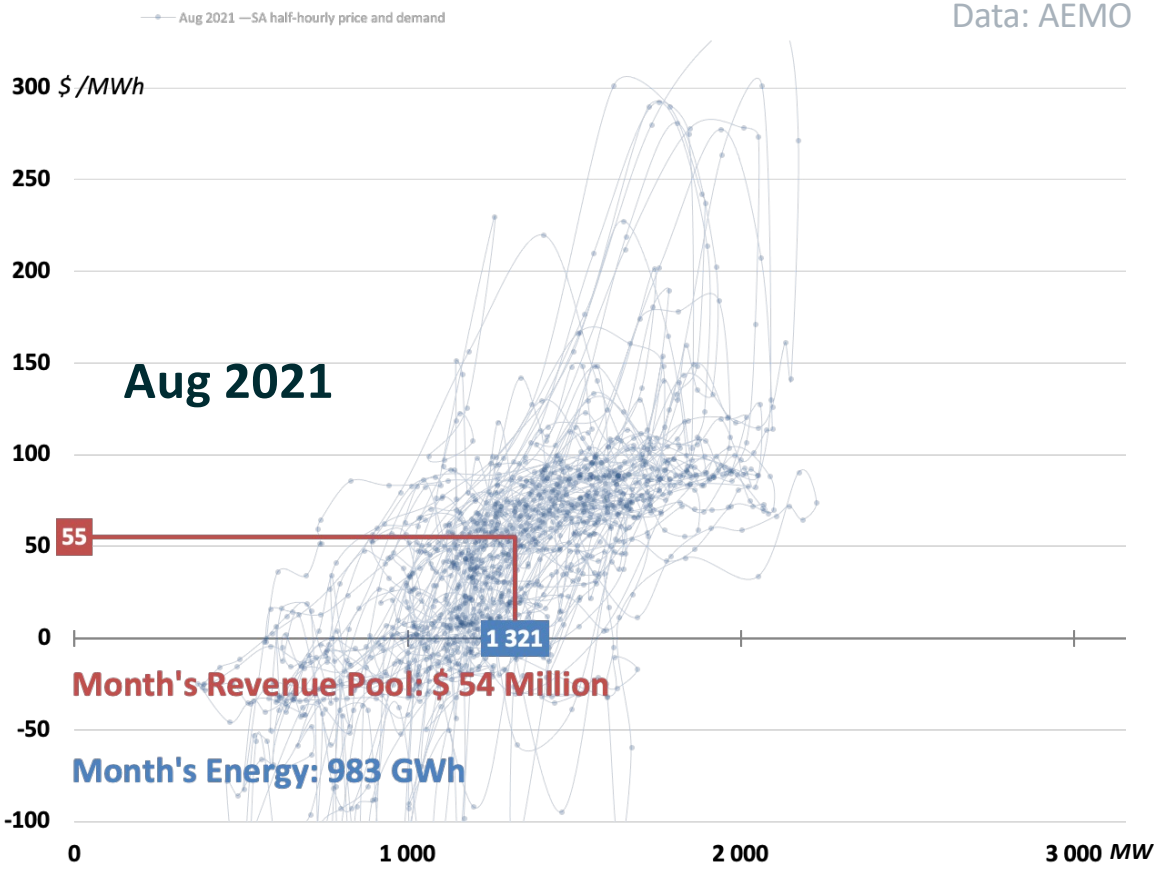
electricity spot prices in South Australia, Aug '09 & '21

Data: AEMO





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One part of the problem

"No-one can produce a bankable price forecast of the Australian electricity market today"

—a senior banker with 25 years of experience financing the Australian energy sector

Our research in mid-2017 found that this view is universally held by the major Australian banks and the major international banks active in Australian energy, resources and infrastructure financing

