

# China's plans for decarbonization and energy security will reduce overseas coal imports

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ANU



Australian  
National  
University

# China's coal imports

## Big market for Australian coal

China was the destination of circa 25% of Australia's thermal and coking coal

## China aims to consume less coal

Plans for decarbonisation target both power generation and steel making

## China aims to consume more of its own coal

Strong investment in infrastructure in recent years



# Modelling China's coal imports

Using ANU's Installation-  
level China Coal Model IL-  
CCM

Transport model that optimizes for mining + transport cost

Our model offers roughly a 300-fold increase in spatial  
granularity

Similar earlier models use provincial-level granularity at best.

Our model has location + technical data for all individual:

- Power plants and steel plants
- Railways + stops
- Ports + navigation network
- Inter-city road network

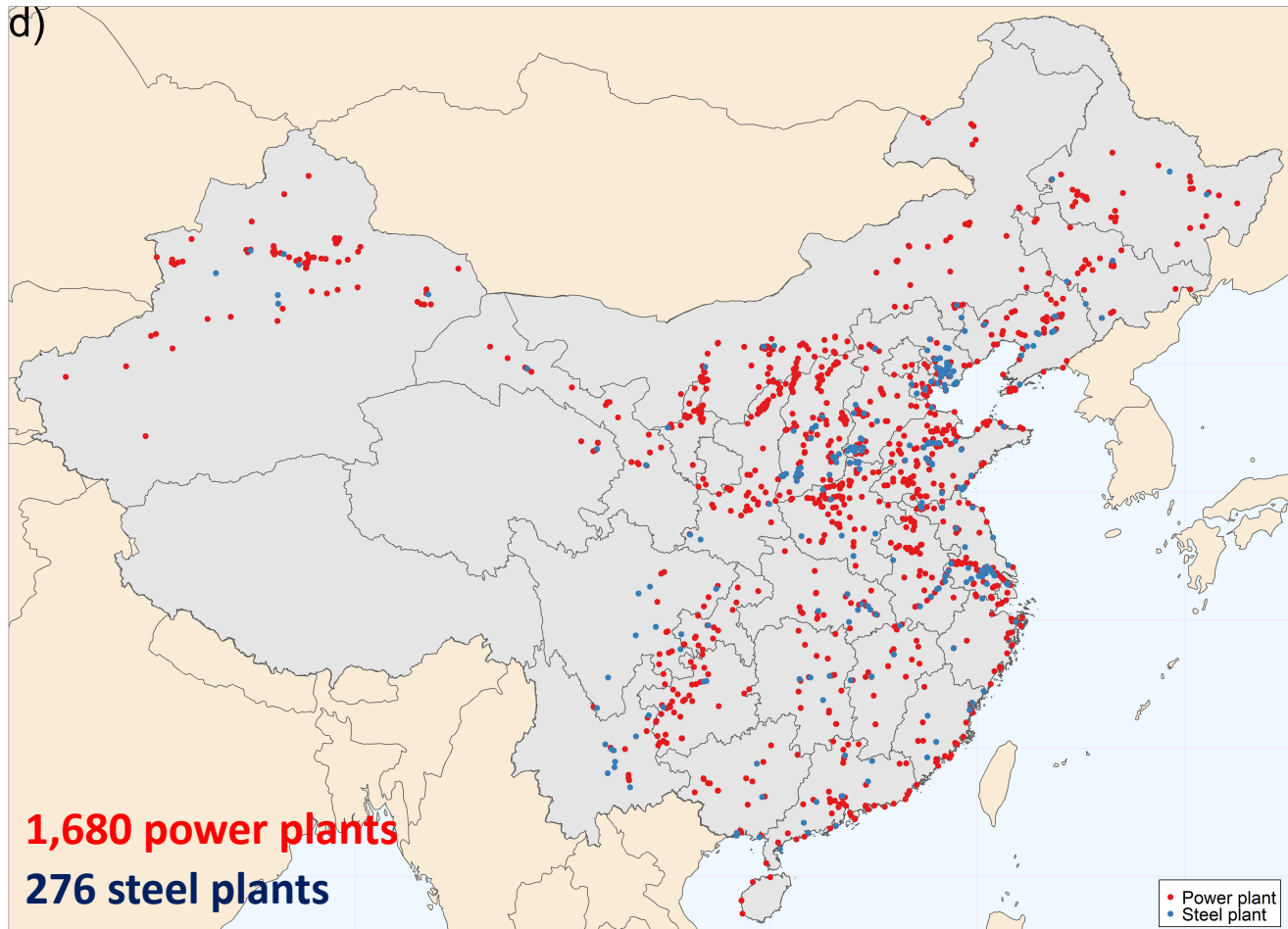


# Modelling China's coal imports

**Our model:** installation-  
level node-and-link model.

Location + technical data  
for all:

- **Power plants and steel plants**
- Railways + stops
- Ports + navigation network
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Data from Global Energy Monitor: <https://globalenergymonitor.org/>



# Modelling China's coal imports

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Location + technical data for all:

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Location names and rail lines scraped from 'China railway map' <http://cnrail.geogv.org/>

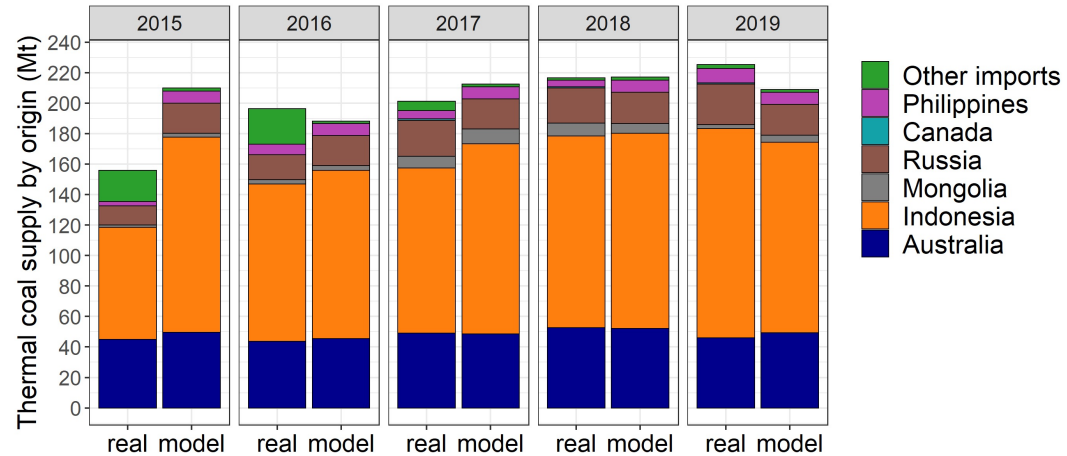


# Modelling China's coal imports

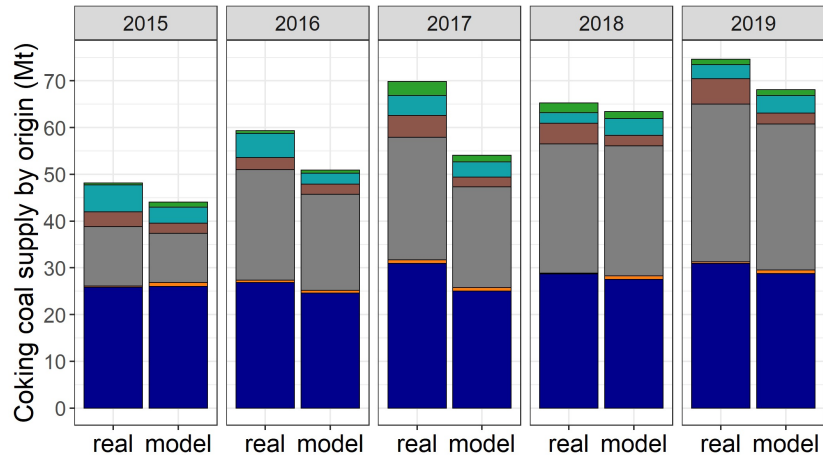
Using ANU's Installation-  
level China Coal Model IL-  
CCM

