Copenhagen Infrastructure Partners

6 June 2025

Productivity Commission
Five Pillars Inquiry Team
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Five Pillars of Productivity – consultation submission

Copenhagen Infrastructure Partners (CIP) acknowledges the Productivity Commission's work to undertake comprehensive inquiries into five pillars of Australian productivity. CIP welcomes the opportunity to provide feedback, specifically on *Pillar 1: Creating a Dynamic and Resilient Economy*, and *Pillar 5: Investing in cheaper, cleaner energy and the net zero transformation.* CIP believes Australia's foreign investment settings and regulatory processes require reform to remain globally competitive and foster productivity growth. Current settings are impacting investor confidence in deploying capital in Australia.

CIP supports the Clean Energy Investor Group's comprehensive submission, which details recommendations specific to the Consultation Paper questions. We have prepared this submission as a largely principles-based supplement, highlighting our feedback priorities as a foreign greenfield renewable energy infrastructure investor.

Foreign greenfield renewable investors specialise in the construction of new and complex energy infrastructure on undeveloped land. Greenfield investors have access to significant capital and global experience to de-risk large-scale projects from early development to operations and are critical to driving the pipeline of new renewable energy infrastructure Australia needs. Renewable energy projects are critical infrastructure and should be strongly prioritised both in Australia's foreign investment settings and domestic regulatory frameworks.

Overview of CIP

CIP is the world's largest dedicated investor in greenfield renewable energy infrastructure. We have over AUD 50 billion under management globally across 13 investment funds. CIP has a global investor base of more than 160 institutional investors, predominantly global and Australian superannuation funds. In Australia, this includes Cbus, Rest, Vision, and NGS Super.

CIP has been active in Australia since 2017 and has a development portfolio comprising around 30GW of offshore and onshore wind, solar PV, pumped hydro, battery storage, and renewable hydrogen projects. This includes Australia's first and most advanced offshore wind development, *Star of the South* in Victoria, as well as Hydrogen Headstart recipient *Murchison Green Hydrogen* in Western Australia and the National Renewable Energy Priority listed *Capricornia Pumped Hydro* in Central Queensland. We recently closed our fifth flagship fund at over AUD 21 billion and with the right investment settings, are motivated to deploy around 10% of this investment in Australia.

Summary of feedback

We recommend:

- Prioritising competitive taxation settings for foreign investors, most urgently finding a solution to the proposed changes to the foreign resident capital gains tax (CGT) regime which would have significant unintended consequences on foreign investment in renewable energy infrastructure
- Implementing measures to de-risk the investment landscape for overseas entities, such as clarifying assessment criteria for foreign investment
- Establishing a 'central agency' that streamlines approval interfaces and enforces regulatory accountability
- A more collaborative approach to project approvals to mitigate binary risk
- Long-term climate merits are considered in assessing clean energy projects and environmental approvals

Pillar 1: Creating a Dynamic and Resilient Economy

Sustainable development and the energy transition are critical to developing a dynamic and resilient economy. 70% of Australia's renewables investment is from foreign investors and more than 35% of Australia's renewables investment is from 10 specialist global investors. This means Australia must have competitive investment settings to attract foreign capital to meet our energy targets and maintain productivity growth. Domestic investors are typically unwilling or unable to take on the same level of risk as a greenfield investor and therefore cannot fill the gap if foreign capital does not invest.

Australia requires over $160 billion in greenfield investment over the next 25 years to meet its emissions targets and energy needs – at least $110 billion of this will need to come from foreign investors. Some foreign investors have a negative perception of Australia's taxation system and have raised concerns with CIP about exposure to Australia. The high overall rate paid by international renewable investors compared to other jurisdictions is a barrier to deploying capital in Australia.

Investment settings compared to other comparable markets

Australia has several ingredients needed to attract global clean energy investment with an abundance of land and some of the best renewable resources globally. However, some of Australia's investment fundamentals are less competitive such as:

- Comparatively high construction and operations costs
- High regulatory complexity
- Comparatively high taxation
- Long-term projected currency depreciation against important global currencies, including USD and EUR

Global investors need to know Australia is aware of its competitive challenges, and be confident government is taking a comprehensive and strategic review of Australia's competitiveness.

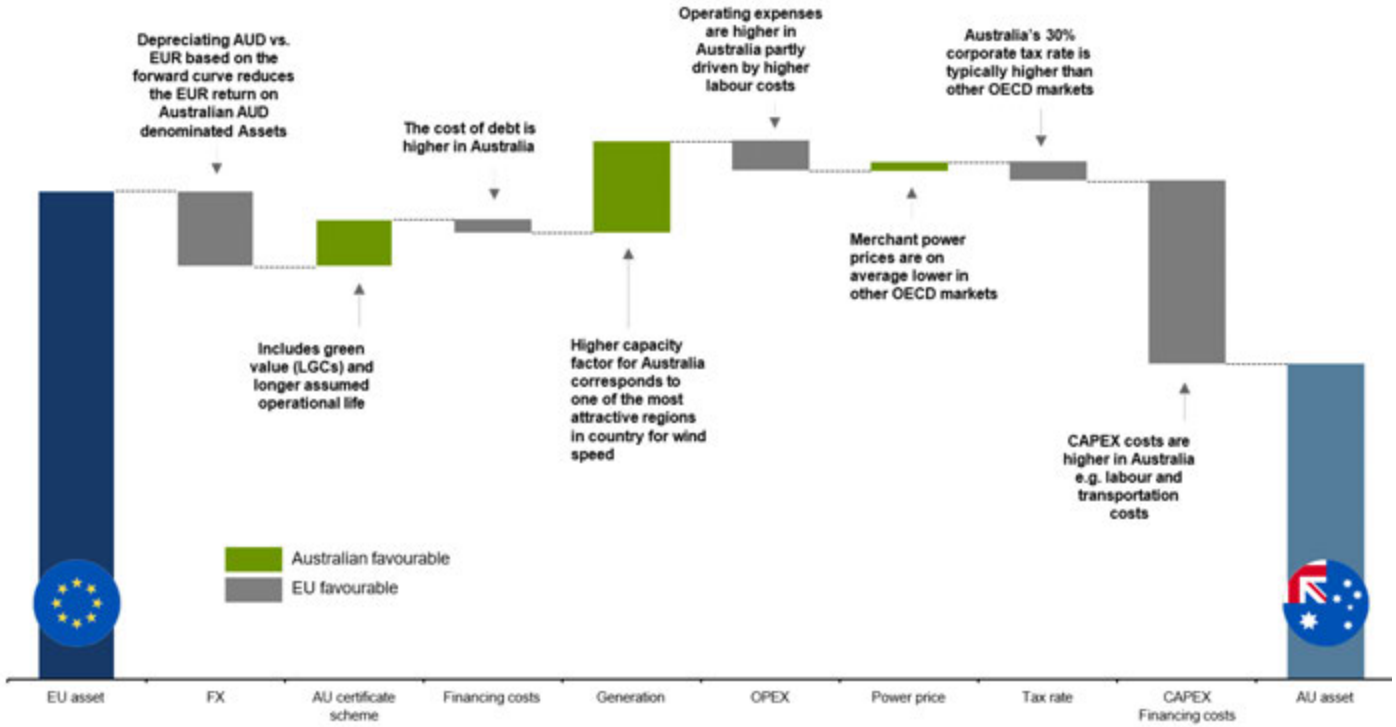

Figure 1: Illustrative breakdown of Australia's competitive advantages and challenges for foreign greenfield investors

Proposed changes to foreign resident CGT regime

A key risk to Australia's productivity growth is the proposed changes to the foreign resident CGT regime. This amendment seeks to expand the application of 30% CGT on foreign residents investing in renewable energy infrastructure. If the changes are implemented as proposed, they would place Australia even further out of line with peer markets such as the USA, UK, Canada, Germany and the Netherlands, where foreign investors do not incur any CGT on the disposal of clean energy assets. Mandala modelling commissioned by CIP suggests that if this reform were implemented, it would result in 6-11% less cumulative new renewable energy investment and capacity by 2050, causing Australia to produce 330-670 Mt CO2 -e more emissions cumulatively by 2050.

CIP acknowledges the collaborative and responsive approach from Treasury and government and is hopeful a solution can be found soon to ensure there are no unintended consequences on investment in critical clean energy infrastructure and a clear message is sent to foreign investors that Australia is open to investment.

Foreign Investment Review Board

We suggest a broader investigation into other measures to de-risk the Australian investment landscape for foreign entities. This may include a reform of the Foreign Investment Review Board (FIRB), including resourcing to accelerate project assessment timelines. It could include the revision of guidelines surrounding land classifications and investor types, which are currently applied by FIRB in inconsistent and discretionary ways across case-by-case assessments. Consistency, clarity and certainty are instrumental to Australia's energy transition.

Pillar 5: Investing in Cheaper, Cleaner Energy and the Net Zero Transformation

Regulatory uncertainty, especially in relation to planning and EPBC approvals processes, is a key restraint for investment in Australian energy projects. Coordinated, timely, and transparent interaction with government agencies is important for investor confidence.

The current investor experience can be one of uncertainty and delays. This is due to issues of convoluted or duplicative interfacing, binary decision-making, and the lack of consideration of a climate merit in assessment processes.

Streamlining of interfacing

Australia's regulatory framework for new renewable energy developments is misaligned between departments and across state and federal governments. This results in duplicative processes, particularly regarding EPBC assessments. This results in assessment bottlenecks and long turnaround times, growing backlogs, and high government assessment staff turnover.

To address this, CIP recommends a single, empowered coordination body or central agency for clean energy projects' planning and environmental approvals. This body would function as a 'one-stop shop' or single point of contact for renewable energy projects, clarifying responsibilities and workflows.

Collaborative and transparent approvals

CIP recommends a more transparent and collaborative approach to approval processes to remove binary risk. We believe proponents would deliver better environmental outcomes if there were more opportunities to work through issues with assessment teams and find sensible solutions. This could be facilitated through Treasury's Front Door policy.

Proponents and government should engage in more frequent and transparent dialogue on how the project is tracking, areas of concern and potential solutions, and how an approvable project could be achieved in the timeliest manner. This would also allow for informed decision-making and more sensible solutions. It would also improve accountability around process and decision timeframes, mitigating unproductive tension and reducing the high levels of binary risk in the Australian market.

Consideration of climate merit

Finally, CIP advocates for the recognition of a project's climate benefits as a relevant consideration in EPBC assessments. Clean energy projects often face significant scrutiny in assessments for immediate biodiversity impacts such as land clearing and potential danger posed by infrastructure to native birds. The environmental merit of clean energy projects to reduce fossil fuel emissions and mitigate the effects of climate change, helping to protect biodiversity in the long-term, is not considered. We believe assessments should consider environmental merit in conjunction with immediate short-term impacts. Clean energy infrastructure is essential to Australia meeting its emissions reduction targets and ensuring sustainable development, and should be prioritised accordingly.

Conclusion

Thank you for the opportunity to provide feedback on the Productivity Commission's inquiry. We believe that carefully managed reforms to investment settings and regulatory streamlining could be instrumental in unlocking productivity growth and investment in Australia.

If you have any questions relating to our submission, please contact me at . We would welcome the opportunity to discuss our submission.

Best regards,

Sophie Fitzpatrick
Vice President Public Affairs
CIP Australia

Attachment A

MANDALA

Supporting greenfield investment to maintain and strengthen Australia's renewables rollout

Final report

DECEMBER 2024

Contents

MANDALA

This document is intended for general informational purposes only. The analysis in this report was commissioned by Copenhagen Infrastructure Service Co. and prepared by Mandala.

Mandala is an economics research and advisory firm. Mandala specialises in combining cutting-edge data and advanced analytical techniques to generate new insights and fresh perspectives on the challenges facing businesses and governments.

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Note: All dollar figures are Australian dollars unless indicated otherwise.

Context of the proposed reforms and this research

The current foreign resident CGT regime is uncertain and narrower than international best practice

- Australia's regime for foreign resident capital gains tax (CGT) is **broadly consistent but narrower than international best practice.**
- The current regime permits foreign residents to disregard a capital gain from a CGT event unless the asset is taxable Australian property, which includes **taxable Australian real property**.
- **Real property is not defined in tax legislation, creating uncertainty** as the legal meaning of 'real property' is derived from common law, and state and territory property legislation.

