



UNSW
SYDNEY



UNSW
Australian
Human Rights
Institute

Escalation

The destructive force
of Australia's fossil fuel
exports on our climate

Contents

Executive summary and key messages	3
About this report	5
Introduction	7
A. Australia's fossil fuel production and escalating climate change	9
Key messages	9
A1 Australia's world-leading fossil fuel production for export	10
A2 Australia's fossil fuel exports <u>matter</u> for our climate	13
B. Australia's missing policy setting restrictions on fossil fuel exports	16
Key messages	16
B1 Australia's missing policy setting restrictions on fossil fuel exports	16
B2 The missing policy and escalating climate change	19
C. Escalating risks for people in Australia from every fractional increase in warming	21
Key messages	21
C1 Escalating changes to Australia's climate	22
C2 Escalating climate risks and harms facing people in Australia	25
C3 Adaptation and escalating risks	32
D. A national fossil fuel exports phase-out plan for Australia	33
Key messages	33
D1 A national policy implementing an orderly phase-out	34
D2 Australia will benefit from being ambitious	37
D3 An orderly and cooperative phase-out	39
D4 A just phase-out	42
Endnotes	43

Executive summary and key messages

1. Australia is one of the world's largest fossil fuel-exporting states

Australia presents itself as a small player in global climate change. Its population is small and its percentage of global emissions is a comparatively low 1.1%. But when the emissions from Australia's fossil fuel exports are added to its domestic emissions, it is shown to be a significant contributor to global warming and climate change.

- › Far from being a minor player in climate change, Australia ranks 2nd in the world calculated by total lifecycle emissions associated with its fossil fuel exports.
- › Australia is still approving major new coal and gas projects and expansions, the bulk of it for export, and has no limits on its production.
- › Australia's policies and actions are incompatible with the *Paris Agreement* temperature goal of 1.5°C and undermine attempts to keep global warming to well below 2°C.
- › Australia's fossil fuel exports matter because they significantly contribute to global temperature rise and intensify climate change, including in Australia.
- › Every single fraction of a degree of warming escalates climate risks, damage and destruction yet further.

2. Australia has no policy to restrict or limit its fossil fuel exports

Australia has no policy in place to cap or restrict its fossil fuel production for export and no plans to do so. Instead, Australia is hedging its bets, promoting the development of new, clean export industries while also actively supporting and subsidizing its thriving fossil fuel export industries.

- › Australia has no policy to restrict, cap or limit its thriving fossil fuel exports and no plans to do so.
- › Australia's emissions reduction policies do not address its fossil fuel exports, other than indirectly through promoting new, clean exports.
- › These indirect policies will not be nearly sufficient to engineer fossil fuel exports replacement, certainly not at the speed and scale needed to align with the *Paris Agreement's* temperature goal – especially while Australia is still actively promoting and subsidizing its fossil fuel export industries.
- › Australia must acknowledge the damage its missing policy is causing to people in Australia and to climate ambition globally.

3. Australia's fossil fuel production for export is doubling back in the form of escalating climate risks, damage and destruction for all Australians

As one of the major contributing countries to global warming, Australia is escalating climate harms for people in Australia. Our fossil fuel exports are doubling back on us in the form of more extreme climate change, threatening our homes, jobs, children, health, food, businesses, recreation, culture, property, safety and lives with escalating damage and destruction.

- › Australia has warmed on average by 1.47°C since national records began in 1910.
- › Every fractional temperature rise means more frequent, intense and compounding heat extremes, fires, rainfall, flooding, storms and cyclones in Australia.
- › The bulk of Australia's population lives in areas which are highly exposed to future physical impacts of climate change.
- › Everyone in Australia is now exposed to escalating climate risks and harms, especially from heat, but many communities are particularly vulnerable.
- › Our underlying socioeconomic systems – including our economic, energy, health and hospitals, transportation and clean water systems – are increasingly exposed to cascading and compounding climate impacts.

4. Australia must urgently implement an ambitious national plan to phase-out its fossil fuel export production in an orderly, cooperative and just manner.

Policy silence surrounds our role in this escalation. People in Australia are unprotected from the worsening climate which our own exports are materially escalating.

- › Australia must urgently implement an ambitious, but orderly, cooperative and just, phase-out of its fossil fuel exports. Not a sudden and disruptive 'stop', but a genuine, progressive phasing out.
- › Unless it begins this process, Australia's actions and policies will not be consistent with the *Paris Agreement's* temperature goal.
- › Australia's economy is quite diverse and not particularly dependent on fossil fuel production.
- › Australia's economy would benefit from avoiding current costs related to its fossil fuel production for export.
- › Investment in Australia's new, clean export opportunities would benefit from a pathway less impeded by powerful competition from Australia's incumbent fossil fuel exporters.
- › The phase-out must be orderly and just, based squarely on cooperative processes and open communication.
- › Approvals in Australia of new fossil fuel project should be halted backed by amendment of the EPBC Act to make the consideration of climate change impacts mandatory as a core part of any new project assessments.
- › Large fossil fuel exporters should be required by law to disclose their exported emissions and to undertake climate-related human rights due diligence in relation to these emissions.
- › Australia should take a strong lead in international efforts towards a cooperative phase-out of fossil fuel production, using all powers in its sphere of influence.