Model preforms  
excellently in back-casting  
exercises

## Thermal coal

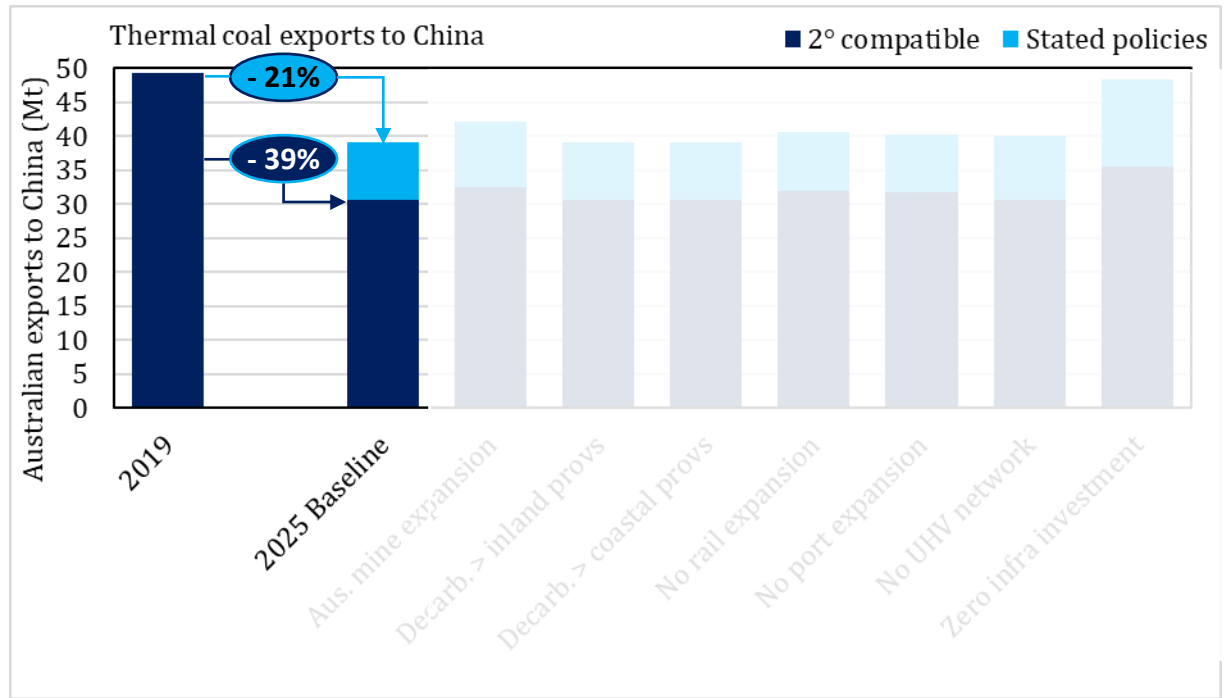


## Coking coal



# Scenarios for China's coal demand & imports

For **thermal coal** (2025)