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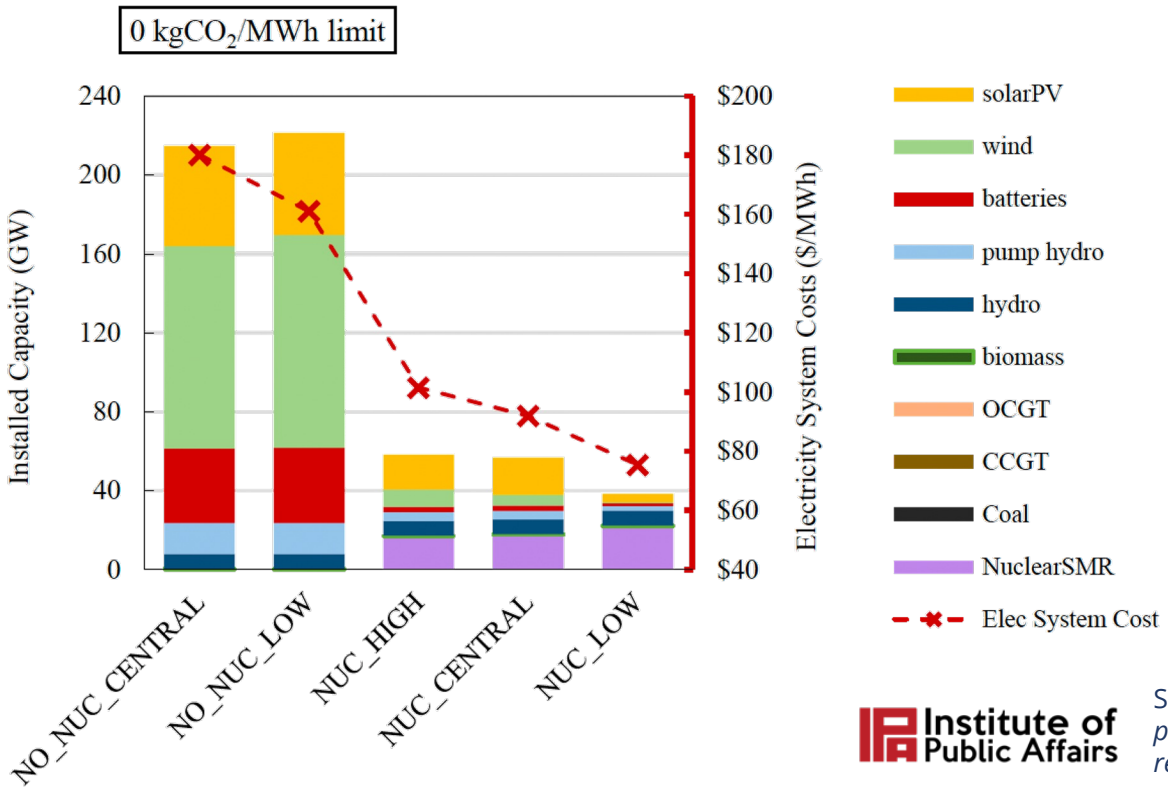
Capacity & average system costs at the limit



All-renewable vs nuclear allowed:

- enormous difference in capacity
- dramatic reduction in footprint
- SMRs can work with solar & wind
- enormous difference in costs
- nuclear has a role at all cost ranges
- costs are from the UQ report
- Note: results are subject to review

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Source: Rioseco, *Understanding the opportunities and costs of planning and operating electricity systems with high shares of variable renewable energy sources*, UQ (forthcoming: **do not cite**)

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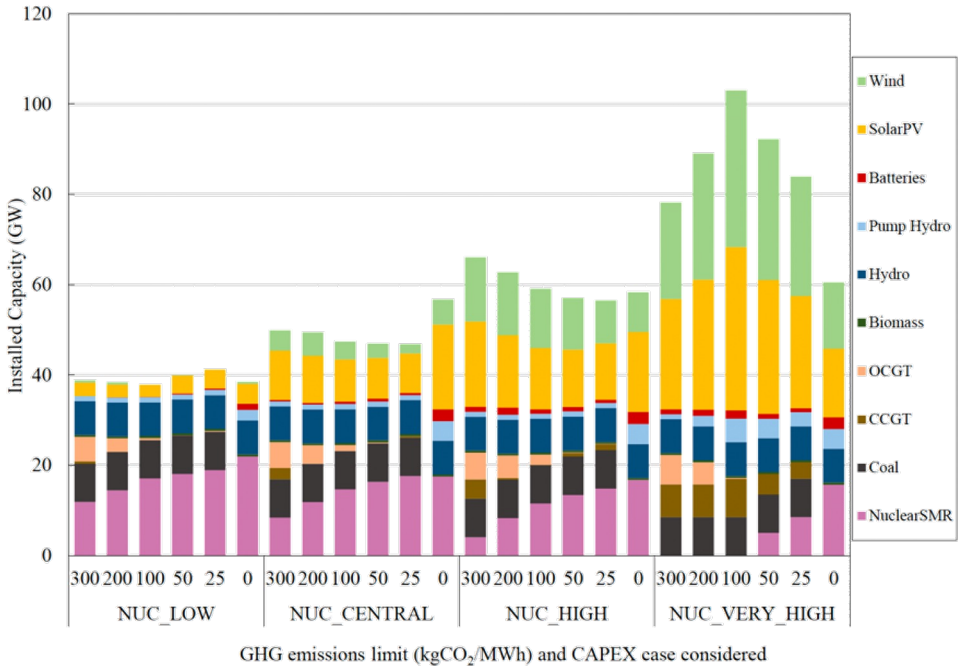
Installed capacity by emission and cost cases



- Renewable AND nuclear allowed
- Wind and solar is supplemental
- Other capacity needed to meet peak
- Nuclear not very sensitive to capital cost
- Coal plants ***very*** valuable to the system
- Coal—***not*** gas—is last thermal plant to go
- Batteries have a relatively small role
- Pumped hydro has a small role
- Results very different from *Net Zero* study
- Note: results are subject to review

Source: Rioseco, *Understanding the opportunities and costs of planning and operating electricity systems with high shares of variable renewable energy sources*, UQ (forthcoming: **do not cite**)