About this report

As an Australia-based institute, this report focuses on the situation of people in Australia: what is the significance for people and communities in Australia of our very large and unrestricted fossil fuel exports, given their substantial contribution to worsening climate change here?

We take this Australia-focused approach knowing that people and communities in other Asia-Pacific countries are facing even more damaging climate change impacts. For some, this extends to loss of entire national territories. Our aim is to demonstrate, for those in Australia, that the consequences of our actions in conducting this export trade include serious and essentially permanent harms to ourselves. We hope that the Institute's efforts to gain domestic support for phasing out Australia's coal and gas exports will also benefit those outside Australia facing grave climate risks made yet more intense by our contributions to ongoing global warming.

- › **Part A** of Escalation explores the evidence that emissions from the fossil fuels Australia produces and exports are substantially contributing to escalating global warming.
- › **Part B** sets out the gaps in Australia's climate policies when it comes to fossil fuel production for export.
- › **Part C** explores the ways in which incremental warming and climate change, escalated by our exported emissions, heighten the risks of harms facing people and communities in Australia.
- › **Part D** then sets out the responsible mitigation actions Australia must take as a matter of urgency, including implementing an exports phase-out.

The Australian Climate Accountability Project is located on the unceded territory of the traditional owners, the Bidjigal people.



‘Australia’s greatest threat, including to the health of its people, is not from beyond its borders — it is from within. Australia’s failure to play its part in the mitigation of climate change and to adequately prepare for its myriad impacts is now costing lives.’

2022 Report of the MJA–Lancet Countdown on Health and Climate Change,
[‘Australia unprepared and paying the price’](#), at 455.

Introduction

Australia is one of the world's largest fossil fuel exporters and its policy approach is one of **escalation**:

- ... of its coal and gas production for export
- ... of fossil fuel reliance in our region
- ... of global temperature rise
- ... of the pace and intensity of climate change
- ... and of risks, damage and destruction from a worsening climate for people in Australia.

The evidence is well-established that fossil fuel-induced climate change will have devastating impacts and that every fraction of a degree of warming will further raise the risks and worsen the harms. Yet Australia is still escalating its greatest contribution to climate change: its fossil fuel production for export.

Australia is the world's 2nd largest exporter of coal and LNG. When the lifecycle emissions from our total fossil fuel *production* are quantified, Australia ranks 5th in the world, and the lifecycle emissions from our total fossil fuel exports place us 2nd in the world (beaten only by Russia, but ahead of the United States and every OPEC country). At around 4% of global emissions,¹ our fossil fuel *exports* generate between three and four times the level of our domestic emissions. But Australia has no national plan or policies for restricting production for export. Instead, our governments continue to promote and subsidize fossil fuel production and issue new exploration licenses and approve new or expanded coal and gas projects (overwhelmingly for export), many with production horizons beyond 2050.

These policies give an assurance to the world that Australia's coal and gas supply is abundant and unconstrained. They help maintain lower coal and gas prices globally, encouraging ongoing consumption. And they send a cogent signal to the world, that Australia intends to produce as much coal and gas as it can sell, for as long as possible. Coming from a stable, major fossil fuel-exporting country like Australia, such reliable assurances weaken climate ambition throughout the world during this critical decade.

Australia's role as a significant contributor to global temperature rise has not received the scrutiny it warrants. Australia needs to be held to account for the full magnitude of its contribution to climate damage, including escalated damage in its own territory.

- › **Emissions from our total fossil fuel production and projected exports are sufficiently large to worsen climate change and escalate the resulting risks, damage and destruction for our people and communities.** Vulnerable communities in Australia will suffer disproportionately, with repercussions for human rights.
- › **Our failure to restrict our fossil fuel production for export is undermining global resolve** to stop the worst effects of climate change, delaying the urgent and immediate actions all countries must take to slow and stop global temperature rise and climate change, including in Australia.
- › **Our eagerness is producing unlimited fossil fuels for export is creating competitive tensions with our emerging, renewables-based export industries,** sending mixed policy messages (to our buyer countries and investors) and potentially slowing the replacement of the old with the new.

By concentrating only on reducing domestic emissions, while taking no action to restrict the very much larger contribution of our exported emissions to global temperature rise, Australia is worsening climate-driven harms for those within its own territory.

No developed country has more to lose [than Australia] from climate change-fueled extreme weather.

Professor Will Steffen and Dr Simon Bradshaw, 2021.²

Australia's Climate Change Minister, Chris Bowen, stated at the 2023 global climate summit (COP28) that fossil fuels must have 'no ongoing role to play in our energy systems'.³ Yet, as one of the world's major fossil fuel producers, Australia's legal and moral responsibilities are not limited to bringing down its emissions at home through reforms to its own energy system (essential though those reforms are). All our fossil fuel production, and especially the bulk of it that is destined for export, should be steeply declining now if the world and Australia are to avoid climate change of catastrophic proportions.