The Government's proposed reforms would broaden the foreign CGT regime to include renewable energy infrastructure

- **In response to these issues, the Government announced reforms to strengthen the foreign resident CGT regime.** A key aim of the reform is to provide greater certainty to foreign investors by better aligning Australia's tax legislation with international best practice, while maintaining consistent tax treatment of assets across Australia.
- Treasury's consultation paper on the reforms outlines a proposal to clarify the types of assets to which would be included in the CGT base for foreign assets.
- **This proposal expands the application of foreign resident CGT to include renewable energy infrastructure.**

This research quantifies the impact of the proposed CGT reforms on renewable energy infrastructure and the broader economy

This research studies:

- **The proportion of renewable energy infrastructure investment** that is likely to be captured by the proposed change
- The impact of the proposed CGT reforms on:
  - Future **renewable energy infrastructure investment** and **capacity**,
  - Future **renewable energy generation** and **emissions**, and
  - Future **economic activity (GDP), jobs** and **electricity prices**

Source: Treasury (2024) *Strengthening the foreign resident capital gains tax regime.*

Summary of impacts of the proposed CGT reforms on renewable energy infrastructure and the broader economy

1. Australia's renewables rollout will require at least $110B NPV in cumulative foreign greenfield investment by 2050 to achieve its targets
2. Proposed changes to CGT settings risk foreign investment and may result in 6-11% less cumulative new renewable energy investment and capacity by 2050
3. Under the proposal, Australia will miss its targets and produce 330-670 Mt CO_2-e more emissions cumulatively by 2050
4. These changes will reduce economic activity, cost jobs across the economy and increase electricity prices

~70%
of renewables investment is from foreign investors

>35%
of renewables investment is from ten specialist global investors

Cumulative impact of the CGT changes by 2050

$8-17B
NPV cumulative loss of renewables investment

5-10 ppt
lower renewable energy penetration in the NEM

$40-80B
NPV cumulative loss of GDP

8-16GW
cumulative loss of new renewable energy capacity

330-670Mt
CO_2-e cumulative additional emissions

2-4%
cumulative increase in electricity prices over the long-run

Source: Mandala analysis.

1 **Australia's renewables rollout will require at least $110B NPV in cumulative foreign greenfield investment by 2050 to achieve its targets**

2 Proposed changes to CGT settings risk foreign investment and may result in 6-11% less cumulative new renewable energy investment and capacity by 2050

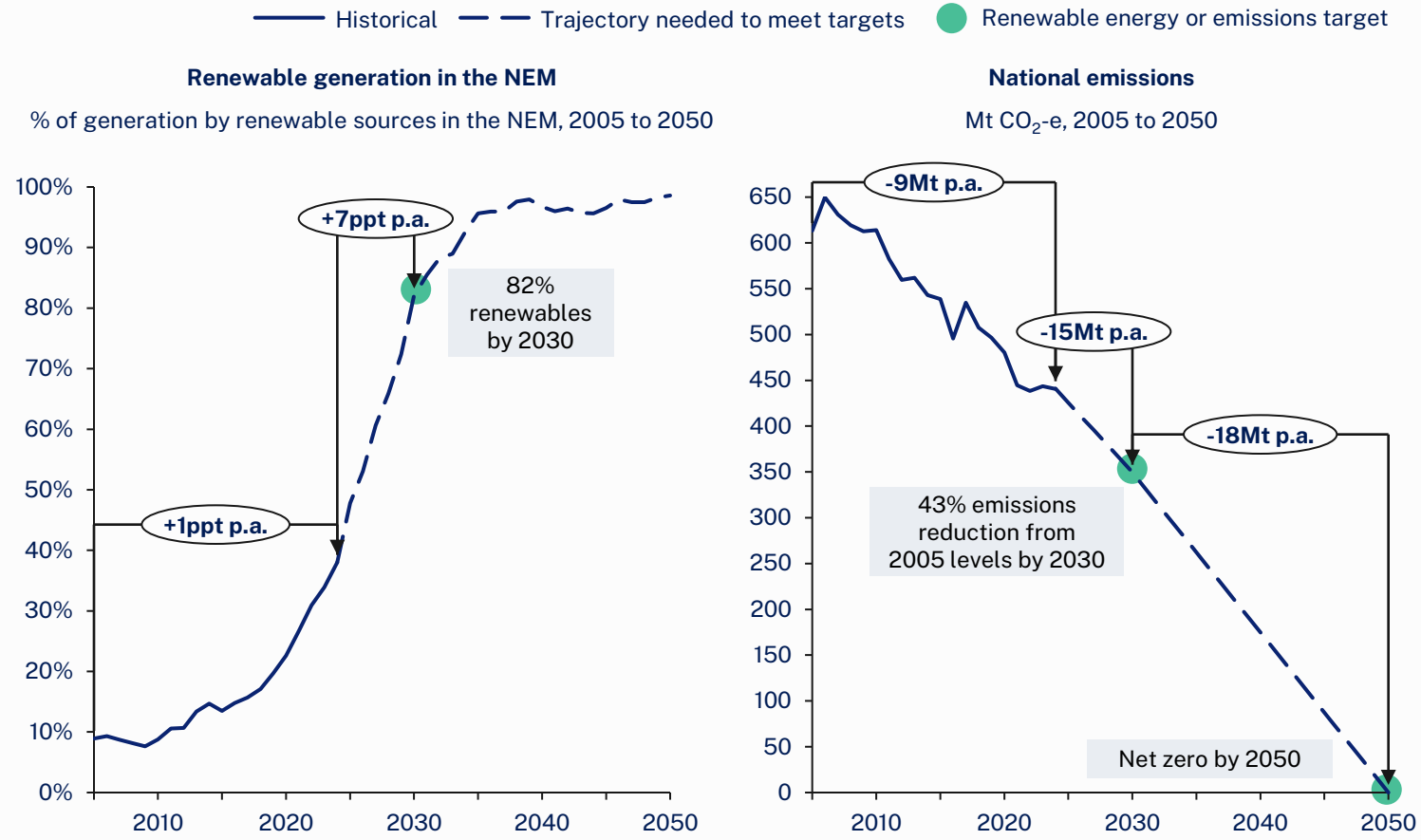
3 Under the proposal, Australia will miss its targets and produce 330-670 Mt CO_2-e more emissions cumulatively by 2050

4 The proposed changes will reduce economic activity, cost jobs across the economy and increase electricity prices

5 Appendix and methodology

Australia will need significant investment to accelerate its renewable buildout to achieve emissions and renewables targets

Trajectories required to achieve renewable energy and emissions targets



Key points

- **To achieve its emissions targets, Australia will need to accelerate its emissions reduction** from 9Mt CO_2-e p.a. (from 2005 to 2024) to:
  - 15Mt CO_2-e p.a. from 2024 to 2030, and
  - 18Mt CO_2-e p.a. from 2030 to 2050.
- **To achieve its 2030 renewable energy target, Australia will need to accelerate the increase its renewable energy generation** from 1 ppt p.a. from 2005 to 2024, to 7 ppt p.a. from 2024 to 2030.

Note: Australia's emissions reduction between 2024 and 2030 would need to be greater than that forecast by the DCCEEW baseline, which has Australia miss the 2030 target by 3Mt CO_2-e.
Source: DCCEEW (2024) *Australia's emissions projections 2024*; AEMO (2024) *2024 Integrated System Plan*; Mandala analysis.

Greenfield investment is critical to driving the pipeline of new renewable energy infrastructure by derisking earlier-stage projects

Derisking of a renewable energy project over project life-cycle

Key project derisking milestone

Greenfield vs brownfield investment

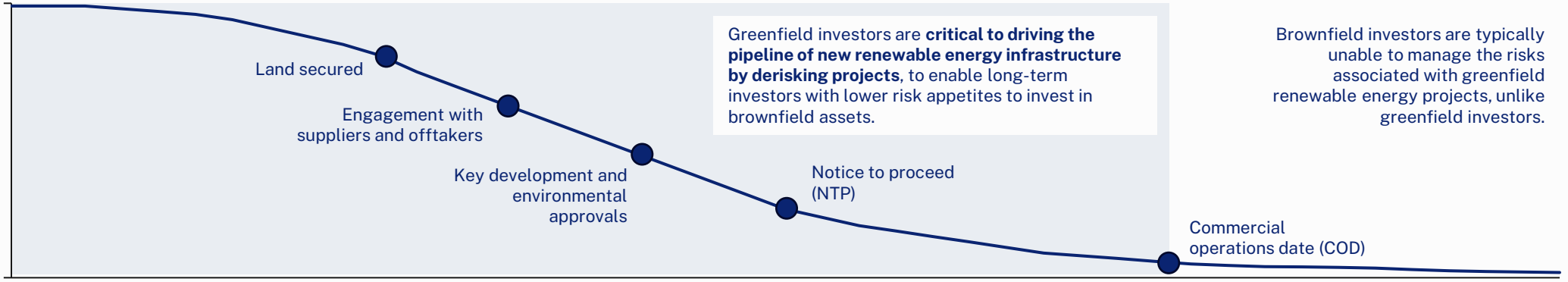
Greenfield investment
Construction of new infrastructure on undeveloped land

Brownfield investment
Investment in existing infrastructure assets

Project phase

Early-stage development | Mid- and late-stage development | Construction | Operation

Indicative project risk



Greenfield investors are **critical to driving the pipeline of new renewable energy infrastructure by derisking projects**, to enable long-term investors with lower risk appetites to invest in brownfield assets.

Brownfield investors are typically unable to manage the risks associated with greenfield renewable energy projects, unlike greenfield investors.

Impact of CGT change on attractiveness to investors

Potentially high

- High impact for greenfield investors that seek the option of divestment after NTP/COD (e.g., investment funds, utilities)
- Lower impact for investors that sell once land has been secured

Low

Brownfield investors typically seek a steady cash yield and are not typically seeking to divest (e.g., super funds).

Availability of capital

Constrained, especially for larger or riskier projects

Few capable sponsors with (i) the expertise to manage complex development workstreams, (ii) the capital to fund large development projects, and (iii) the risk appetite to drive greenfield investment projects.

High

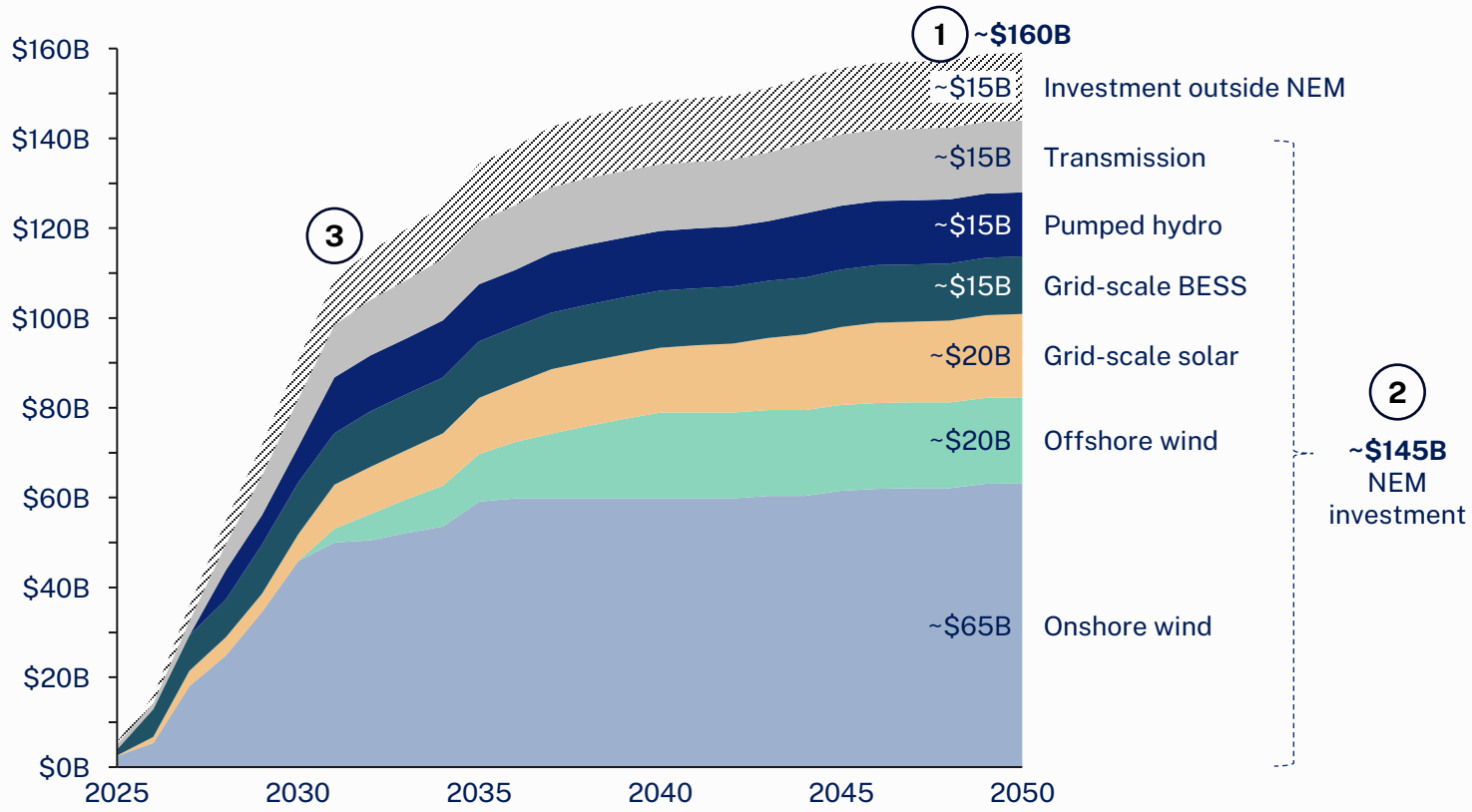
Commoditised, liquid and competitive market with abundant capital.

Source: Expert interviews; Mandala analysis.