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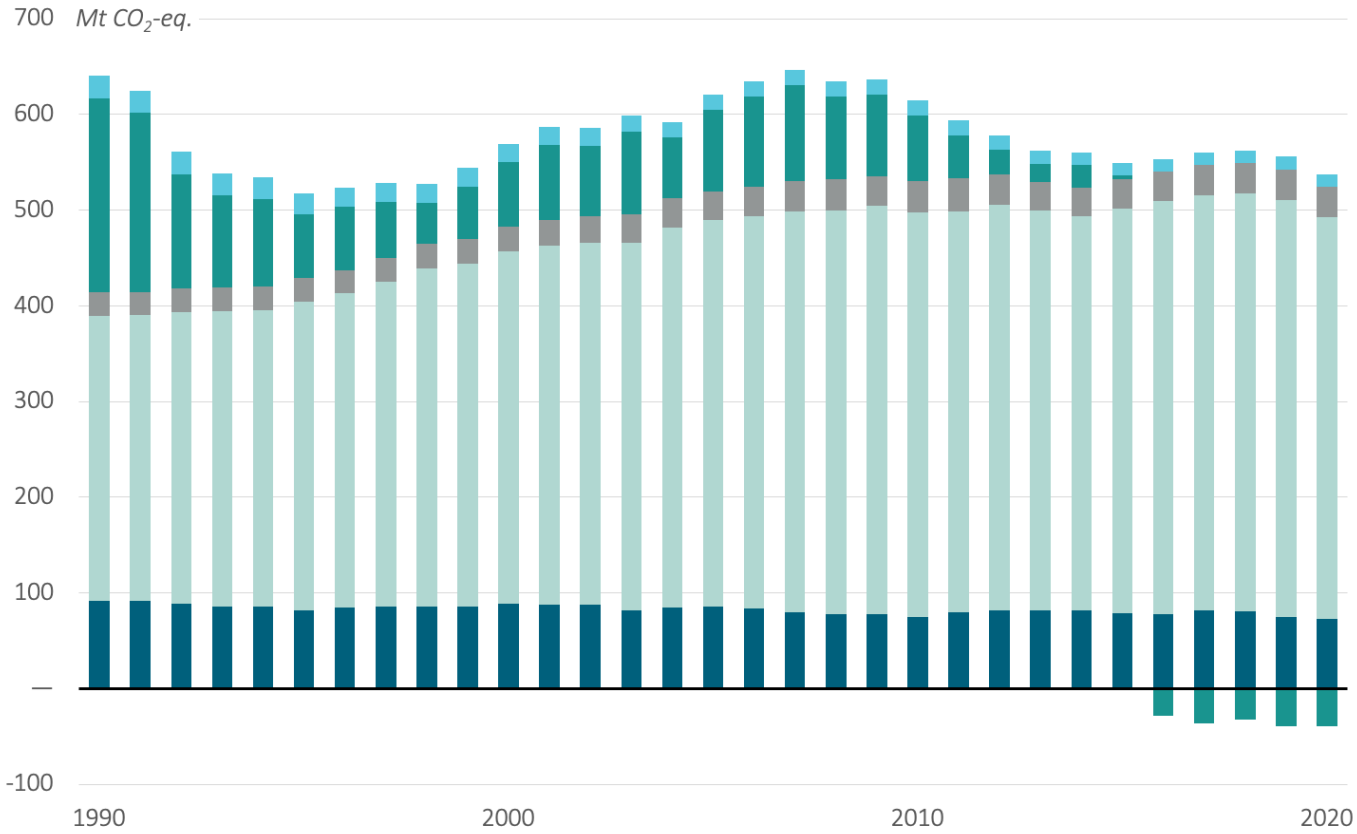
Australia's emissions



Source:
National Greenhouse Gas accounts: https://greenhouseaccounts.climatechange.gov.au