In 2015, the *Paris Agreement* made a great start in the world's cooperative efforts to prevent the worst effects of climate change. Most importantly, it set a temperature goal at 'holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels'.⁴ But fossil fuel production globally is still rising, and Australia's fossil fuel exports are still rising overall.

The single, most important step Australia can take to help achieve the *Paris Agreement's* temperature goal is to phase out its production of fossil fuels for export.

An Australian phase-out would slow the pace of global temperature rise, lessen future climate change and reduce the harms confronting its own people and communities. And as a progressive, responsible signal from Australia, it could well be game-changing for climate change. Australia is one of only a small handful of countries with the combination of huge fossil fuel resources, obvious alternatives from enviable renewables and outsized 'soft power' that could trigger change in this way and on this scale.

The climate-driven risks facing people in Australia, and especially our more vulnerable communities, are severe. Australia has power and ability to change this but is declining to do so. Instead, our ongoing fossil fuel production for export is escalating the risks, damage and devastation facing our communities, our children, our families, our friends, our homes, our jobs, our recreation, our food systems, our property, our cultures, our health, our safety, our businesses, our economy, our lives, our futures and the futures of generations to come.

Australia's role in escalating climate harms for those within its own territory, through its ongoing fossil fuel exports, has received far too little scrutiny. The purpose of the Australia Human Rights Institute in establishing the Australian Climate Accountability Project is to change that.



A

Australia's fossil fuel production and escalating climate change

Key messages

Australia presents itself as a minor player in climate change but, in fact, it is one of the world's largest fossil fuel-exporting states.

- Far from being a minor player in climate change, Australia is the world's 2nd largest exporter of coal and LNG by energy.
- Based on lifecycle emissions from the coal, gas and oil Australia exports, it is the world's 2nd largest.
- Australia is still approving major new coal and gas projects, almost entirely for export and with no limits on potential expansion.
- Australia's policies and actions are incompatible with the temperature goal of 1.5°C and undermine attempts to keep global warming to well below 2°C.

Australia's fossil fuel exports matter for climate change, including in Australia.

- Every fraction of a degree of warming escalates climate risks, damage and destruction yet further.
- Annual global average temperatures have risen by 1.2°C since pre-industrial times, almost all due to burning of fossil fuels, and in 2023 reached an annual average of about 1.44°C above preindustrial levels.
- Australia's fossil fuel production and exports are substantially contributing to global temperature rise and climate change.

A1 Australia's world-leading fossil fuel production for export

More than 95% of the world's fossil CO₂ emissions since pre-industrial times stem from the use of coal, gas and oil.⁵ Annual average global temperatures have already risen by 1.2°C above pre-industrial levels, almost all due to the burning of fossil fuels, and in 2023 reached an annual average of about 1.44°C above pre-industrial levels.⁶

Even though Australia itself has warmed on average by even more,⁷ it continues to be one of the world's large fossil fuel producing countries and the 2nd largest coal and LNG exporter.⁸ It has legislated a target of net zero domestic emissions by 2050⁹ and has taken steps to reduce emissions from domestic production and use of fossil fuels – but the bulk of Australia's existing and new fossil fuel production is for export. In 2022, 91% of its black coal and 76% of its gas by energy was exported.¹⁰ Australia has taken no steps directly restricting its fossil fuel production in line with global warming of 1.5°C and well below 2°C.¹¹

On the contrary, new or expanded fossil fuel projects are continuing to come into operation. Of committed major resource and energy projects in 2023, almost half by value were oil and gas;¹² more than two dozen were publicly announced¹³ and some key LNG infrastructure projects, such as LNG terminals, progressed to their next stage.¹⁴ There were also 42 publicly announced coal projects on the list,¹⁵ with the bulk of these involving metallurgical coal. Two large new coal mines have recently been approved in Queensland: Whitehaven's Winchester South greenfield coal mine (approved to produce metallurgical, but also thermal, coal for around 30 years) and Gregory Crinum's M Block coal mine expansion (approved to produce metallurgical coal until 2073).¹⁶ As of 2023, Australia already had 103 operating coal mines.¹⁷

Australia's fossil fuel exports are not decreasing. Current government forecasts have Australia's metallurgical coal exports (eg for steelmaking) increasing 'as mines in NSW and Queensland ramp up'.¹⁸ While Australia's exports of thermal coal exports are holding steady¹⁹ (in fact, are still growing year on year),²⁰ the latest government data indicate that they may peak towards the end of the decade before beginning to decline.²¹ An increasing proportion of Australia's production (by volume) will be for export.²² The same government forecasts have gas export volumes holding steady this decade, despite new supply from the United States and Qatar.²³ Australia's recently released Future Gas Strategy is premised on the presumption that '[e]ven in net zero scenarios, Australia and the world will need gas at lower levels through to 2050 and beyond.'²⁴