Australia will require over $160B NPV in greenfield investment over the next 25 years to meet its emissions targets and energy needs

NPV of investment required to achieve net zero by 2050, across selected technologies

$ billions (2024 dollars), Cumulative NPV, 2025 to 2050, under AEMO's Optimal Development Path (Step Change)



Key points

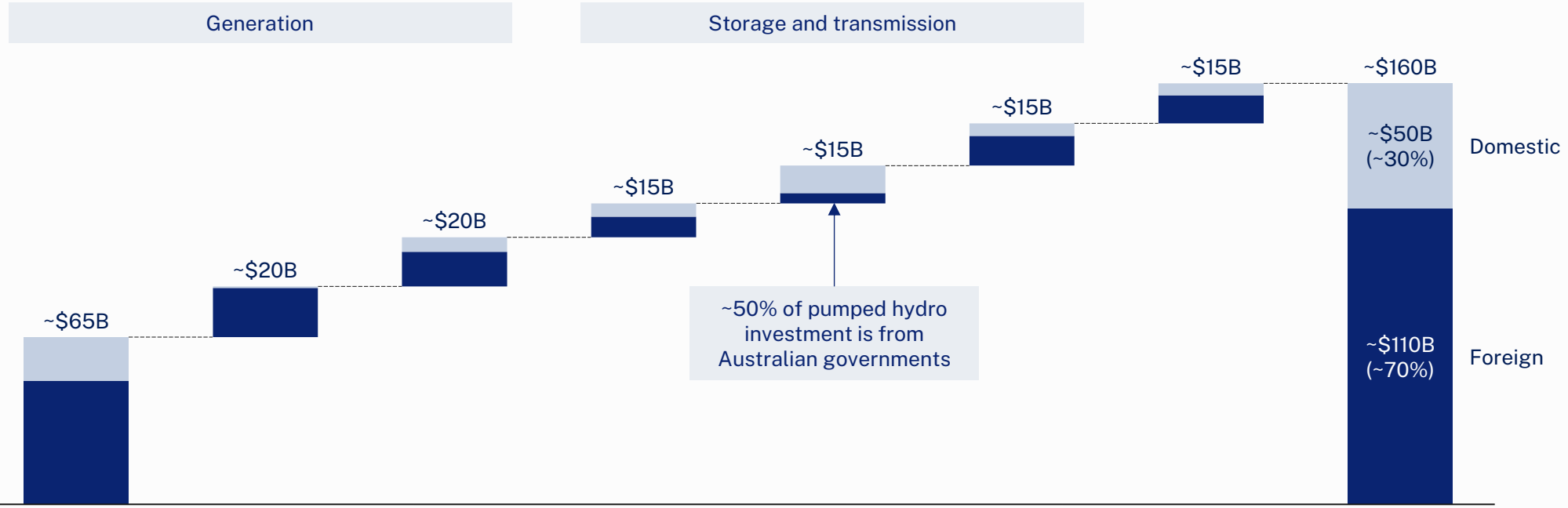
1. **$160B is a lower bound for the investment required to meet its targets. To achieve this Australia needs to more than double its average annual renewable investment over the next decade.** Modelling is based on AEMO's Optimal Development Path, the the lowest-cost pathway to meet national electricity needs, and to achieve emissions targets. This leads to conservative estimates – CIP's Star of the South offshore wind project alone is estimated to require over $15B in CAPEX.
2. **~$145B of investment in the NEM aligns with AEMO estimates.** AEMO's ISP has estimated $142B of investment is needed in NEM generation, storage, firming and transmission infrastructure to 2050 to meet consumer energy needs and meet government targets.
3. **~$110B of investment by 2031 aligns with CEFC estimates.** If 2024 investment is included, total investment needed from 2024 to 2031 would be ~$120B, aligning with CEFC estimates in its 2022-23 Annual Report.

Note: Figures may not sum due to rounding. In line with AEMO, estimates exclude the cost of commissioned, committed or anticipated projects, consumer energy resources or distribution network upgrades.
Source: AEMO (2024) *2024 Integrated System Plan*; CEFC (2023) *Annual Report 2022-23*; ABS (2022) *Value of Renewable Energy Construction;* Mandala analysis.

Australia will need at least $110B NPV of foreign greenfield investment (~70% of total investment) by 2050 for its renewable energy infrastructure needs

NPV of investment required from 2025 to 2050 to meet targets by technology, foreign vs domestic

$ billions, Cumulative NPV, 2025 to 2050

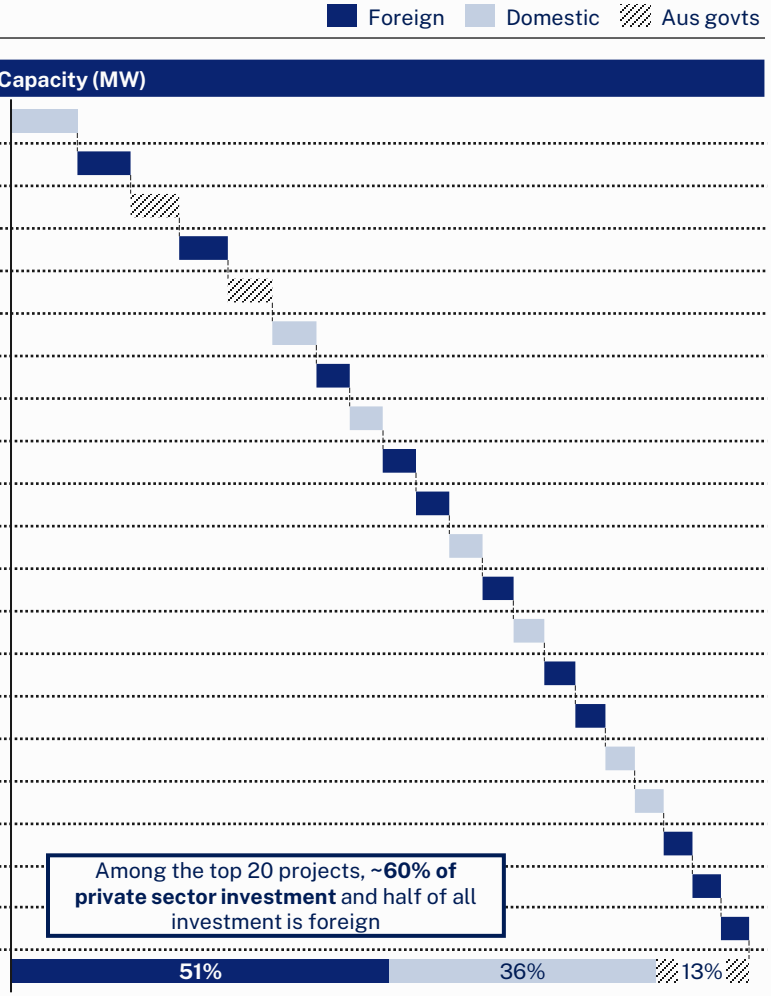


Note: We apply the proportion of foreign investment by technology for existing projects to the total investment required from 2025 to 2050 to meet targets. To estimate the proportion of foreign investment, we have excluded projects that are not in the NEM and projects that have not submitted a DA application to remove more speculative projects.
Source: AEMO (2024) *2024 Integrated System Plan*; RenewMap; expert interviews; Mandala analysis.

Over half of the capital for the 20 largest projects is foreign, with more foreign capital needed as these projects progress to construction

20 largest announced projects

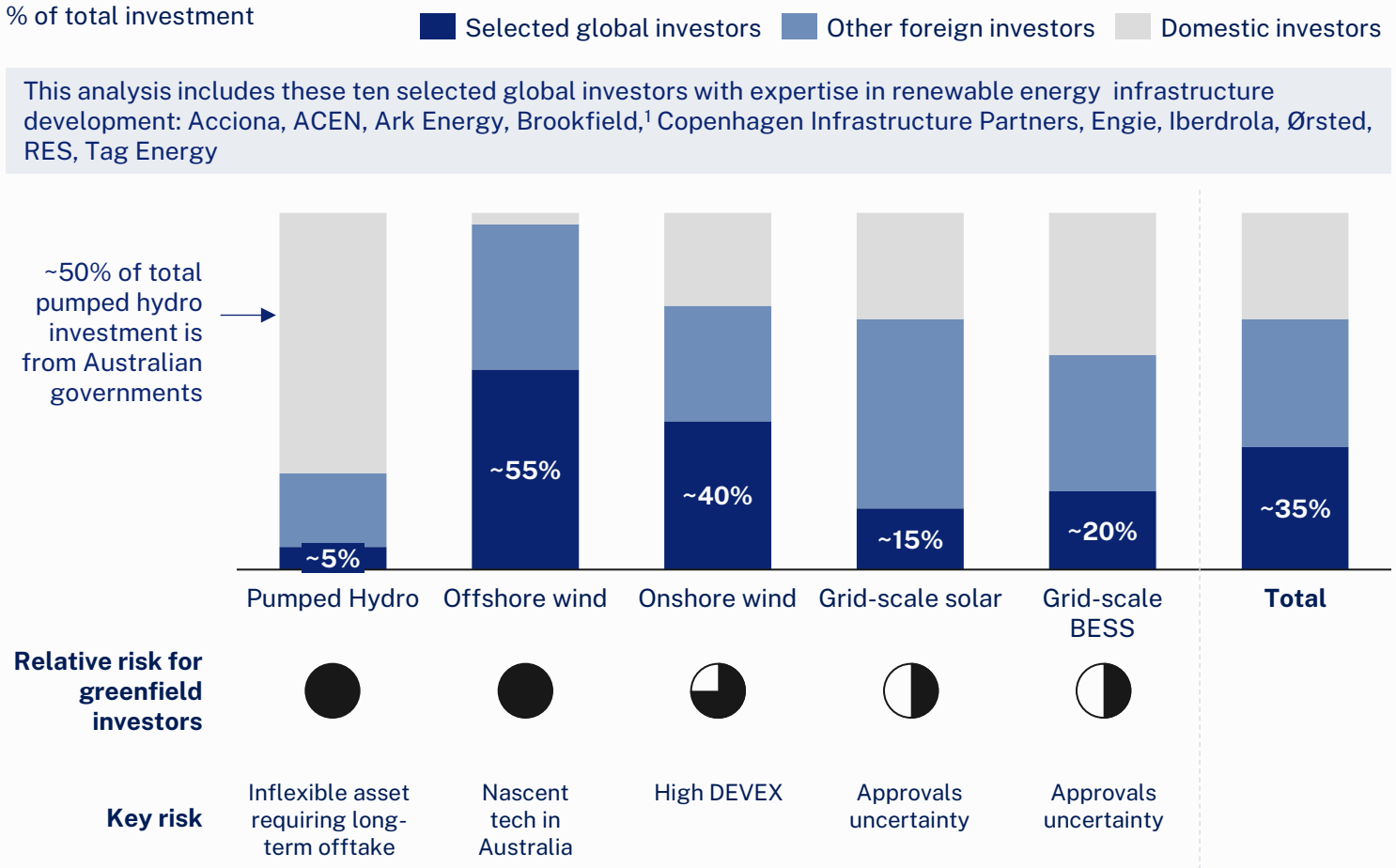
#	Project	Developers	Technology	Project phase
1	Whaleback Ridge Wind Farm	West Coast Renewables	Onshore Wind	Development phase, DA assessment
2	Denman BESS (Metlan)	Metlan (Mytilineos)	BESS	Development phase, DA assessment
3	Snowy 2.0	Snowy Hydro	Pumped Hydro	Construction phase
4	Star of the South	Copenhagen Infrastructure Partners, Cbus	Offshore Wind	Development phase, DA assessment
5	Borumba Pumped Hydro	Queensland Hydro	Pumped Hydro	Development phase, DA assessment
6	Mt Rawdon Pumped Hydro Project	Evolution Mining, ICA Partners	Pumped Hydro	Development phase, DA assessment
7	Yanco Delta Wind Farm	Virya Energy, Origin Energy	Onshore Wind	Development phase, DA approved
8	Gol Gol Battery	Squadron Energy	BESS	Development phase, DA assessment
9	Lake Victoria Wind Farm	WestWind Energy	Onshore Wind	Development phase, DA assessment
10	Warracknabeal Energy Park	WestWind Energy	Onshore Wind	Development phase, DA assessment
11	Pottinger Energy Park (Wind)	AGL, Someva Renewables	Onshore Wind	Development phase, DA assessment
12	Deeargee Solar Farm (BESS)	ACEN	BESS	Development phase, DA assessment
13	Wongalee Wind Farm	Windlab, Fortescue	Onshore Wind	Development phase, DA assessment
14	Baldon Wind Farm	Goldwind Australia, Omni Wind	Onshore Wind	Development phase, DA assessment
15	The Plains Wind Farm	ENGIE	Onshore Wind	Development phase, DA assessment
16	Liverpool Range Wind Farm	Epuron, Tilt Renewables	Onshore Wind	Development phase, DA approved
17	Stanwell BESS (Stage 2)	Stanwell Corporation	BESS	Development phase, DA approved
18	Cannie Wind Farm	RES	Onshore Wind	Development phase, DA assessment
19	Upper Calliope Solar Farm	European Energy	Solar PV	Development phase, DA assessment
20	North East Wind Farm	ACEN	Onshore Wind	Development phase, DA assessment
				Total for the 20 largest projects



Note: To estimate the proportion of foreign investment, we have excluded projects that are not in the NEM system to remove more speculative projects with very large announced capacities.
Source: RenewMap; expert interviews; Mandala analysis.