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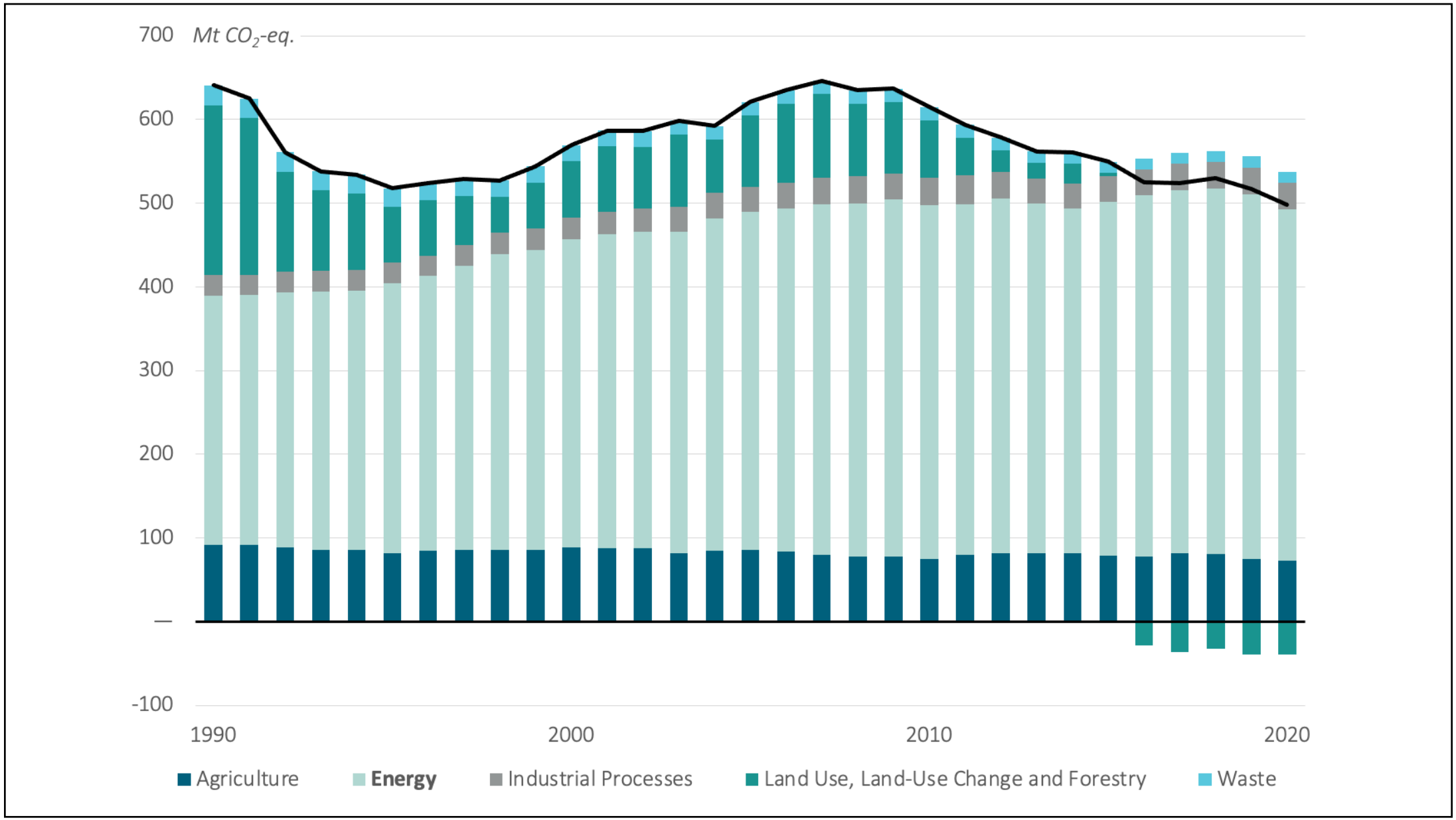
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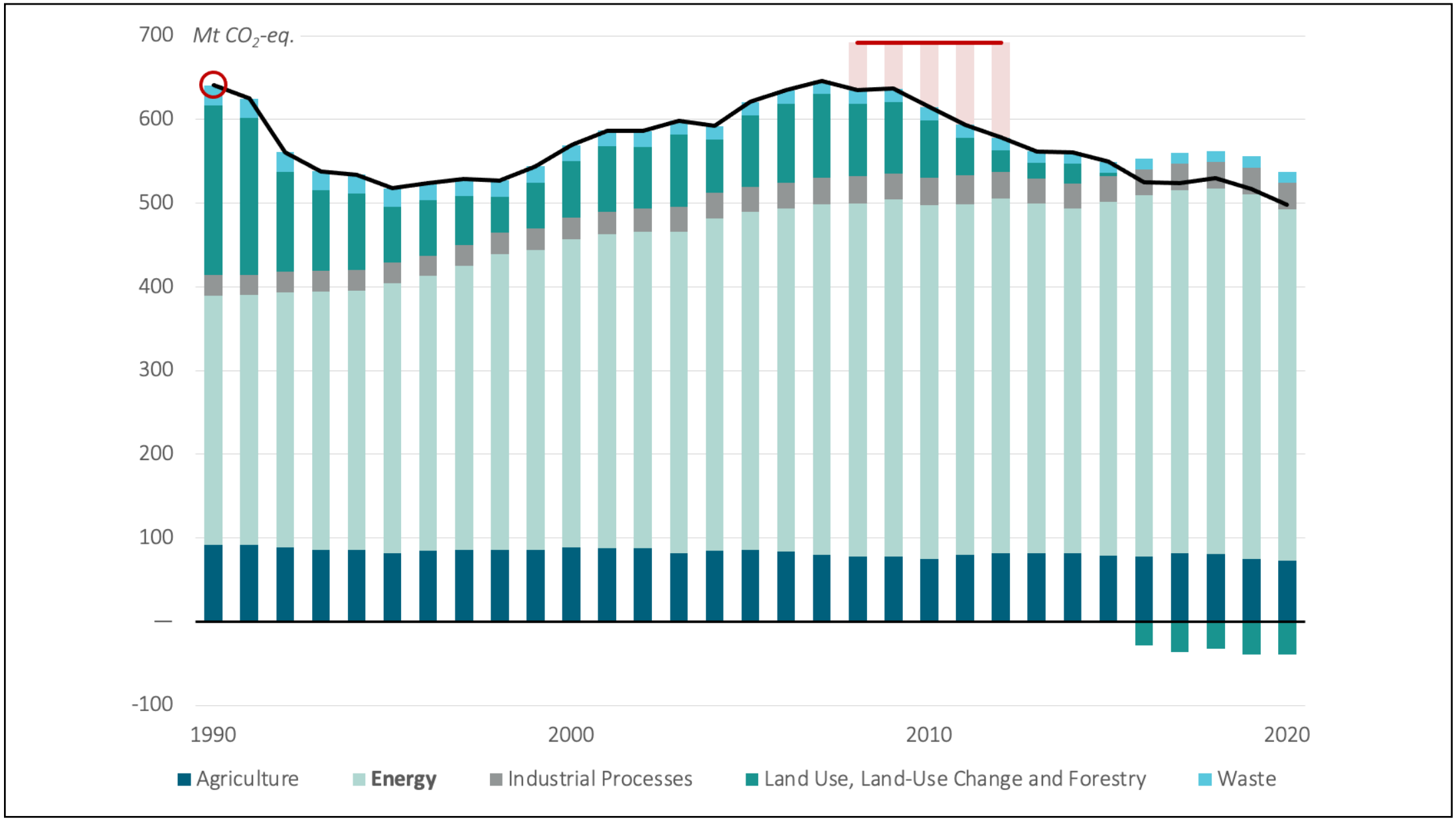
Agriculture
Energy
Industrial Processes
Land Use, Land-Use Change and Forestry
Waste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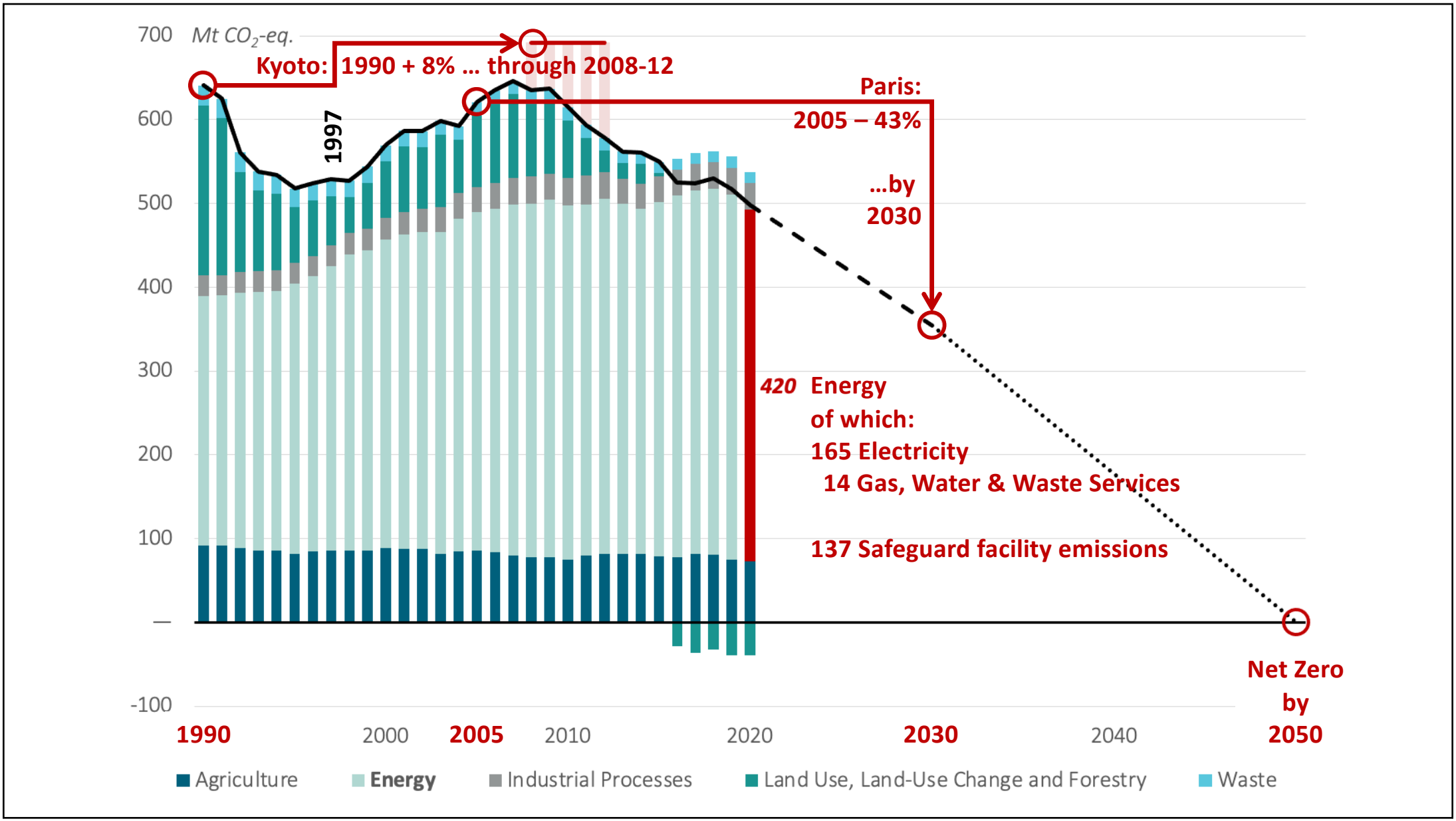
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Kyoto: 1990 + 8% … through 2008-12
1997
Paris:
2005 – 43%
…by
2030
420 Energy
of which:
165 Electricity
14 Gas, Water & Waste Services
137 Safeguard facility emissions
Net Zero
by
2050
1990
2000
2005
2010
2020
2030
2040
Agriculture
Energy
Industrial Processes
Land Use, Land-Use Change and Forestry
Waste