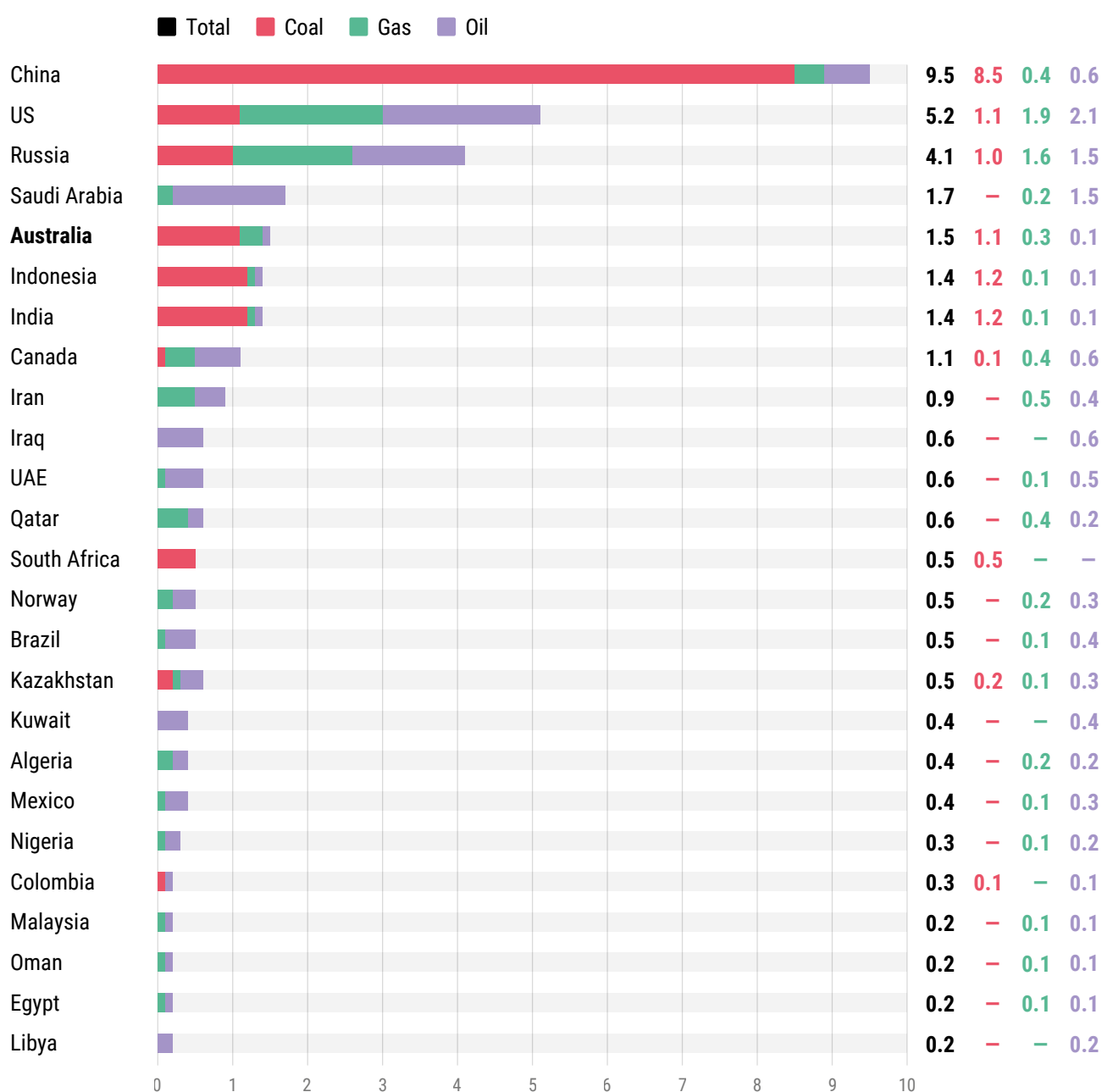


Boat pushing a barge of coal. Photo: Justin Wilkens/Unsplash.

Countries' total CO₂e emissions are ordinarily measured by those which take place within their own territories. For Australia, these made up just over 1% of global emissions in 2022. Since most of Australia's coal and the bulk of its gas is not consumed within Australia, the emissions from combustion/use of the exports overseas are not included in the 1.1%.

The scale of Australia's fossil fuel contribution to climate change can only be fully understood through using forms of measurement which incorporate these exports. This can be done by attributing fossil fuel emissions to the source of production, rather than consumption. One way to do this is to calculate the total lifecycle emissions associated with all Australia's fossil fuel production. By this measurement, as the graph below shows, in 2001 Australia ranked 5th in the world.²⁵ This calculation includes the very significant emissions during all stages of the lifecycle or supply chain in producing fossil fuels (extraction, processing, transporting and, ultimately, combustion and use), including non-energy uses such as feedstocks.