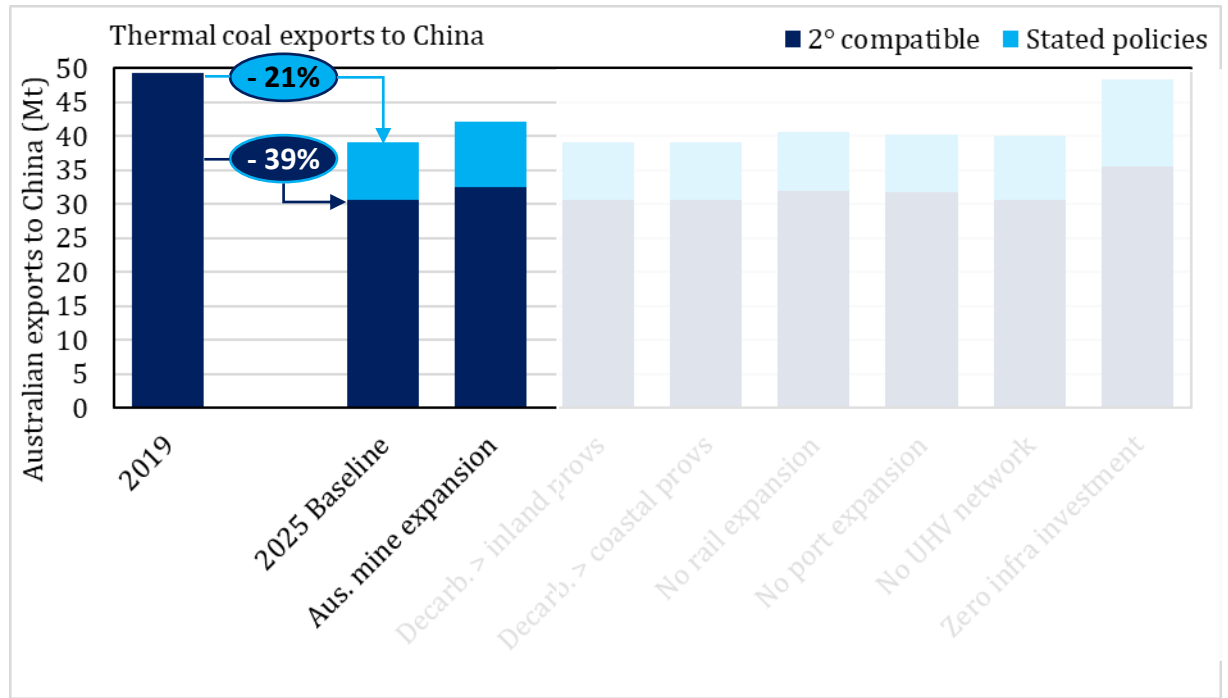
Demand scenarios from the IEA:

- **Stated policies:** all officially announced targets
- **2° compatible:** ambition in line with Paris agreement



# Scenarios for China's coal demand & imports

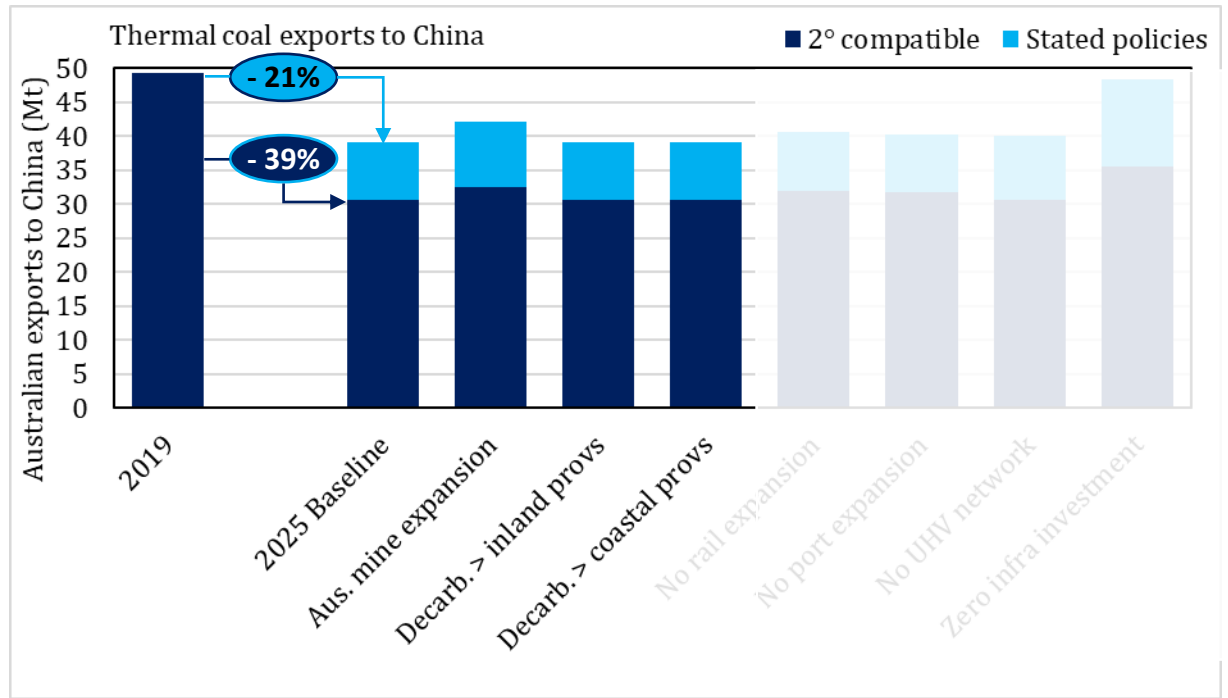
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# Scenarios for China's coal demand & imports