12 Jun 2021

15 Sep 2021

2 Nov 2021

https://www.forces.net/china/sunak-and-biden-discuss-chinas-increased-assertiveness-and-agree-visits

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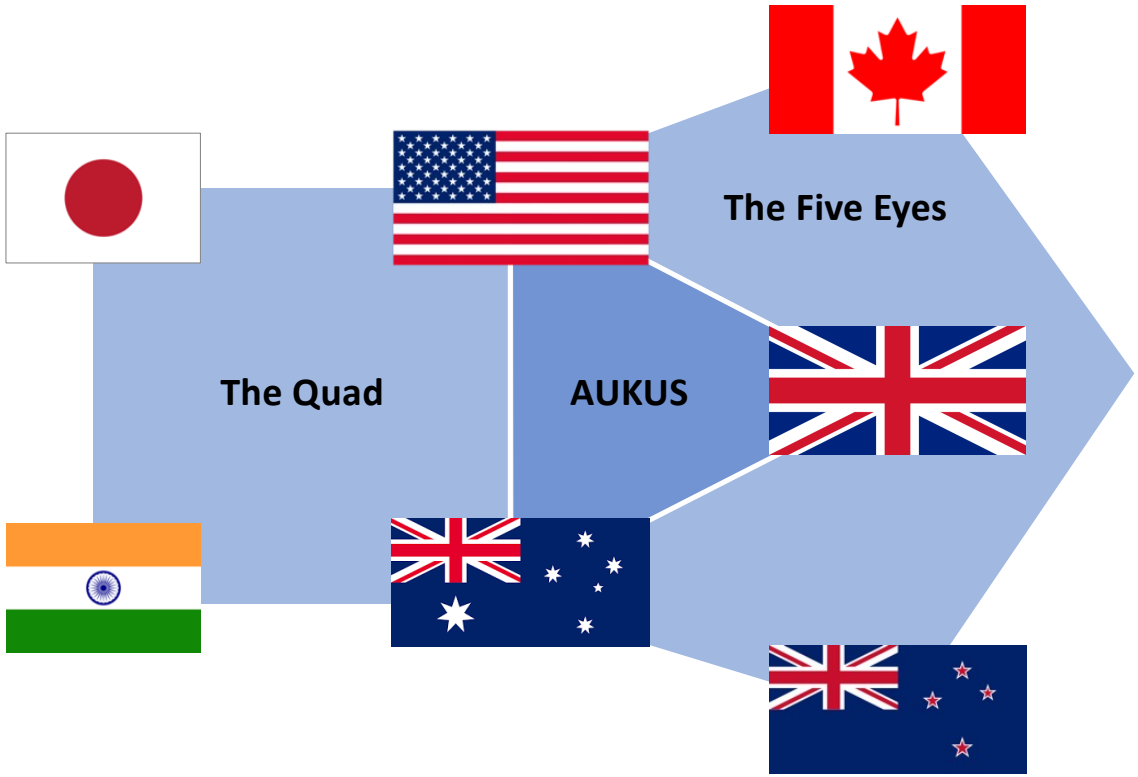

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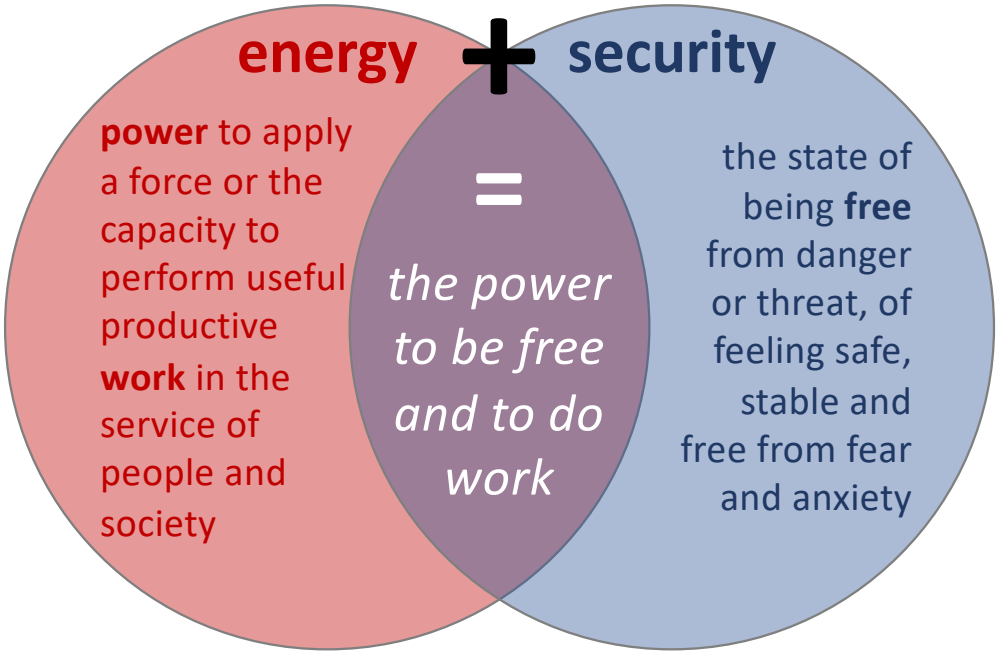
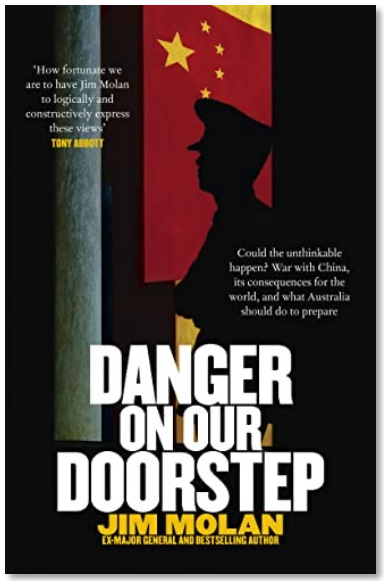
is inextricably linked with national security