2021 extraction-based GHG emissions (GtCO₂e)

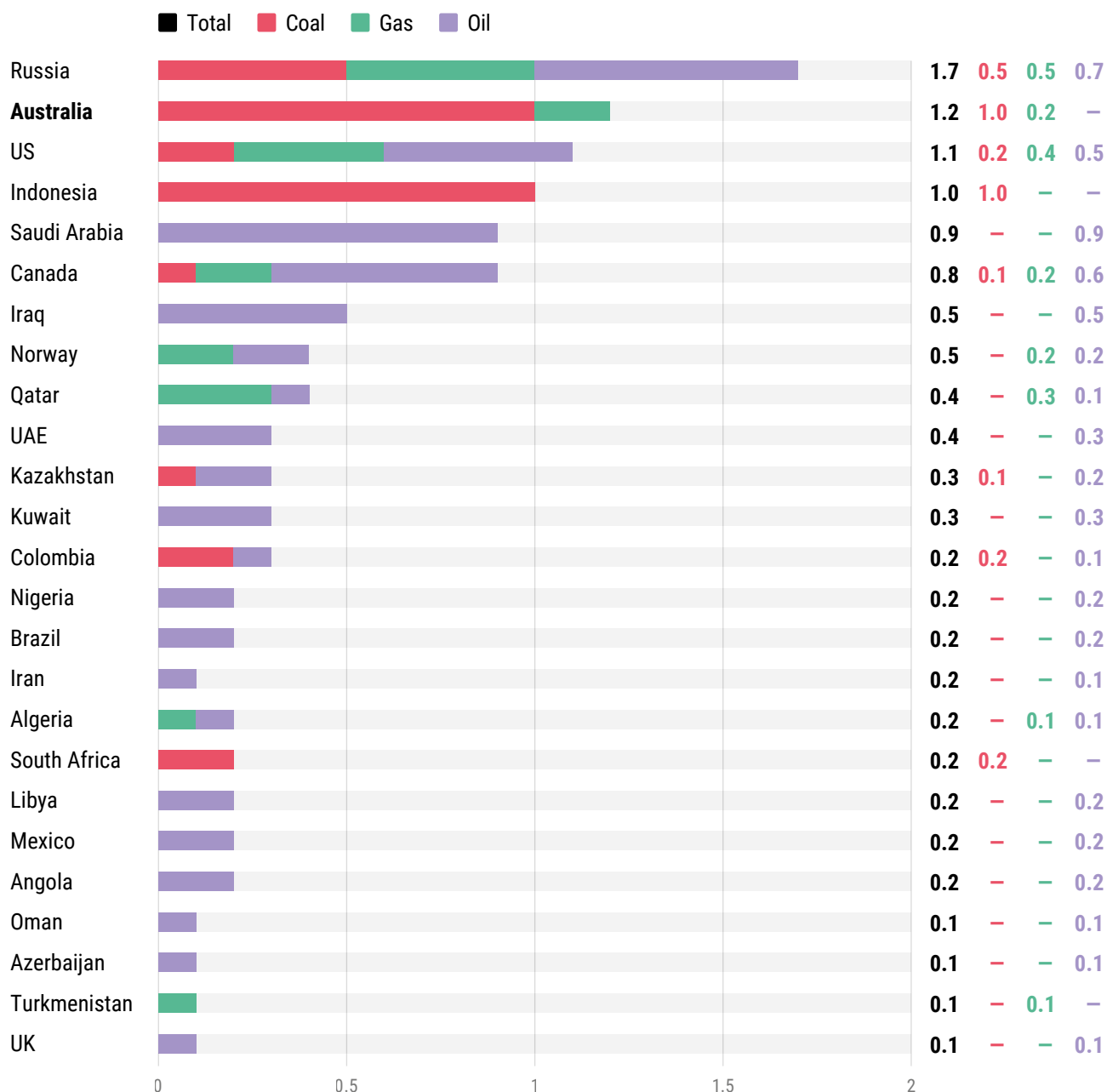


Source: Production Gap Report 2023, Figure 3.1, at 36.

Another way is to measure emissions along the full supply chain but only for exported fossil fuels, rather than for total fossil fuel production. The 2021 exports extraction and end-use GHG emissions graph below reveals that this calculation places Australia as the 2nd largest fossil fuel emitter by exports in the world²⁶ – ahead of the United States and all the OPEC states, including the oil giant Saudi Arabia, and behind only Russia.

As a major fossil fuel exporter with no regulatory limit on potential expansion, measurement methods of this kind enable Australia to be clearly seen as a world-leading contributor to ongoing global temperature rise and worsening climate change, including within its own territory.

2021 exports extraction and end-use GHG emissions (GtCO₂e)



Source: Climate Analytics, 'Australia's global fossil fuel carbon footprint', 2024.