Ten global investors with expertise in renewables development make up at least 35% of all renewable energy infrastructure investment in Australia

Source of capital for selected technologies



Key points

- **Ten global investors make up at least 35% of all renewable energy investment in Australia.** This analysis uses a bottom-up approach to identify projects developed by these ten investors, so the estimates are conservative.
- **Projects that require more risk tend to require either more investment from the ten selected global investors, or direct government investment.** Projects like offshore wind and pumped hydro carry greater risk for greenfield investors. They require larger DEVEX (development expenditure) and incur greater uncertainty around feasibility and approvals.
- Projects that carry higher relative risk for greenfield investors often require the extensive expertise and risk appetite of a select group of global renewable energy infrastructure investors. There is typically a lack of domestic investors willing or able to take this level of risk. However, more investors may be willing to finance greenfield projects as the Australian market matures over time.

1 Includes X-ELIO and Neoen assets acquired by Brookfield. Excludes Victorian Neoen assets acquired by HMC Capital.
Source: AEMO (2024) *2024 Integrated System Plan*; RenewMap; expert interviews; Mandala analysis.

Australia's investment conditions are already disadvantageous relative to other jurisdictions, who are also vying for greenfield renewable investment

Key renewable energy infrastructure policy settings of peer countries

Stronger investment settings — Weaker investment settings

	Increase in RE capacity share, 2000 to 2023	Total RE investment 2023 (USD)	Average time for approvals	Govt RE investment in 2024 (USD)	Corporate tax rate	Examples of policy interventions
Germany	+53 ppts (10% to 63%)	$95.4B	~ 2 years	$11.5B	30%	To accelerate approval times, the German government **removed duplicative processes** in transmission planning and **consolidated multiple environmental assessments** into a single assessment
UK	+48 ppts (4% to 52%)	$73.9B	~ 2 years	$10.3B	25%	To reduce risk for project developers, the UK government established a **Contracts for Difference (CfD) scheme** to protect developers from wholesale price volatility and provide greater certainty of returns.
Australia	+35 ppts (16% to 52%)	$3.2B	~4.5 years	$2.9B	30%	The Australian Government's **Capacity Investment Scheme** finances and underwrites RE projects. The Government's **Front Door** (under development) proposal aims to provide a single regulatory point of contact for investors for simplify and speed.

Countries that have had the fastest renewable buildouts have a harmonious suite of policy settings improve the attractiveness of renewable infrastructure investment.

Note: RE refers to renewable energy.
Source: BloombergNEF (2024) *Energy Transition Investment Trends;* Clean Energy Council (2024) *Clean Energy Australia 2024 Report*; Tax Foundation (2024) *Corporate Income Tax Rates in Europe, 2024;* Australian Tax Office (2024) *Changes to company tax rates*; 10 Clean Energy Wire (2024) *Germany needs double the public money planned for renewables support in 2024- report*; The Guardian (2024) *Will Great British Energy herald UK's green revolution?*; EnergyAction (2024) *Renewable Energy Investment Australia 2024-25: New Era;* Bologna Institute for Policy Research (2024) *Germany will not meet its 2030 renewable energy build-out* targets; Renewables Now (2024) *Approvals for Scottish clean energy projects to be streamlined*; ABC news (2024) *Only three wind farms were connected to the power grid last year. Here's what's holding up Australia's clean energy transition*; Martin and Rathi (2024) *The secret behind Germany's record renewables buildout*; UK Government (2024) *Contracts for difference;* DCCEEW (2024) *Capacity Investment Scheme*; Treasury (2024) *Future Made in Australia*; IRENA (2024) *Renewable energy statistics 2024*; Mandala analysis.

1 Australia's renewables rollout will require at least $110B NPV in cumulative foreign greenfield investment by 2050 to achieve its targets

2 **Proposed changes to CGT settings risk foreign investment and may result in 6-11% less cumulative new renewable energy investment and capacity by 2050**

3 Under the proposal, Australia will miss its targets and produce 330-670 Mt CO_2-e more emissions cumulatively by 2050

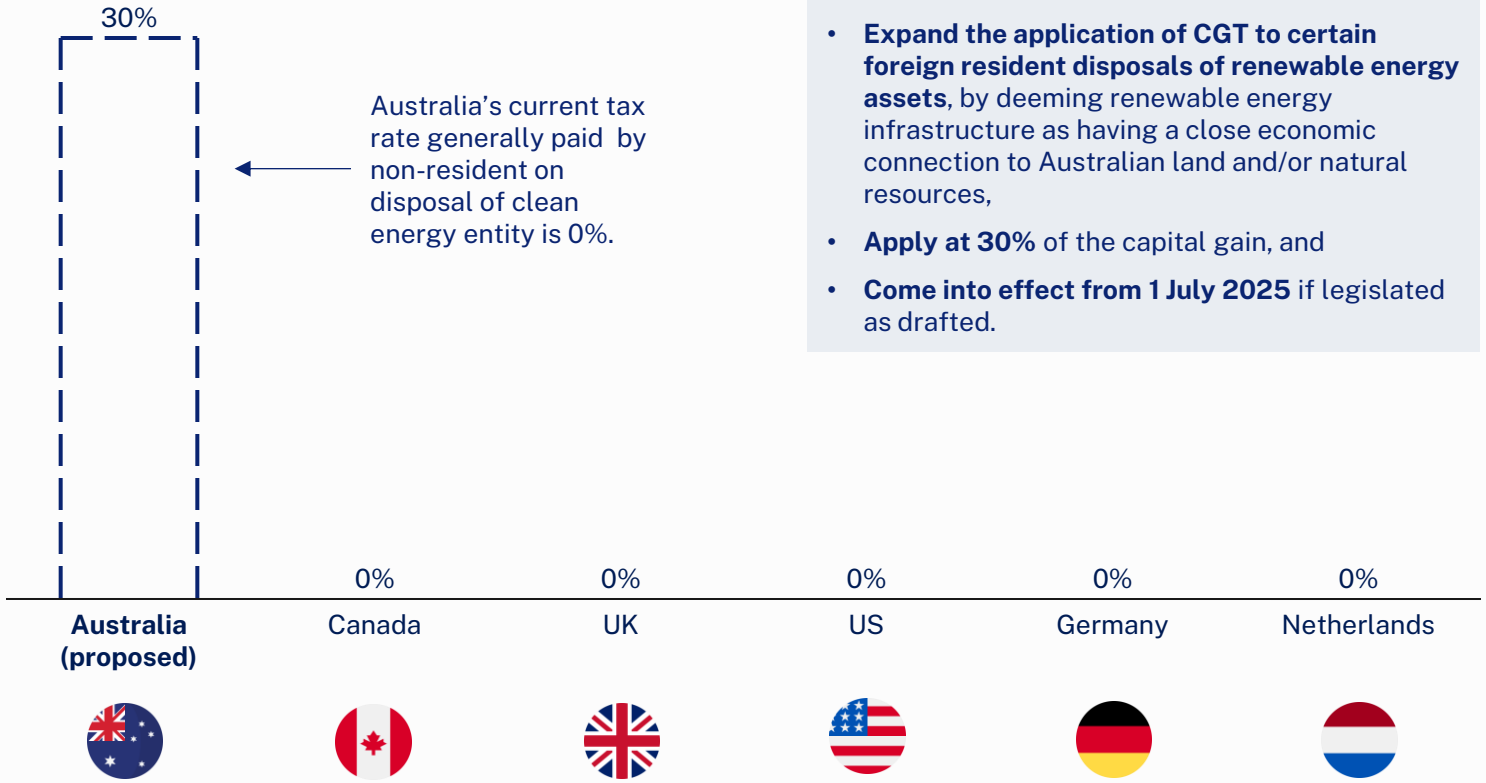
4 The proposed changes will reduce economic activity, cost jobs across the economy and increase electricity prices

5 Appendix and methodology

Treasury's proposal would see CGT applied to foreign investors on land-rich renewable infrastructure investments, further reducing Australia's attractiveness

Tax rate generally paid by non-residents on disposal of clean energy entity in peer countries

% of capital gain



Treasury's proposals:

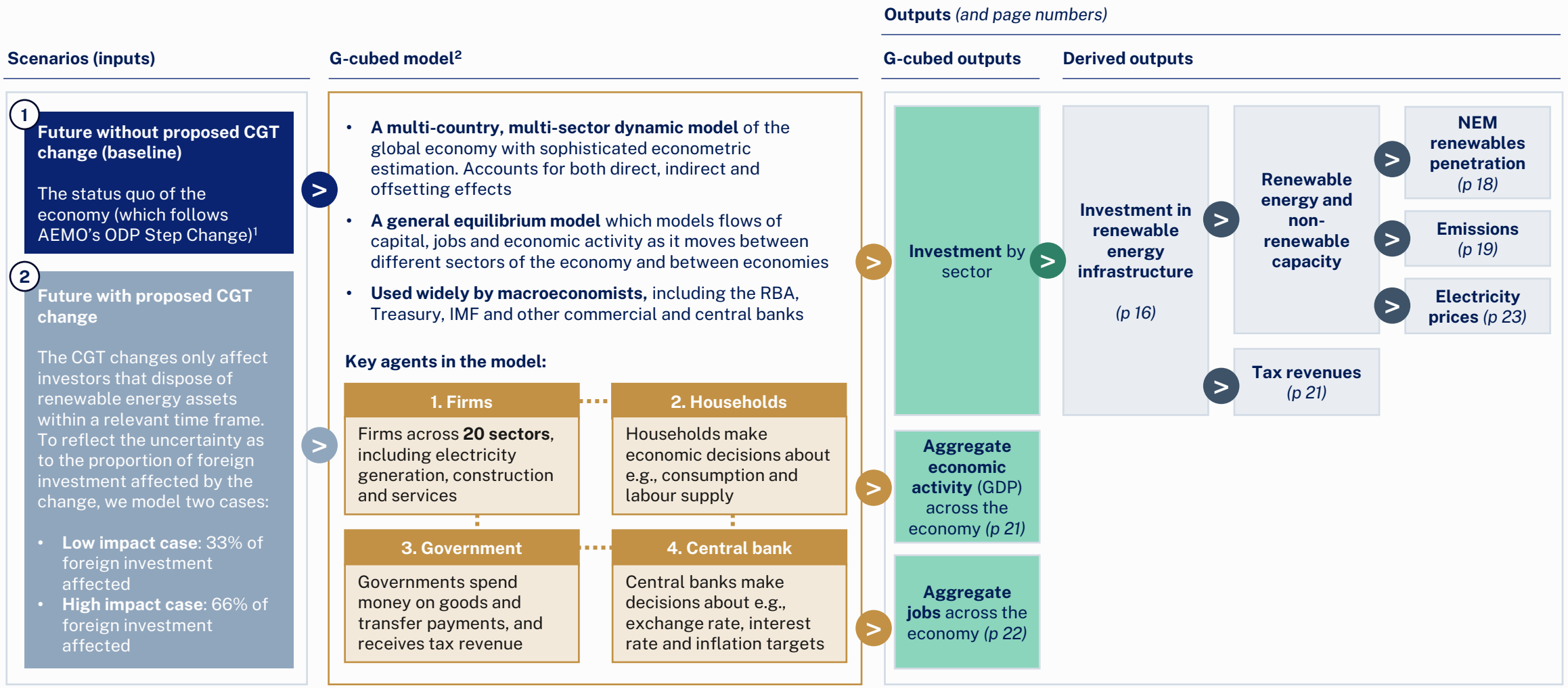
- **Expand the application of CGT to certain foreign resident disposals of renewable energy assets**, by deeming renewable energy infrastructure as having a close economic connection to Australian land and/or natural resources,
- **Apply at 30%** of the capital gain, and
- **Come into effect from 1 July 2025** if legislated as drafted.

Key points

- **The proposed changes would place Australia out of line with peer markets and reduce Australia's attractiveness to investors.** A 30% CGT on foreign investors in Australia would depart from the policy of peer countries where foreign investors do not incur CGT.
- **The proposed change would compound Australia's unfavourability as a market for international investment, which is already expected to face macroeconomic headwinds.** Forecast Australian Dollar depreciation is expected to raise investment costs for global investors. The Australian Dollar is expected to depreciate ~10% against the US Dollar and ~35% against the Euro over the next 25 years.

Note: Analysis excludes the impact of relevant treaties or exemptions that could apply to certain foreign investors.
Source: Treasury (2024) *Strengthening the foreign resident capital gains tax regime*; Bloomberg; expert interviews; Mandala analysis.

To estimate the impact of the proposed changes on economic outputs, we analyse two scenarios using the G-cubed general equilibrium model



1 AEMO's optimal development path (ODP) Step Change assumes that Australia meets its renewable generation and emissions targets. 2 See McKibbin and Triggs (2018) *Modelling the G20*.
Source: Mandala analysis.