Australia needs a *National Security Strategy*

Energy security is an indispensable part

Energy and national security are interlinked

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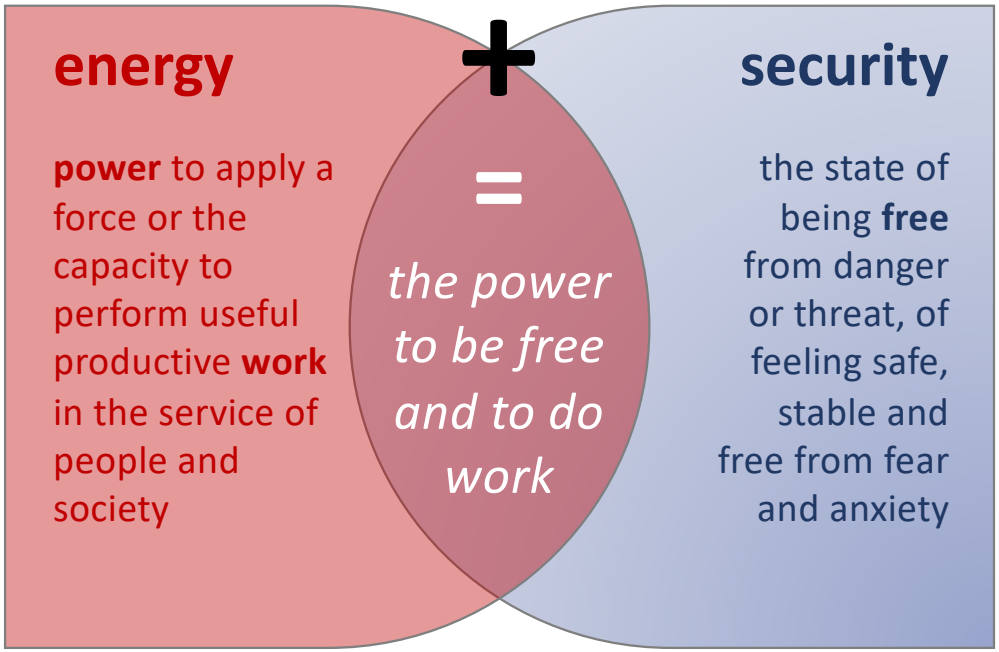
Energy Security

is deeply connected with the IPA's programmes



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affects

and is affected by:

- Climate Change and Energy
- Rights and Freedoms
- the Dignity of Work
- Western Civilisation
- the Australian Way of Life

Other current research programs at the IPA

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Energy Security

Scott Hargreaves
Executive Director

"The freedom to take responsibility for your own life, family, business and community is fundamental to the Australian way of life. It is this freedom that attracts people from all over the world – it must be preserved and promoted."

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Energy Security

Success measures and the longer-term outlook

2020s

blowing up
our coal plants
Look after them:
we still need them
to look after us.
We need to secure our
gas supplies and exports
of commodities

2030s

EXEXERCISE

real options created
in the 2020s

to deploy Mini & Small
Modular Reactors (SMRs)
when and where needed

2040s

CONSOLIDATE

gains from a system
that is secure
low cost and has
minimal footprint:

physical, visual,
environmental and
emissions

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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