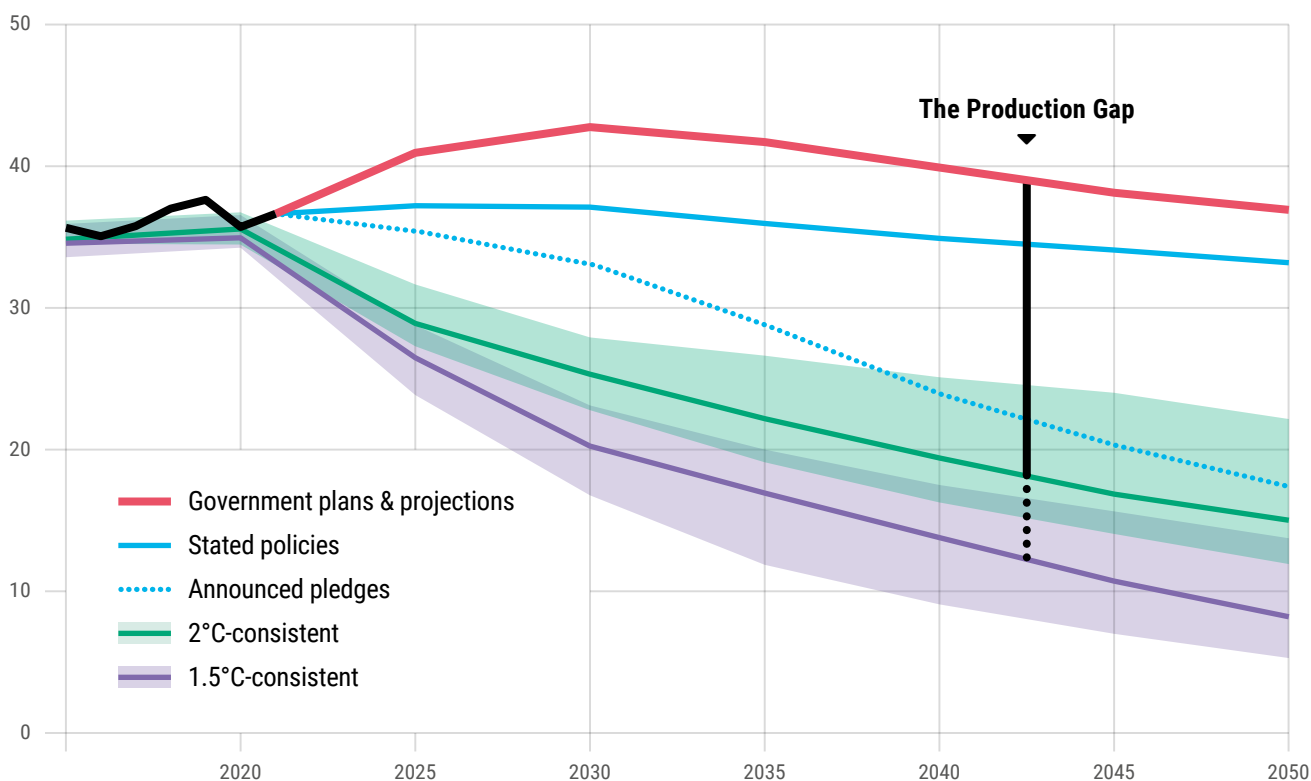
A2 Australia's fossil fuel exports matter for our climate

The remaining amount of CO₂ the world can emit to keep global temperature rise to 1.5°C is small. The IPCC has explained that limiting warming to around 1.5°C will 'require global emissions to peak before 2025 at the latest, and be reduced by 43% by 2030.'²⁷ Carbon budget calculations have previously compared remaining global carbon allowances from the beginning of 2020 for, amongst other things, a 67% chance of limiting global temperature rise to 1.5°C, 1.7°C and 2°C.²⁸ These estimates were recently updated using 2023 as the base year. While there are uncertainties involved, relating to the response of the climate to emissions and the impacts of other greenhouse gases, it was concluded that 'the remaining global carbon budget for limiting warming to 1.5°C is becoming very small.'²⁹

The significant differences in climate impacts between living in a world at 1.5°C and at 2°C are explained towards the conclusion of this section.

Globally, the production of fossil fuels has reached record levels³⁰ and is projected to remain very high. Taken altogether, current plans and projections of the world's fossil fuel producing countries 'would lead to an increase in global coal production until 2030, and in global oil and gas production until at least 2050'.³¹ The Global Fossil Fuel Production graph, below, shows the 'gap' between the quantity to be produced if the world is to keep warming to 1.5°C and well below 2°C and what is actually being, and is planned to be, produced. As explained in that report, 'the CO₂ emissions expected to occur over the lifetime of existing fossil fuel infrastructure already exceed the remaining 1.5°C carbon budget. This leaves no room for new coal mines, oil and gas fields, or fossil-fuel-burning power plants, unless existing infrastructure is retired early.'³² Retiring early is generally costlier, more politically difficult and may be legally constrained.³³

Global fossil fuel production (GtCO₂e)



Source: Production Gap Report 2023, Figure 2.1, at 19.