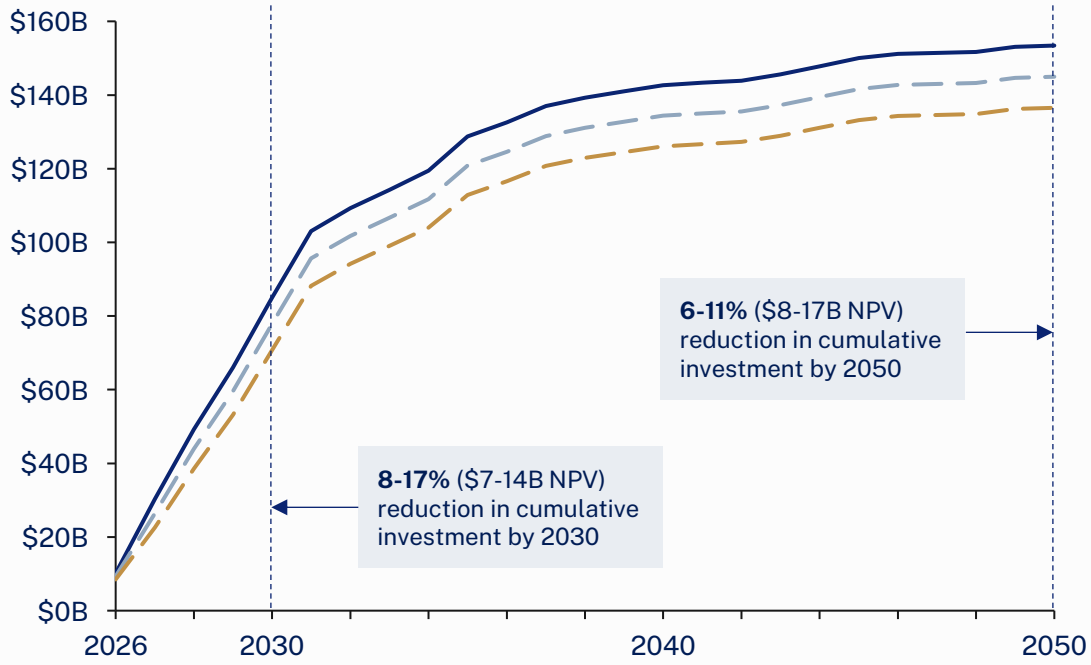
By 2050, the CGT changes will result in a 6-11% (up to $17B NPV) reduction in total investment and a 6-11% (up to 16GW) reduction in renewable capacity

Cumulative investment in renewables and cumulative new renewable capacity

Without proposed CGT change — With CGT change (low impact case) — With CGT change (high impact case)

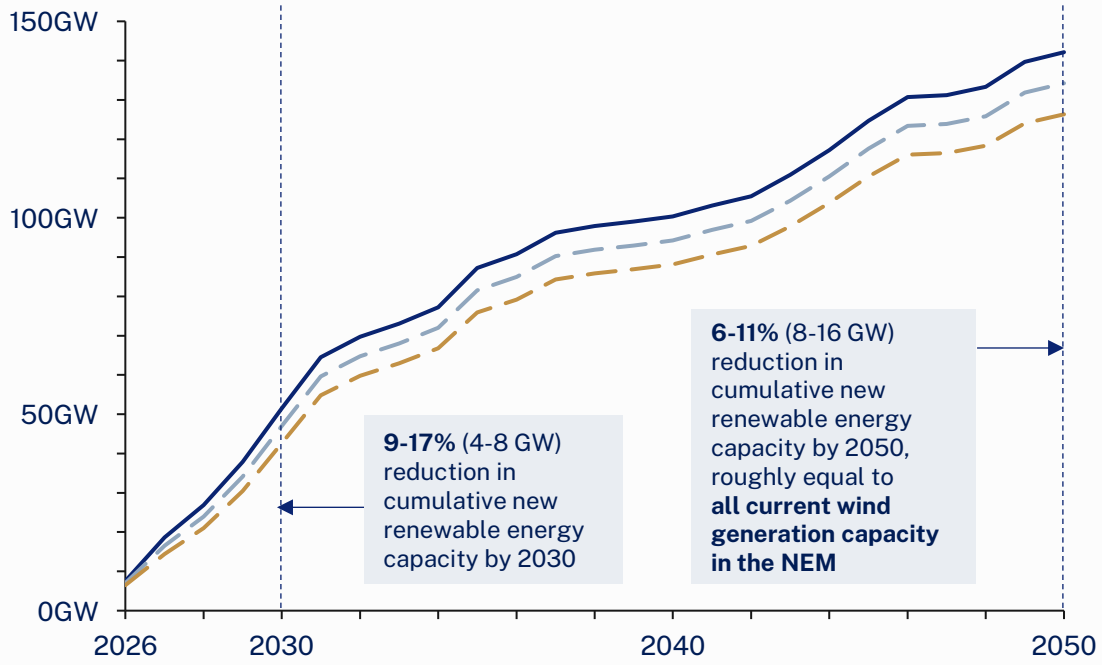
Cumulative investment in renewables

$, NPV, 2026 to 2050



Cumulative new renewable capacity

GW, NPV, 2026 to 2050



Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Source: AEMO (2024) *2024 Integrated System Plan*; RenewMap; expert interviews; Mandala analysis.

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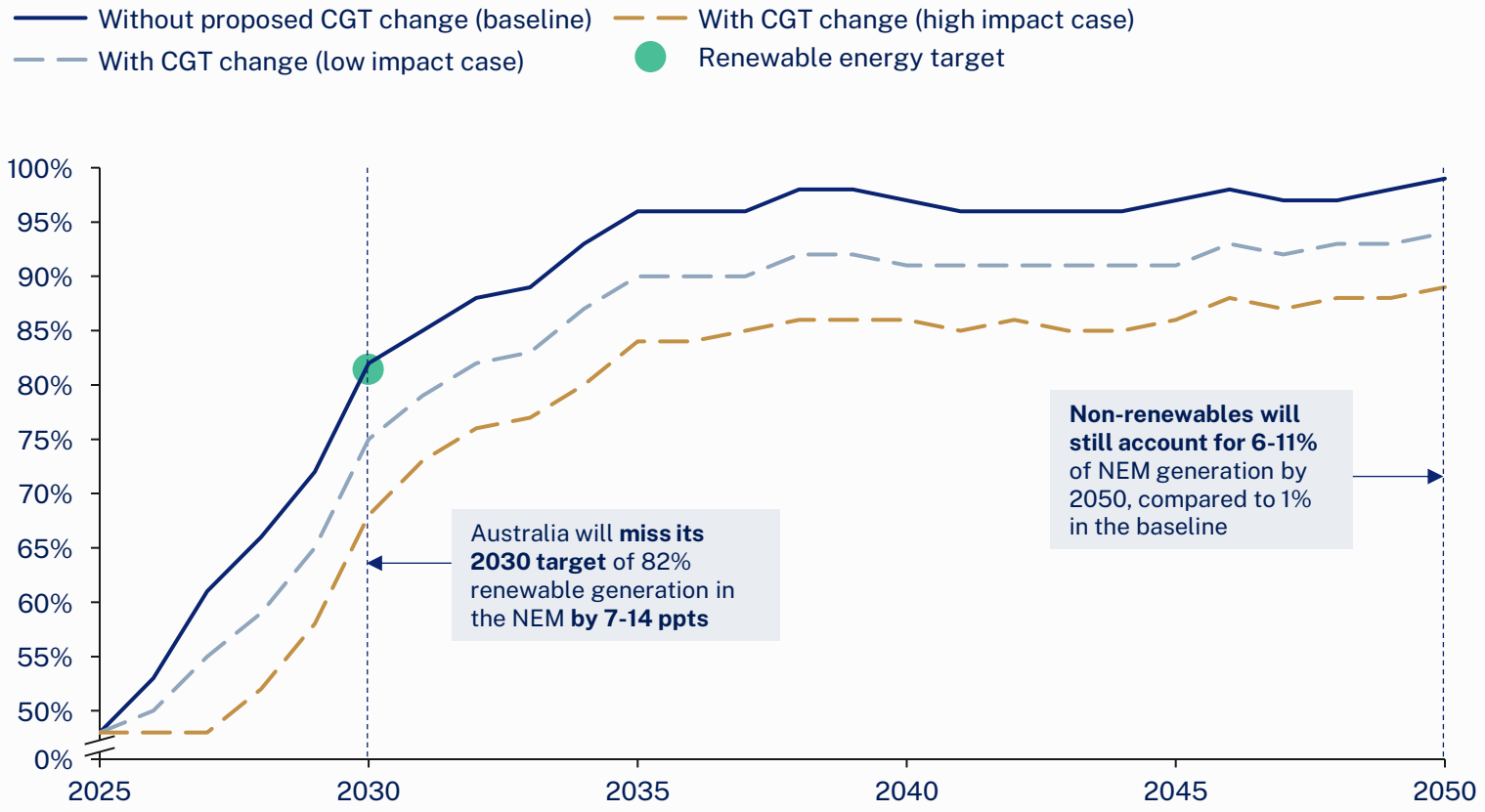
5. Appendix and methodology

The proposed CGT changes will lead to Australia missing its 2030 target for renewables in the NEM by 7-14 ppts

Renewable generation in the NEM

% of generation by renewable sources in the NEM, 2025 to 2050



Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Source: Mandala analysis.

Key points

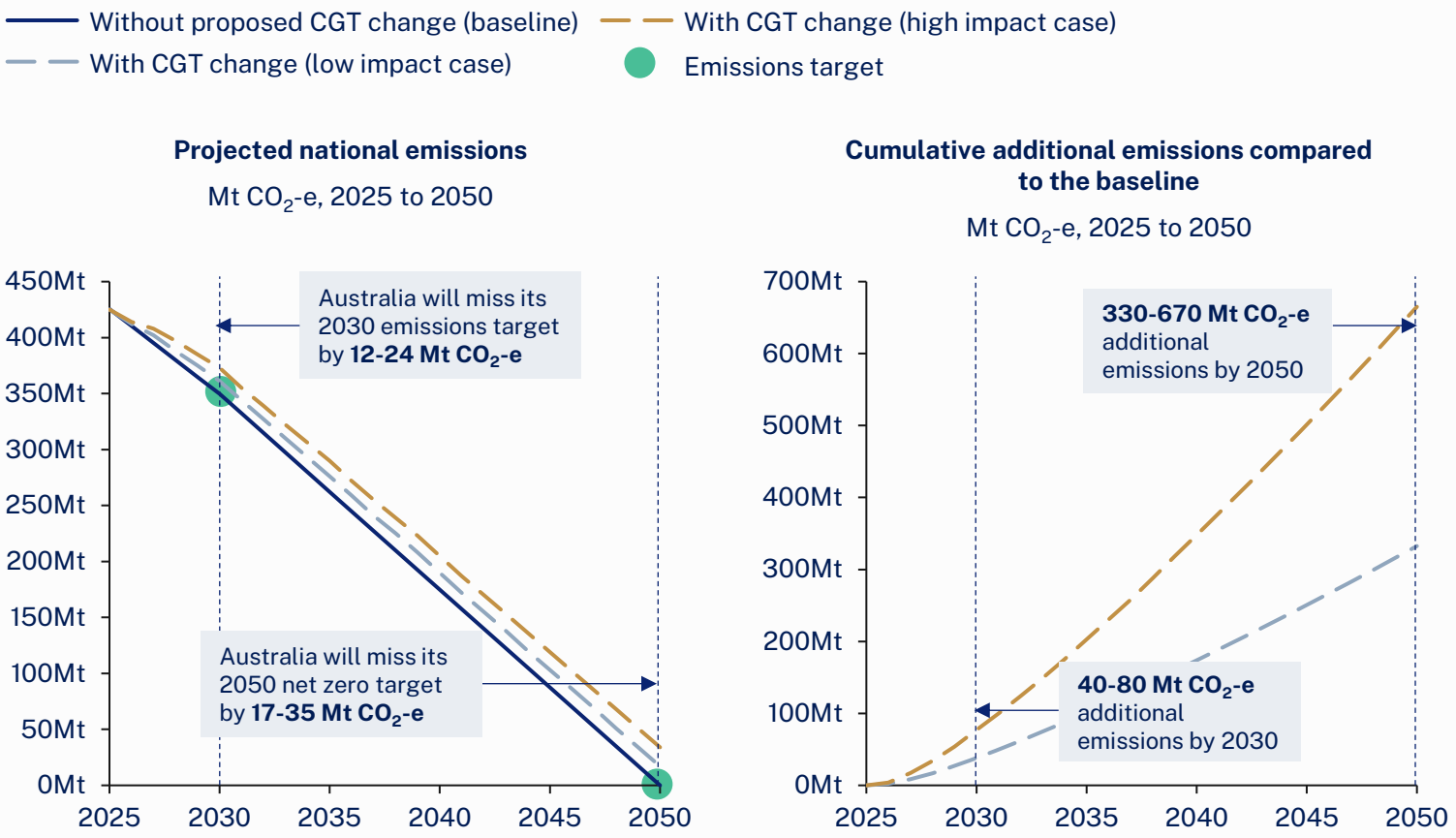
- **The proposed changes will lead Australia to miss its 2030 RE target by 7-14 ppts**, or 13-26 TWh of renewable generation. This is roughly equal to all grid-scale solar generation present in the NEM last financial year. Australia would reach its 2030 target 2-5 years later with the CGT changes.
- **Renewables in the NEM will remain 5-10 ppts lower by 2050**, or 19-38 TWh of renewable generation.