For more information visit ipa.org.au

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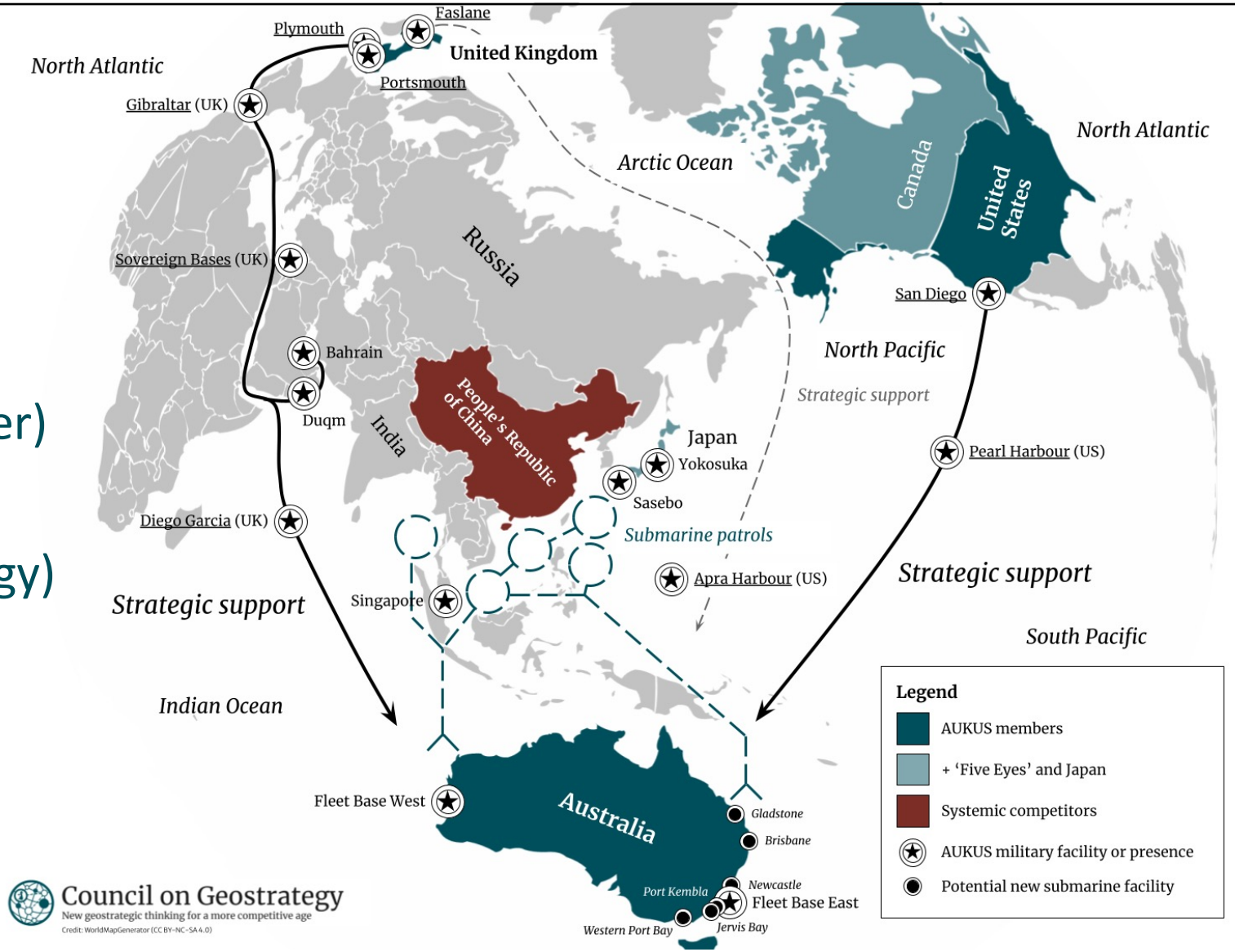
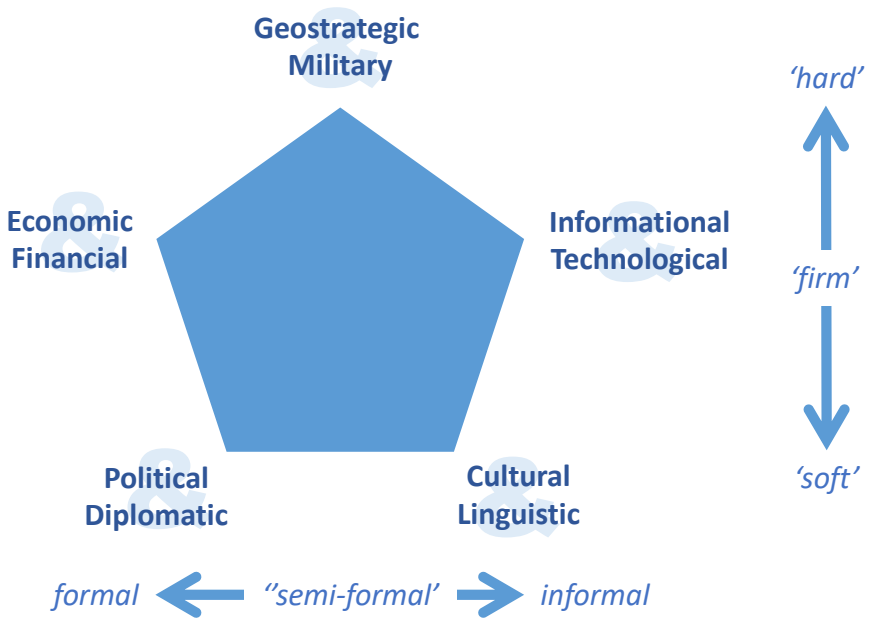
The geopolitics of AUKUS

- propulsion (power)
- endurance (energy)



https://www.geostrategy.org.uk/britains-world/aukus-strategic-drivers-and-geopolitical-implications/

The five vertices of international power



Australia is a middle power

Ranking nowhere near the great powers

Hence not 'powerful' measured on the five axes of international power

However, Australia does have:

- very significant soft power
- substantial 'firm' power
- very significant 'positional power' in a geostrategic sense

The value of these factors tends to be overlooked, or under-estimated by Australians, companies and governments