For **thermal coal** (2025)



# Scenarios for China's coal

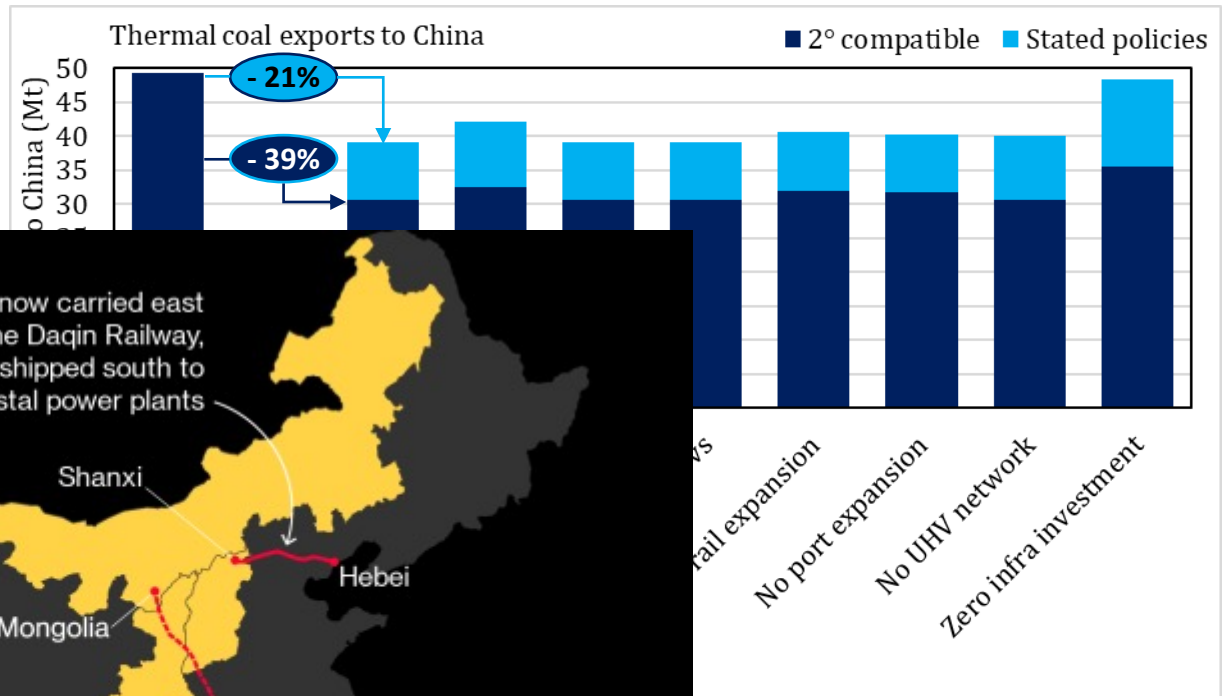
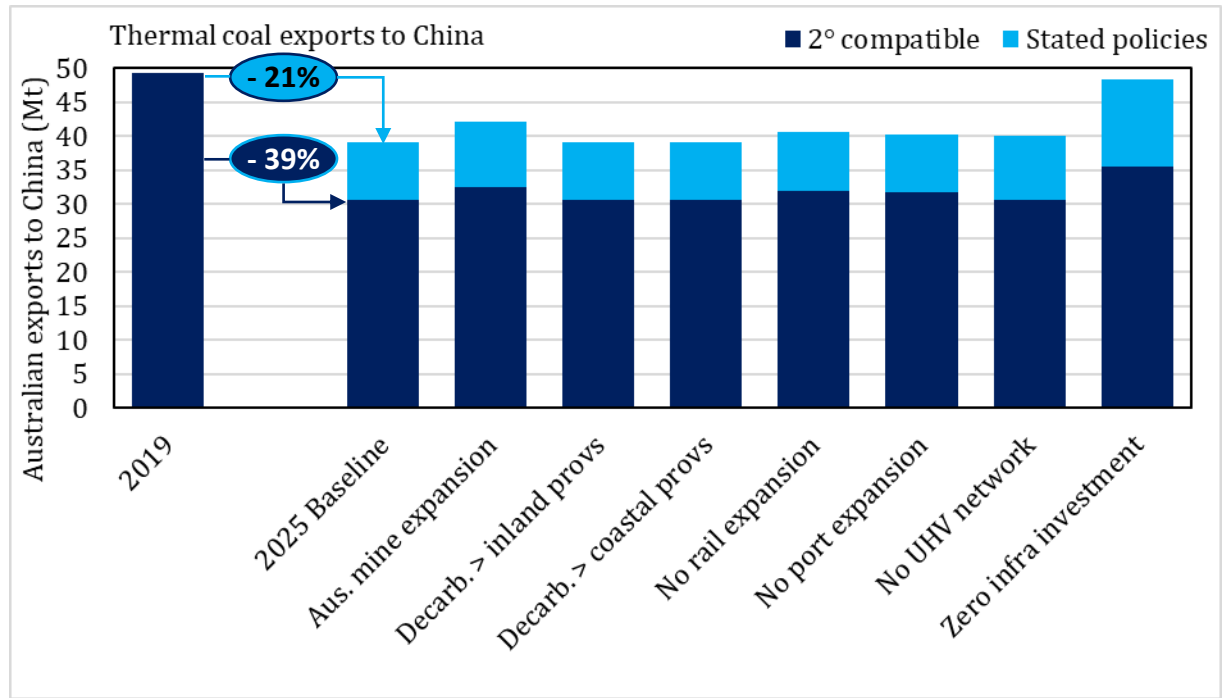


Image credit: BNN Bloomberg <https://www.bnnbloomberg.ca/china-s-energy-game-plan-features-a-giant-coal-hauling-rail-line-1.1319050>

# Scenarios for China's coal demand & imports

For **thermal coal** (2025)



Key factors:

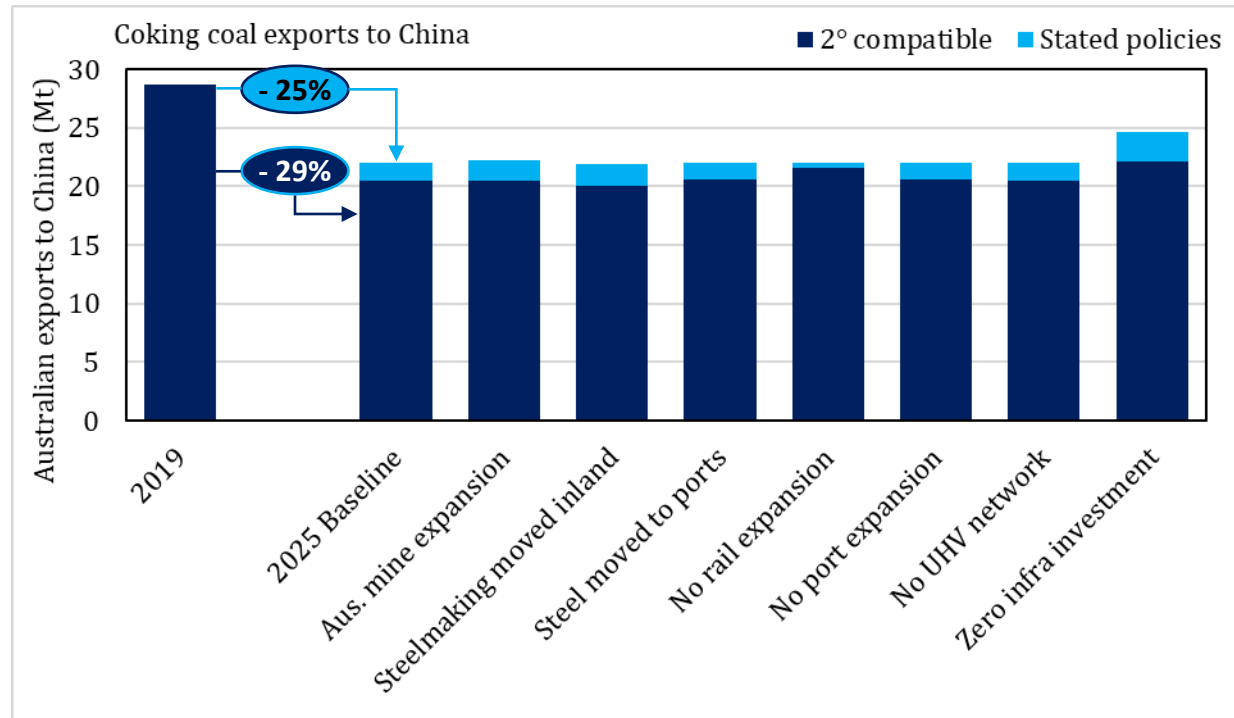
- Improving power plant efficiency
- Infrastructure investment
- Decarbonization ambition level

Not important:

- Domestic mine expansion
- Shift of demand towards inland provinces

# Scenarios for China's coal demand & imports

For **coking coal** (2025)



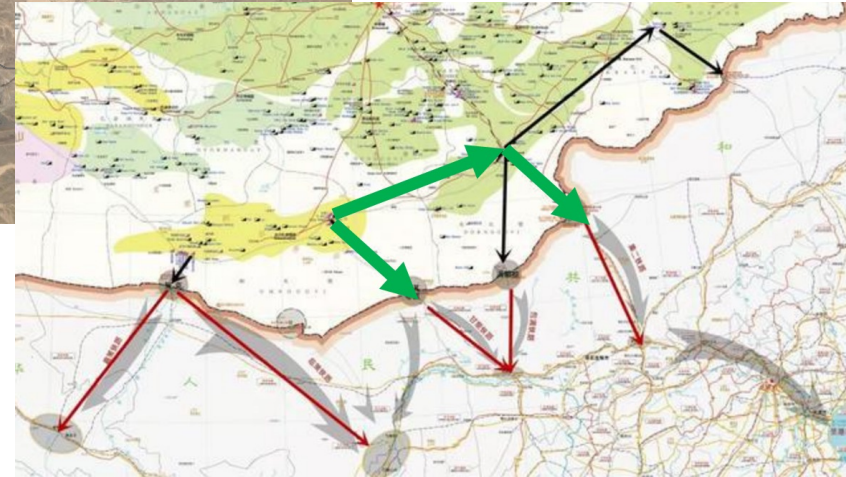
# Scenarios for China's coal demand & imports

For **coking coal** (2025)