Methodological notes

- The baseline is AEMO's ODP (Step Change) from its 2024 ISP. It assumes that Australia meets its renewables and emissions targets.
- A lower level of investment in renewables is caused by a withdrawal of foreign investment which attracts lower post-tax returns due to the CGT change.
- Analysis assumes that every 1 GW of 'missing' renewable capacity (compared to the baseline) is replaced by 1GW of non-renewable capacity (coal and gas).

The proposed changes will lead to Australia missing its emissions targets and generate an additional 330-670 Mt CO_2-e of emissions by 2050

Projected national emissions and cumulative additional emissions compared to the baseline



Key points

- **Australia will miss its 2050 emissions target by more than the FY23 emissions of Australia's largest coal plant** (Eraring).
- **The annual increase in emissions above the baseline may appear small, but the cumulative impact is substantial.** The electricity sector will emit an additional 330-670 Mt CO_2-e by 2050, roughly equivalent to national emissions in 2024, or 3-6 times all NEM emissions in 2024.

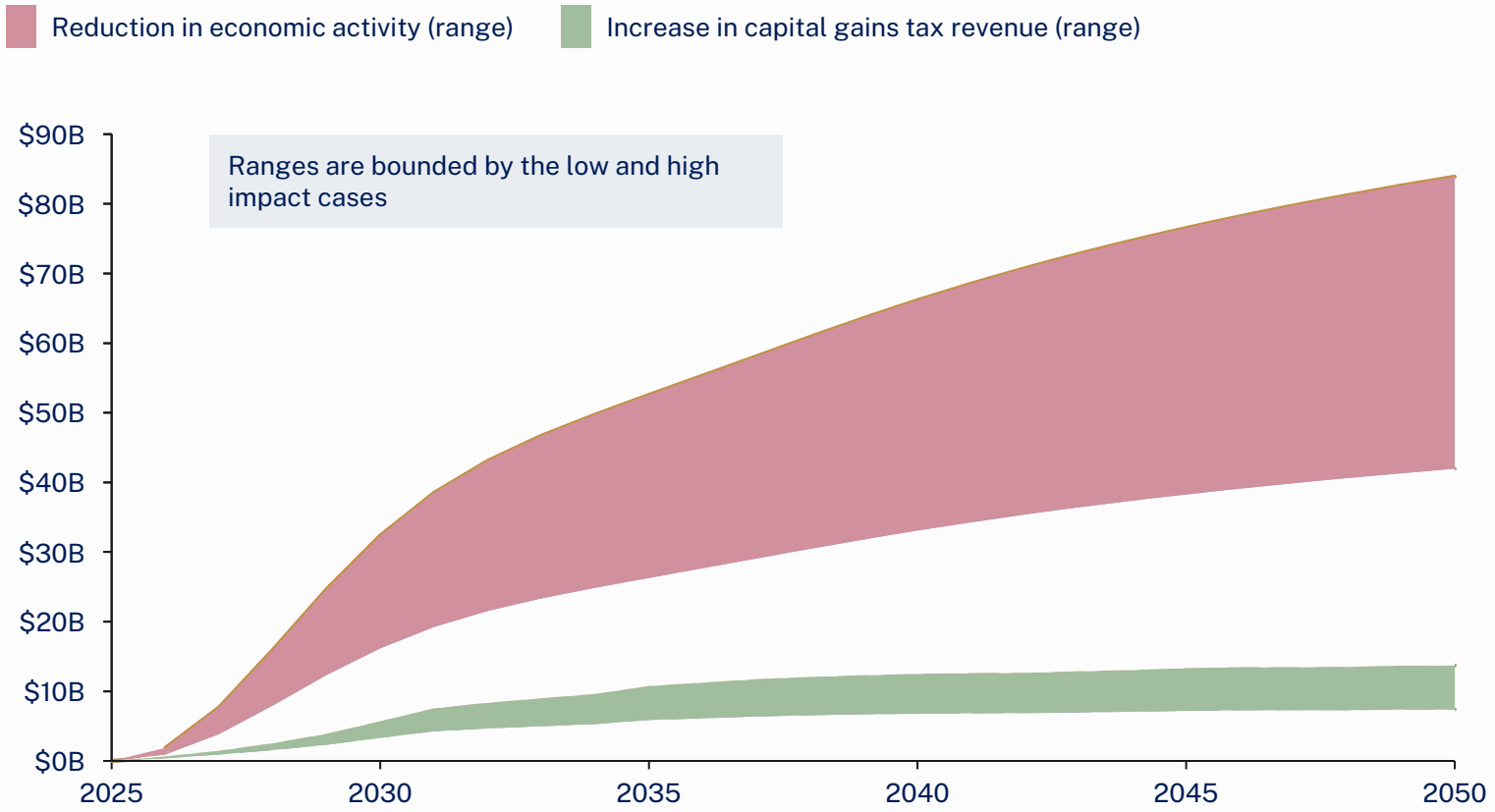
Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Sources: Wakatama (2024) *NSW energy minister rules out government takeover of Origin Energy's Eraring power plant*; AEMO (2024) *2024 Integrated System Plan*; Mandala analysis.

1. Australia's renewables rollout will require at least $110B NPV in cumulative foreign greenfield investment by 2050 to achieve its targets
2. Proposed changes to CGT settings risk foreign investment and may result in 6-11% less cumulative new renewable energy investment and capacity by 2050
3. Under the proposal, Australia will miss its targets and produce 330-670 Mt CO_2-e more emissions cumulatively by 2050
4. **The proposed changes will reduce economic activity, cost jobs across the economy and increase electricity prices**
5. Appendix and methodology

The proposed changes will only raise $7-14B NPV in additional capital gains tax revenue by 2050, significantly less than the $40-80B NPV cost to the economy

Cumulative additional capital gains tax revenue from the proposed changes

$, NPV, 2025 to 2050



Key points

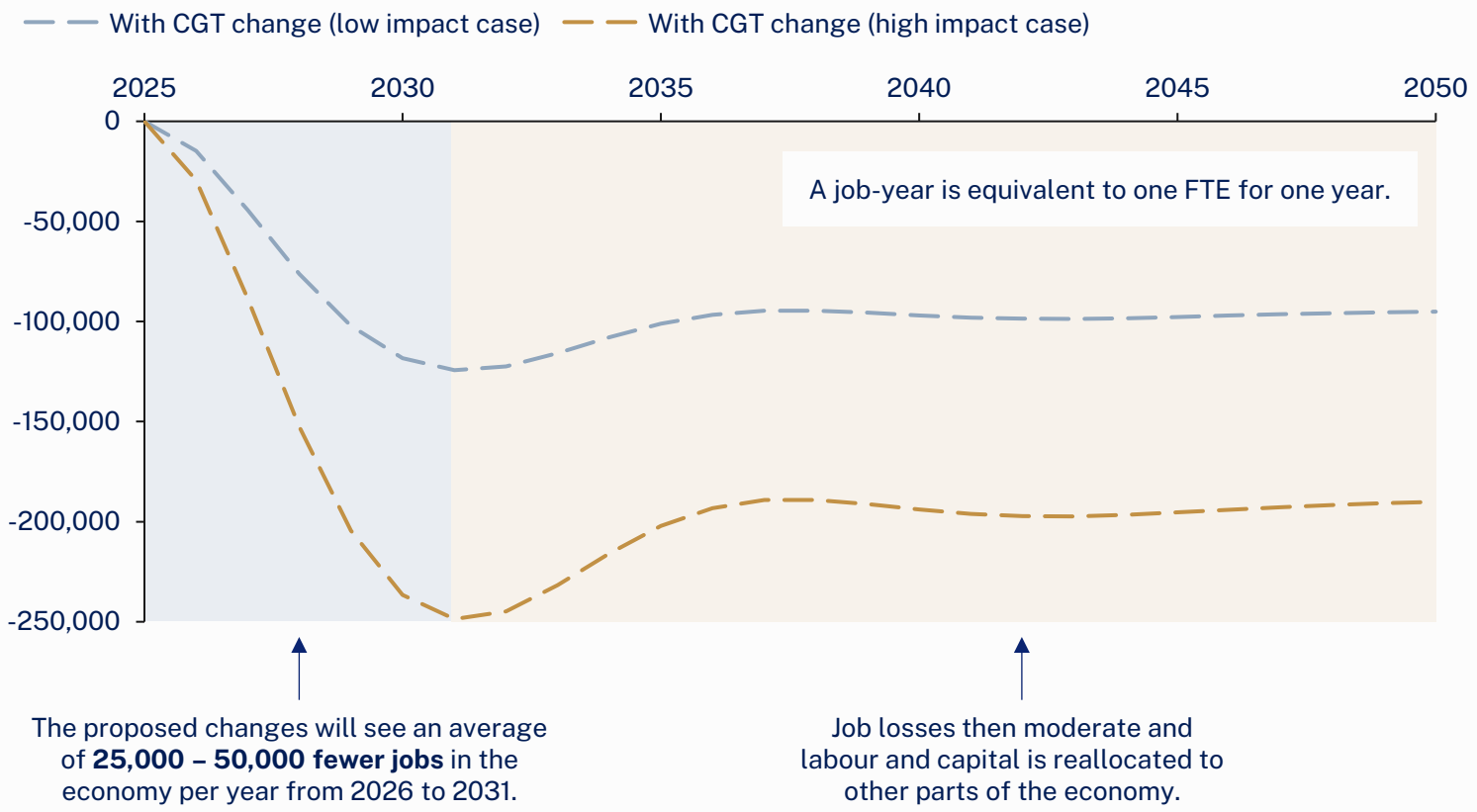
- **The proposed changes will only raise $7-14B NPV in additional CGT from 2026 to 2050**, an increase in Commonwealth tax receipts of less than 0.01%.
- **However, the changes cost Australia $40-80B NPV in economic activity (GDP) by 2050**, which is about 2-3 times as large as the government's Future Made in Australia package.
- **Cumulative additional tax revenue is only:**
  - **18-20% of lost national economic activity** to 2030, and
  - **16-18% of lost national economic activity** to 2050.

Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Source: Treasury (2024) *Future Made in Australia;* Mandala analysis.

The proposed changes result in 25,000 – 50,000 fewer jobs across the economy in each of the first five years after they take effect

Cumulative reduction in job-years across the Australian economy compared to the baseline

Number of job-years (FTE), 2025 to 2050



Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Source: AEMO (2024) *2024 Integrated System Plan*; Mandala analysis.

Key points

- **The proposed changes cost 250,000 – 500,000 job-years by 2031**, which is equivalent to 25,000 – 50,000 jobs lost per year. This is roughly equal to the entire workforce currently required to build and maintain energy infrastructure.
- **While job losses moderate over time, the national economy does not recover the significant job losses** incurred from 2026 to 2031.

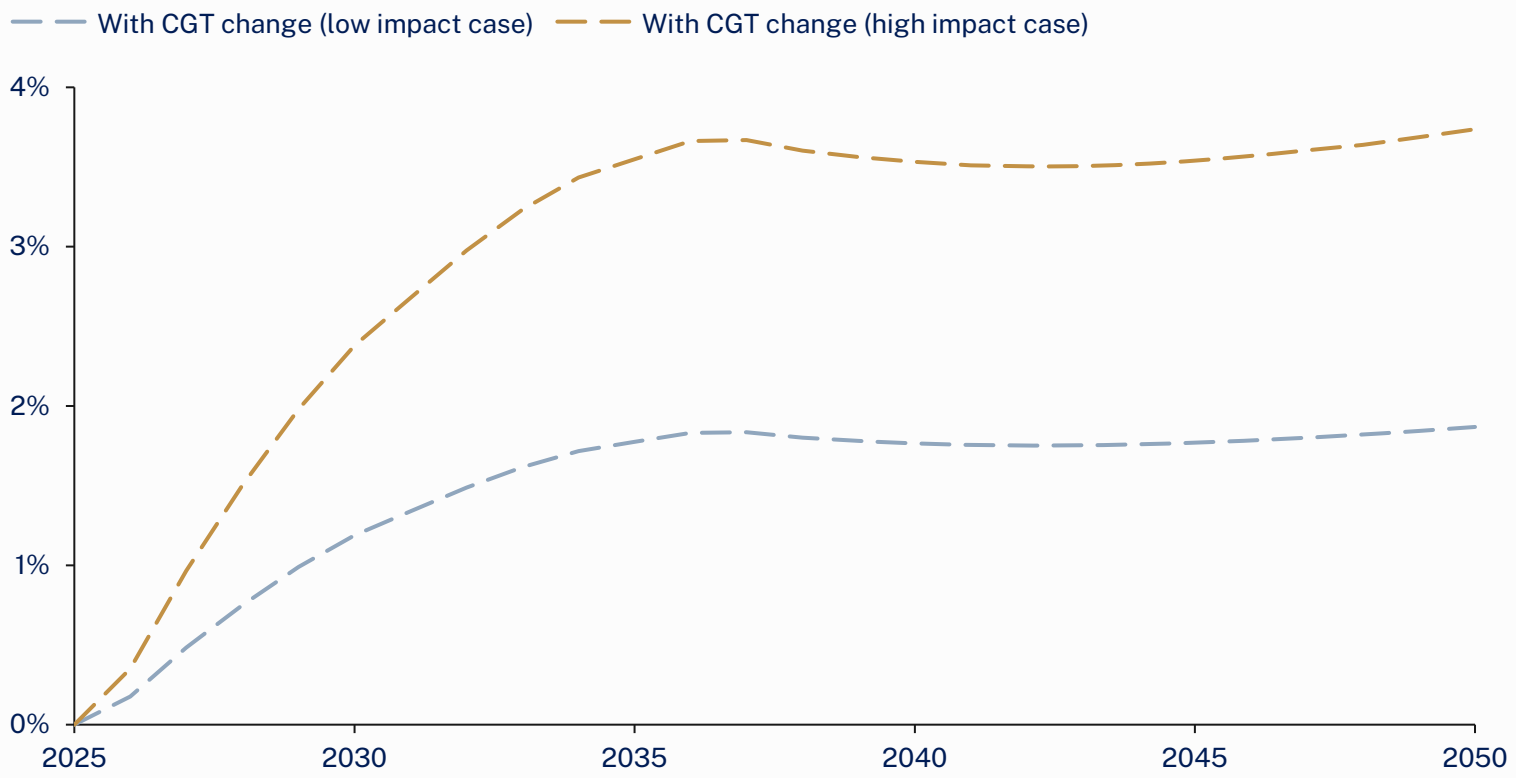
Methodological notes

- **This is a general equilibrium analysis that accounts for net job transitions across the national economy.** It examines the movement of workers from electricity sectors into other sectors of the economy.
- A partial equilibrium analysis of job transitions in the NEM is the appendix. This applies a different methodology but shows a net loss of jobs in the NEM.