Even if all announced government pledges under the *Paris Agreement* are implemented as promised, it is very likely that the temperature rise will be well over 2°C. Based on governments' actual plans, projections and stated policies, the world is on course for at least 2.5°C of warming³⁴ and possibly for above 3°C. More recent estimates have the world on track for 2.7°C median warming by 2100 but also continuing to warm after that date, which 'means current policies do not limit warming to the level of 2.7°C.'³⁵ Global emissions in 2023 increased over 2022 levels, and more than 65% of that was from coal emissions.³⁶

The ongoing increase in fossil fuel production globally has been attributed in part to population growth and rising standards of living boosting overall demand for energy and industrial materials, particularly in China and India. It is also partly due to the fact that access to alternatives to fossil fuels are still limited for manufacturing some key industrial products (steel, aluminium and cement). However, it is also a result of profound distortions in fossil fuel markets globally, including large and long-standing subsidies for both producers and consumers. In the absence of a global price on carbon, large emitters can largely avoid paying for the external 'social costs' of the fossil fuels combusted, which holds prices down and makes production more profitable.³⁷

Within this larger global problem, Australia's fossil fuel production matters, for many reasons. Two are particularly important in this context.

1. An issue of equity and Australia's 'fair share'

Almost two-thirds of Australia's fossil fuel exports went to Japan, Korea and Taiwan in 2022-2023,³⁸ countries in the very top echelons of income and development globally. Australia itself is a high-income country and enjoys a high level of human development.³⁹ Australia also exported fossil fuels to the upper-middle-income country China; together with a large quantity of metallurgical coal, much smaller quantities of thermal coal and a little gas to the lower-middle-income India.⁴⁰ However, only a small proportion was exported to meet the energy needs of low-income countries.

This raises questions of equity as to apportionment of the burden of global decarbonization and Australia's 'fair share' in the task. The portrait is of a wealthy country, Australia, intent on continuing to sell (and to subsidize) the bulk of its coal and gas to three of the world's wealthiest and most highly developed countries, regardless of the very limited remaining global carbon budget.⁴¹

2. A material contribution to warming

Australia's fossil fuel production matters because it is contributing at a substantial level to incremental global temperature rise and, through that, actively driving climate change. Climate scientists have repeatedly warned that every fraction of a degree of warming escalates climate risks and harms. Such statements are repeated many times in various forms in the IPCC's 2023 Synthesis Report, and in its accompanying Summary for Policymakers and other recent IPCC reports.⁴² The frequent repetition of this fact indicates the IPCC's view of its high importance for policy making.

With every additional fraction of temperature rise, the probability also rises that extreme weather hazards will occur more frequently, and/or more intensely, and/or for longer duration. And, as a consequence of this, the risks of harmful impacts for people exposed to extreme weather hazards also escalate alongside the rising probability.

Through this chain of effects, every fraction of a degree of warming results in greater risks, damage and devastation for exposed people – and every fraction averted means those greater harms are avoided.

'Risks and projected adverse impacts and related losses and damages from climate change escalate with every increment of global warming.'








IPCC, 2023 Synthesis Report: [Summary for Policymakers](#), at 14.

In its 2018 Special Report, the IPCC demonstrated the differences which fractions of a degree make to climate-driven risks and harms.⁴³ It showed that even half a degree of additional warming will dramatically escalate climate impacts, comparing the climate changes and impacts projected for an average global increase of 1.5°C with those projected for 2°C and demonstrating that climate risks and harms will be significantly greater at the half-degree warmer level. The IPCC provided many illustrations of the significant escalation of risk levels from this relatively small difference in global mean temperatures (0.5°C). For example, compared to 1.5°C warmer world, in a 2°C warmer world we can expect a *more than doubling* in:

- the population exposed to extreme heat at least once every five years;
- reduction in maize harvests in the tropics;
- decline in marine fisheries; and,
- the number of people worldwide exposed to water scarcity.⁴⁴

The following graph from the Climate Council illustrates worsening climate changes and impacts at fractionally different temperature levels.

Increasing likelihood of extreme events with higher warming

Event	Associated Impacts	Natural	Current	1.5°C	2°C
 Angry summer 2012-2013	 Severe heatwaves, power blackouts, bushfires, illnesses and deaths up	3% (1-5%)	44% (36-52%)	57% (50-65%)	77% (70-84%)
 Coral Sea heat JFM 2016	 Worst coral bleaching event on record	0% (0%)	31% (22-40%)	54% (53-76%)	87% (79-93%)
 SE Australia drought 2006	 Low rainfall	1% (1-2%)	2% (1-3%)	3% (1-4%)	3% (1-4%)
	 High temperatures	1% (0-1%)	35% (28-42%)	52% (45-59%)	74% (67-81%)

Source: Climate Council, ['Aim High, Go Fast'](#), 2023, at 37.

B

Australia's missing policy setting restrictions on fossil fuel exports

Key messages

Australia has no policy to cap, limit or restrict its thriving fossil fuel exports.