Tavan Tolgoi coking coal mine and rail links

30 Mt rail links operational in 2022

3 further links expected in next 2/3 years

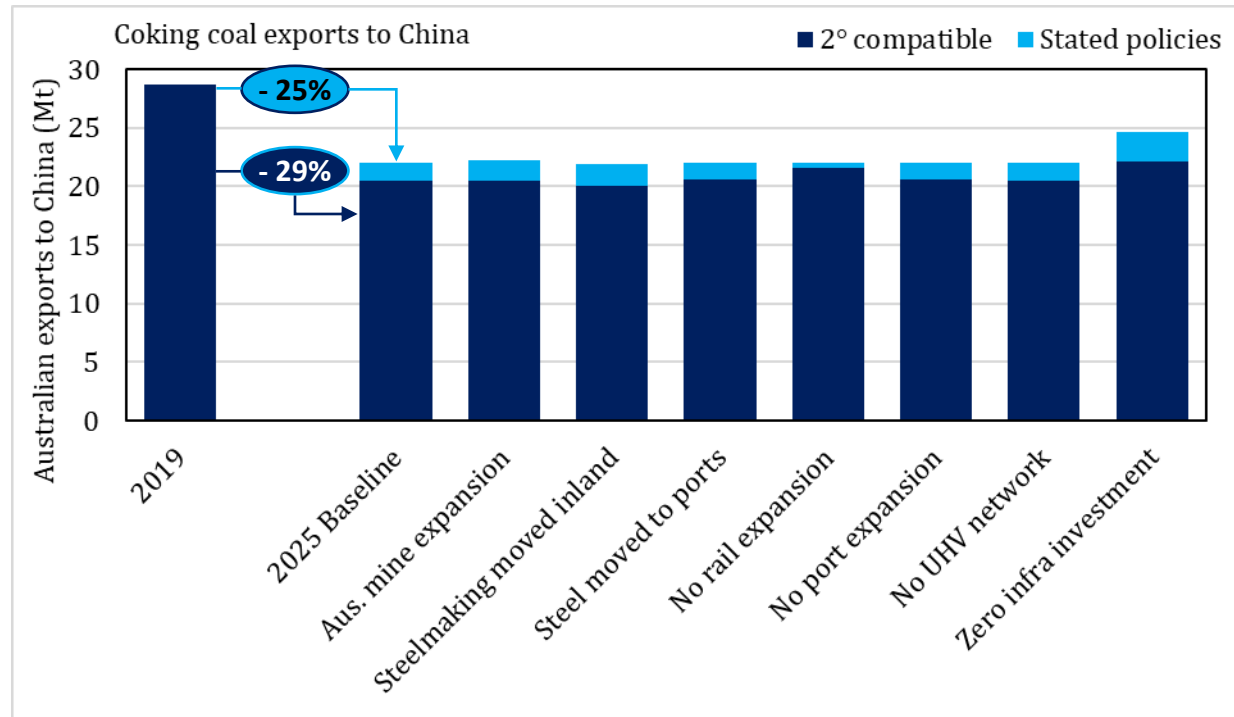


# Scenarios for China's coal demand & imports

For **coking coal** (2025)

Key factors:

- Mongolian mine expansion
- Infrastructure investment
- Decarbonization ambition level



Not important:

- Domestic mine expansion
- Shift of demand towards inland provinces



# Recap

China's coal consumption will start to come down.

Australian imports will almost certainly come down with it.

## Imports of Australian thermal coal

Likely to fall from 49.4 Mt in 2019 to between 30.6 and 39.1 Mt by 2025

## Imports of Australian coking coal

Likely to fall from 28.7 Mt in 2019 to between 20.5 and 22.0 Mt by 2025

Results for 2030 see similar but less pronounced continued drop

Substantial reductions expected under currently announced policies, stronger with increased decarbonization ambition

This is before any political considerations are factored in

Infra investments and consumption reduction make it less costly for China to cut imports



# THANK YOU

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