Electricity prices could rise by at least 2-4% over the long-term due to the proposed reforms

Cumulative increase in residential electricity prices over the baseline (indicative)

% increase in residential electricity prices, 2025 to 2050



Key points

- **A 2-4% increase in electricity prices means the average household will have to pay:**[1]
  - **$140-$280** more for electricity in total over the next 5 years, and
  - **$900-$1,800** more in total over the next 25 years.
- **Estimates of electricity price increases are conservative** as it does not account for any delays in the introduction of renewable energy assets or the withdrawal of coal assets.

  AEMC analysis suggests that wind and transmission connection delays could add 6% to residential electricity prices, and hydro and battery delays could add 1%. Our analysis assumes no delays in the introduction or withdrawal of generation assets relative to the baseline – if these delays were to occur, the increase in residential electricity prices would be higher.[2]

1 Figures in real 2024 dollars. 2 Delays in the withdrawal of aging coal plants would likely increase the volatility of electricity prices and threaten grid stability. For example, Loy Yang A and Yallourn together experienced 55 breakdowns from December 2017 to June 2019, and are expected to experience more breakdowns and incur greater maintenance costs if their closure is further delayed.
Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026. See the appendix for modelling assumptions.
Source: AEMC (2024) *Residential electricity price trends*; Australia Institute (2019) *Breaking brown: gas and coal plant breakdowns in Victoria*; Mandala analysis.

1 Australia's renewables rollout will require at least $110B NPV in cumulative foreign greenfield investment by 2050 to achieve its targets

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5 **Appendix and methodology**

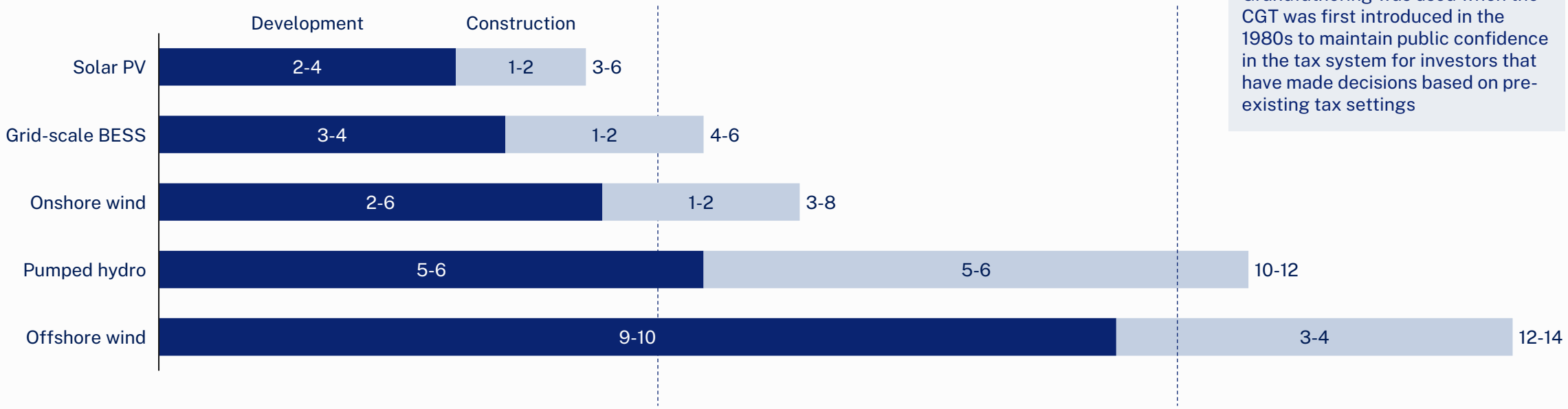
A. Appendix

B. Methodology

A sufficient transitional or grandfathering period is needed to ensure regulatory certainty for investors who have committed funds under existing tax settings

Typical development and construction periods by project type

Number of years



Grandfathering was used when the CGT was first introduced in the 1980s to maintain public confidence in the tax system for investors that have made decisions based on pre-existing tax settings

Impact of delayed implementation on greenfield investors that invest in 2025

Implementation in 2030 would affect most investors that invested in offshore wind, hydrogen, pumped hydro and offshore wind based on current tax settings

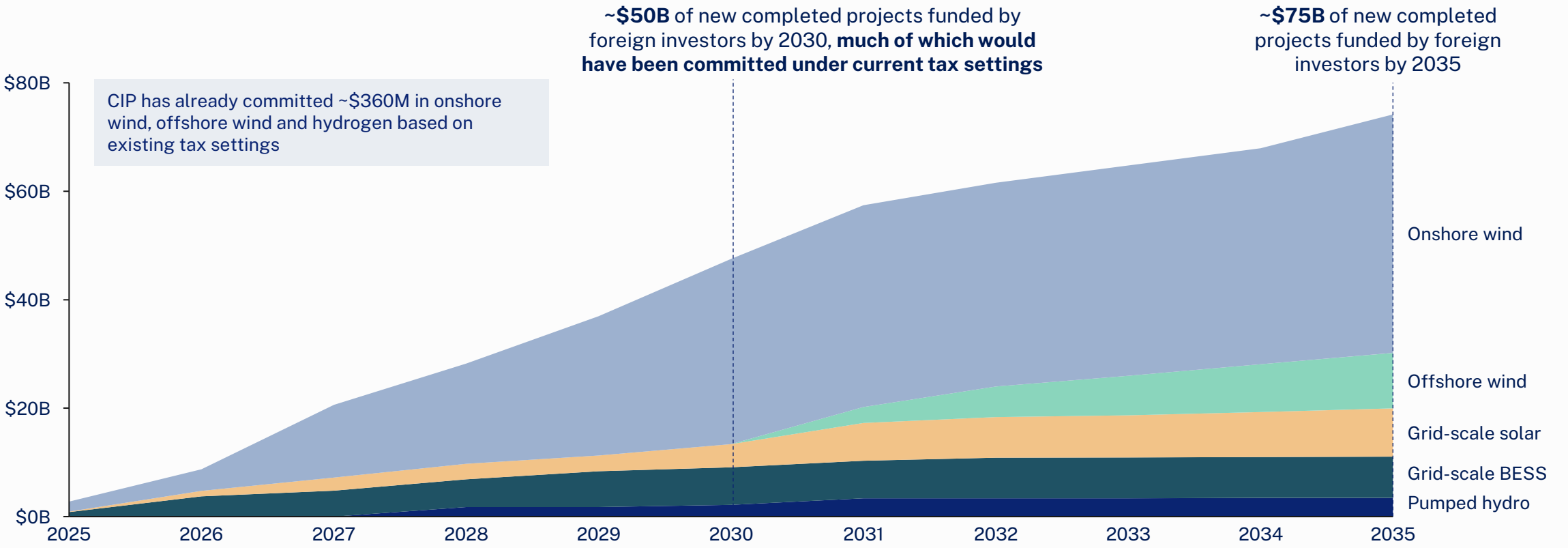
Implementation in 2035 would still affect some investors that invested in projects with longer development and construction periods based on current tax settings

Source: Longden (2024) *Renewable projects are getting built faster – but there's even more need for speed*; DCCEEW (2022) *Australia's first large scale hydrogen plant to be built in Pilbara*; PWC (2022) *Momentum is building in the Australian offshore wind market*; Edify (2020) *How long does it take to build a solar farm?*; Hydro Tasmania (n.d.) Cethana pumped hydro project; Clean Energy Council (2024) *Submission in response to the Hydrogen Production Tax Incentive consultation paper*; expert interviews; Mandala analysis.

~$50B of projects funded by foreign investors are expected to come online by 2030, with much of this investment committed under current tax settings

Cumulative value of completed projects funded by foreign investors from 2025

$ NPV, NEM, without the CGT change, projected



Source: AEMO (2024) *2024 Integrated System Plan*; CEFC (2023) *Annual Report 2022-23*; ABS (2022) *Value of Renewable Energy Construction;* RenewMap; expert interviews; Mandala analysis.

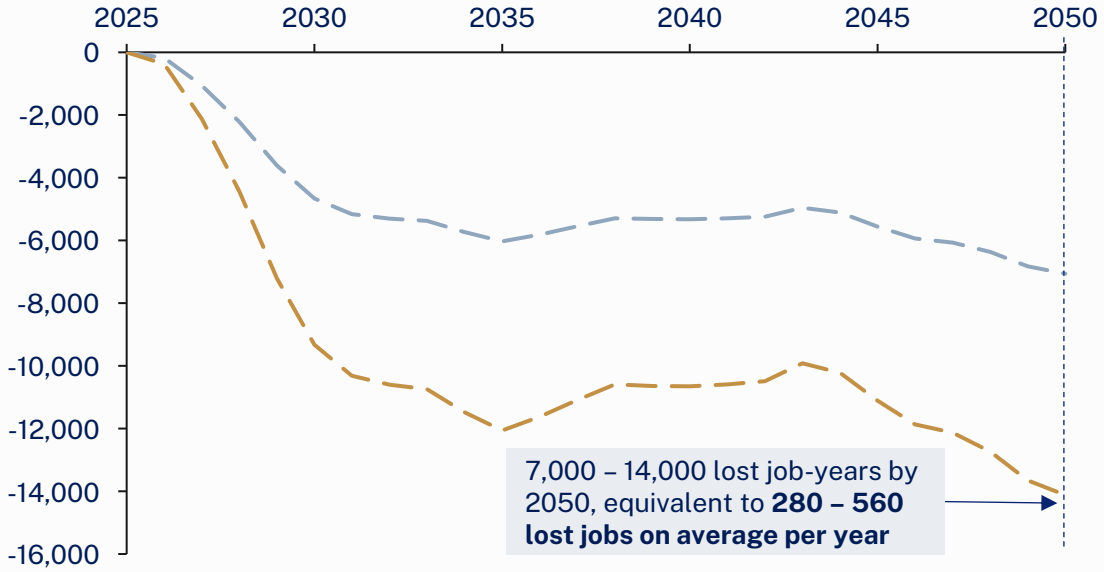
Partial equilibrium analysis shows there will be 280-560 fewer jobs in the NEM on average per year with the proposed change

Cumulative reduction in job-years in the NEM

With CGT change (low impact case) With CGT change (high impact case)

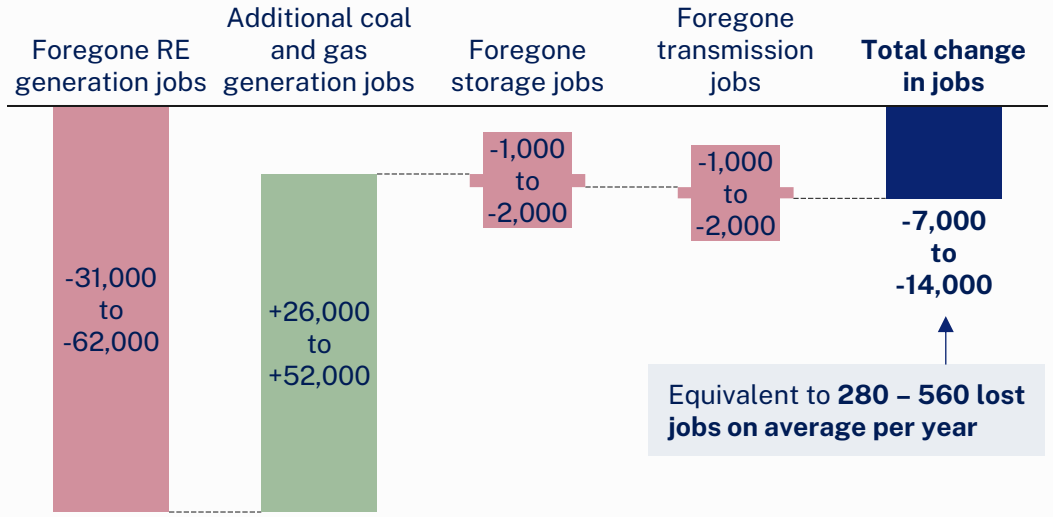
Cumulative reduction in job-years in the NEM compared to the baseline

Job-years (FTE), 2025 to 2050



Composition of cumulative lost job-years in the NEM in 2050

Job-years (FTE), 2050



This partial equilibrium modelling (NEM-specific) uses a different methodology to general equilibrium modelling (economy-wide) used elsewhere in our analysis . This analysis does not account for labour moving to other parts of the economy, but allows us to examine job flows in the NEM in more detail. As estimates from partial and general equilibrium modelling use different methodologies, they are not comparable.

Note: Assumes the tax takes effect from 1 July 2025, and affects investment levels from 2026.
Source: AEMO (2024) *2024 Integrated System Plan*; CSIRO (2024) *GenCost: cost of building Australia's future electricity needs*; Mandala analysis.

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A. Appendix

B. Methodology

Methodology – Section 1 (1/2)

Page	Output	Method	Data sources
6	A. Renewable generation in the NEM	The trajectory required to meet the renewable generation targets follows AEMO's ODP (Step Change) from its 2024 ISP.	AEMO (2024)
6	B. National emissions	The trajectory required to meet the renewable generation targets is linear between 2024 and 2030 (to meet the 2030 emissions target), and linear between 2030 and 2050 (to meet the 2050 net zero target).	DCCEEW (2024)
8	C. Investment required for NEM generation and storage[1]	(i) New forecast capacity per technology per year per AEMO ODP Step Change (GW)	AEMO (2024)
		x	
		(ii) Build costs per AEMO ODP Step Change ($/GW)	AEMO (2024)
		Notes and assumptions: • AEMO reports capacity for 'utility storage' which includes both grid-scale BESS and pumped hydro. We assume that capacity for pumped hydro is the sum of Snowy 2.0, Borumba and 'deep storage', and utility-scale BESS is equal to 'utility storage' minus pumped hydro • The build cost for offshore wind is assumed to be the simple average of 'fixed' and 'floating' offshore wind • The build cost for grid-scale BESS is assumed to be the 2-hr BESS build cost • The build cost for pumped hydro is assumed to be simple average of 8-hr, 24-hr, 48-hr and Cethana pumped hydro	
8	D. Investment required for NEM transmission	The cost of NEM transmission is taken to be $16 billion NPV per the AEMO ISP. This cost is distributed over time proportional to the additional km of transmission per year per AEMO ODP Step Change.	AEMO (2024)
8	E. Investment outside the NEM	Assumed to be 10.5% x total NEM costs. 10.5% reflects the relative size of the NEM network (56GW in 2022) and SWIS network (5.9GW in 2022)	AER (2023) WA Government (2023)

1 Onshore wind, offshore wind, grid-scale solar, grid-scale BESS, pumped hydro.
Note: Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Section 1 (2/2)

Page	Output	Method	Data sources
9-11	F. Investment required from 2025 to 2050 to meet targets by technology, foreign vs domestic	Steps: 1. Using RenewMap data, filter out projects that are abandoned, decommissioned, have not been submitted for DA approval, or are not part of the NEM. 2. Identify all developers and owners for each project. 3. Classify developers and owners as either 'domestic' or 'foreign'. 4. If one or more developers or owners are 'foreign', classify the project as 'foreign'. 5. Weight the GW capacity of each project as follows to reflect their level of progress: i. 0.5 for projects under DA assessment ii. 0.75 for projects that are DA approved but under development iii. 1 for projects under construction or operation 6. For each NEM generation or storage technology, calculate the share of GW from foreign projects. Multiply this by total investment required by technology (from output C) to calculate foreign investment required. 7. For NEM transmission and investment outside the NEM, assume the share of GW from foreign projects is the same as the weighted average share of GW from foreign projects for NEM generation and storage. Multiply this by total investment required by technology (from output C) to calculate foreign investment required.	Output C

Note: Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Section 2

Page	Output	Method	Data sources
15	G. CGE model inputs	We represent the CGT change as an increase in the pre-tax IRR required by an investor to receive the same post-tax return. • Reduction in IRR = Target return (17.5%) x CGT rate (30%) • Increase in pre-tax IRR required = 1/(1-Reduction in IRR) - 1	
		Notes: The CGT changes only affect investors that dispose of renewable energy assets within a relevant time frame. There is uncertainty as to the proportion of foreign investment that is affected by the change (e.g., some foreign investors may have access to tax credits under treaties, and other may not). To reflect this uncertainty, we model two cases: • Low impact case: 33% of foreign investment affected • High impact case: 66% of foreign investment affected Key assumptions: • Affected foreign investors target a return of 17.5% IRR (post-tax) • Affected foreign investors have an investment period of 3 years (the period where DEVEX and CAPEX is incurred) • The CGT tax rate for affected foreign investors is 30%	
16	H. Cumulative investment in renewables (baseline)	Baseline investment follows Output C.	Output C
16	I. Cumulative investment in RE with the CGT change	• The CGE model produces a % deviation in investment by sector with the CGT compared to the baseline. • To estimate investment in renewables with the CGT, we apply this % deviation to the share of foreign investment affected by the CGT (either 33% for the low impact case or 66% for the high impact case)	
16	J. Cumulative new RE capacity (baseline)	The baseline follows AEMO's ODP (Step Change) from its 2024 ISP.	AEMO (2024)
16	K. Cumulative new RE capacity with the CGT change	(i) Cumulative RE NEM investment with the CGT (for each case)	
		/	
		(ii) Cumulative RE NEM investment in the baseline (from output H)	Output H
		x	
		(iii) Cumulative capacity (GW) in the baseline (per AEMO ODP Step Change)	AEMO (2024)

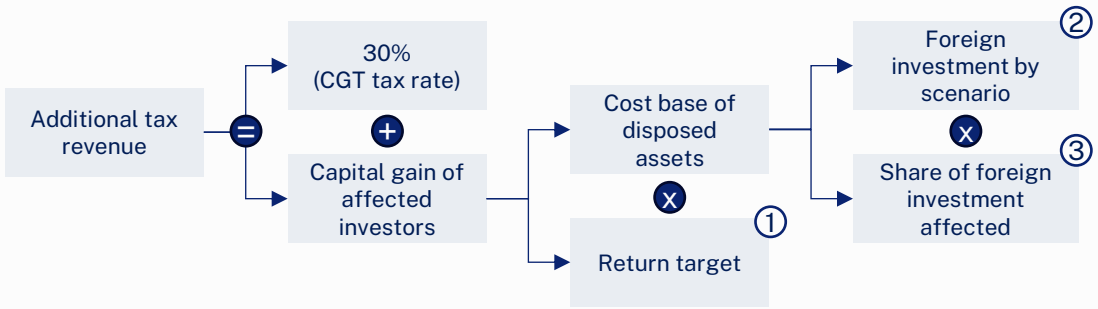
Note: RE refers to renewable energy. Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Section 3

Page	Output	Method	Data sources
18	L. RE generation in the NEM (baseline)	The baseline follows AEMO's ODP (Step Change) from its 2024 ISP.	AEMO (2024)
18	M. RE generation in the NEM with the CGT change	Steps: 1. For each year and technology, calculate the ratio of (i) cumulative RE NEM investment with the CGT (for each case), and (ii) cumulative RE investment in the baseline (from output H). 2. Multiply the ratio calculated in Step 1 by cumulative generation (TWh) in the baseline (per AEMO ODP Step Change) to calculate cumulative RE NEM capacity with the CGT (for each case). 3. Assume that the reduction generation of RE generation with the CGT changes (compared to the baseline) is replace TWh-for-TWh with non-RE NEM generation. Key assumptions: • RE NEM generation includes hydro, offshore wind, wind, utility solar, distributed PV, other renewable fuels and DSP • Non-RE NEM generation includes black coal, brown coal, mid-merit gas and flexible gas • Additional non-RE NEM generation by technology with the CGT changes are added in the same proportional to their generation in the baseline. This means that the scenario with the CGT changes assumes that coal plants are withdrawn in the same years as in the baseline.	AEMO (2024) Output H
19	N. Projected national emissions (baseline)	The baseline adopts the trajectory to meet the 2030 and 2050 targets as outlined in Output B.	Output B
19	O. Projected national emissions with the CGT change	For emissions with the CGT, we calculate the additional emissions above the baseline as a result of the CGT change, calculated as outlined below: Steps: 1. Calculate the emissions per non-RE TWh of NEM generation as the average ratio from 2025 to 2030 of (i) forecast non-RE NEM generation (TWh), and (ii) forecast total NEM emissions; both per AEMO's ODP (Step Change) from its 2024 ISP. 2. Multiply the additional non-RE NEM generation with the CGT changes (from Output J) by emissions per non-RE TWh of NEM generation to calculate additional emissions with the CGT change.	Output J

Note: RE refers to renewable energy. Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Section 4 (1/2)

Page	Output	Method	Data sources
21	P. Economic activity (baseline)	Economic activity in the baseline follows GDP forecasts from the 2023 Intergenerational Report.	Treasury (2023)
21	Q. Economic activity in with the CGT change	• The CGE model produces a % deviation in economic activity (GDP) with the CGT compared to the baseline. • To estimate economic activity with the CGT, we apply this % deviation to economic activity in the baseline (Output P).	Output P
21	R. Additional tax revenue	 See notes for numbered items below. Notes: 1. The post-tax return target is assumed to be 17.5% IRR, with a three year investment period. The project return target is $(17.5\%)^3 / (1 - 30\%) = 89\%$. 2. Foreign investment by scenario is Cumulative investment in renewables with the CGT change (Output I) less Cumulative investment in renewables in the baseline (Output H). 3. The share of foreign investment invested starts at 33% (low impact case) or 66% (high impact case). This share changes over time, corresponding with the change in investment in renewables over time with the CGT change (see Output H).	Outputs H and I

Note: Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Section 4 (2/2)

Page	Output	Method	Data sources
22	S. Jobs (baseline)	(i) Forecast population of Australia (from 2023 Integrational Report)	Treasury (2023)
		x	
		(ii) Forecast participation rate (from 2023 Integrational Report)	Treasury (2023)
		x	
		(iii) 95.5% assumed employment rate (2024-5 and 2025-6 forecast from the 2024-5 Budget)	Treasury (2024)
22	T. Jobs with the CGT change	• The CGE model produces a % deviation in employment with the CGT compared to the baseline. • To estimate jobs with the CGT, we apply this % deviation to employment in the baseline.	Output S
23	U. Residential electricity prices	(i) Forecast LCOE by technology ($/GWh)	CSIRO (2024)
		x	
		(ii) Renewable generation by technology in the NEM (GWh)	Outputs L and M
		x	
		(iii) Ratio of forecast residential electricity prices and generation cost [(1) x (2)]	AEMC (2024)

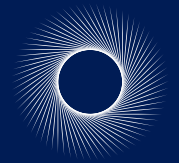
		Notes and assumptions:
		• For (i):
		  • The CSIRO report provides LCOE forecasts for 2023, 2030, 2040 and 2050. We interpolate prices by assuming a constant rate of growth in LCOE between these periods.
		  • RE generation includes integration costs.
		• For (ii):
		  • Additional non-renewable energy NEM generation by technology with the CGT changes are added in the same proportional to their generation in the baseline. This means that the scenario with the CGT changes assumes that coal plants are withdrawn in the same years as in the baseline.
		• For (iii):
		  • For 2025 to 2034, we apply AEMC price forecasts. For 2035 to 2050, we assume the ratio of electricity prices and generation costs are the same as in 2034.
		  • This approach assumes that: (a) rates of household electrification are the same in all scenarios, and (b) residential electricity prices increase proportionately with generation cost (i.e., retail margins are the same across scenarios, and network costs scale proportionately with generation costs due to underinvestment in RE generation, storage and transmission)	

Note: RE refers to renewable energy. Discount rate of 7% for NPV calculations.
Source: Mandala analysis.

Methodology – Appendix

Page	Output	Method	Data sources
25	A1. NEM jobs in the baseline (partial equilibrium)	The baseline follows AEMO's ODP (Step Change) from its 2024 ISP.	AEMO (2024)
25	A2. NEM jobs with the CGT changes (partial equilibrium)	Steps: 1. For each technology, calculate the ratio of (i) Capacity (GW) with the CGT changes (for each case), and (ii) Capacity in the baseline. See Outputs J and K. 2. Multiply the ratio in Step 1 with NEM jobs in the baseline (Output A1).	Outputs J, K, A1

Note: Discount rate of 7% for NPV calculations.
Source: Mandala analysis.



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