- Australia's existing emissions reduction policies barely address its fossil fuel exports, and even then only indirectly – through promoting the development of new, clean exports to potentially displace them.
- These indirect policies will not be sufficient to trigger exports replacement, certainly not at the speed and scale needed to meet the *Paris Agreement's* temperature goal and especially while Australia is still actively promoting (including subsidizing) its fossil fuel export industries.
- Australia must acknowledge the damage its missing policy is causing to people in Australia and to climate ambition globally.

B1 Australia's missing policy setting restrictions on fossil fuel exports

The 2023 Production Gap Report observed with concern that Australia has 'no national policy framework aiming to restrict fossil fuel exploration, production or infrastructure development.'⁴⁵

Australia's policy approach to meeting the *Paris Agreement's* temperature goal is mainly focused on reducing domestic emissions in two areas: energy generation and large industry. A national (unlegislated) target has been set of 82% renewable electricity generation in Australia by 2030 and, although the electricity sector transformation has slowed recently, it is underway.⁴⁶ The change is being propelled by a combination of cheap solar and wind energy, announced targets, federal incentives and state-level policies.

Binding (and declining) net emissions baselines for operators of large industrial facilities have been set under the Safeguard Mechanism.⁴⁷ The baseline requirements cover coal mines and LNG plants, although the regulation does not extend to emissions from the burning or use of exported coal and gas, which constitute the bulk of their emissions. The recent reforms to the Mechanism do, however, significantly impact the costs of some new gas projects, such as the Santos Barossa project.⁴⁸ Unfortunately, the Mechanism is significantly weakened by flaws in its coverage, ambition, integrity controls relating to offsets and liberal permission to use those offset instead of implementing actual emissions reductions.⁴⁹

Any restrictions on the production of fossil fuels within Australia are effectively limited to the operation of general law and general measures, particularly the common law, mining and environmental protection laws and regulations and, in three sub-national jurisdictions, human rights legislation. A damaging gap is that the *Federal Environmental Protection and Biodiversity Conservation Act (EPBC Act)* does not provide specifically or explicitly for the impacts of project emissions on climate change to be taken into account in the granting of approvals. Although litigators have argued that the EPBC Act can nevertheless apply to coal and gas projects *because* of their climate impacts, the arguments have had limited success.⁵⁰ The gap is so stark and concerning that the Full Federal Court of Australia has recently felt compelled to draw attention to it:

*'The arguments on this appeal do underscore the ill-suitedness of the present legislative scheme of the EPBC Act to the assessment of environmental threats such as climate change and global warming and their impacts on matters of national environmental significance in Australia.'*⁵¹

At the same time that Australia is engaged in transitioning its electricity system away from fossil fuel dominance, its fossil fuel production is not decreasing. This is possible because the bulk of Australia's existing production is for export and most new production will be too. Australia has no plans to cap, limit or restrict this production. In the 2023 discussions over reform of the Safeguard Mechanism, the government is reported to have declined to commit to a policy of no new fossil fuel project approvals.⁵² Dozens of proposed new or expanded coal and gas projects are in the approvals pipeline.

In so far as Australia's current policy approach might conceivably be said to aim, at best indirectly, at *reducing* its fossil fuel exports, a raft of national policies and programs now include incentives to develop alternative industries which could potentially displace fossil fuel exports (perhaps some thermal coal) to some extent. The initiatives recently announced under the Federal Government's proposed *Future Made in Australia Act (FMIA Act)* are set to become law in the second part of 2024 and will form the core of Australia's future industrial policy, as well as its national transition policy.⁵³ In the Federal Government's 2024-2025 Budget, AU\$22.7 billion in public finance over 10 years was pledged under the Act's framework for the establishment and development of clean industries in Australia and clean energy supply chains. The package includes nearly AU\$14 billion from 2027/2028 to boost Australia's critical minerals and green hydrogen sectors, principally through production tax credits.⁵⁴

The Act is, in part, an exports-oriented package and promises substantial incentives and supports for the development and establishment of clean industries and energy with an exports focus, including zero emissions energy, green manufacturing, transition minerals and new economy services. While the Australian Act does not match in size the United States' *Inflation Reduction Act*, Europe's *European Economic Security Strategy* or Japan's *Economic Security Promotion Act*, it is similar in character and purpose. If delivered as promised and at scale, the Act is forecast to stimulate billions of dollars in private investment in clean energy, clean manufacturing and critical minerals production in Australia and for export.

Yet it is extremely unlikely that the *FMIA Act* will result in any significant displacement of Australia's current fossil fuel exports, certainly not as regards the near-term. Even the United States' *Inflation Reduction Act* has not prevented the rapid expansion of United States gas and oil exports that has taken place over the period since that Act was introduced. In December 2023, United States' LNG exports reached an all-time monthly high and a massive capacity expansion is currently underway.⁵⁵ The kind of scaling up of clean exports which would be involved for any significant displacement of our fossil fuel exports is beyond Australia's reach and, in any event, Australia may have only limited success in its ambitions to develop new manufacturing and raw materials for the net zero global economy.

Much more powerful and direct policy action will be needed for Australia to bring down its fossil fuel production for export to any substantial extent.⁵⁶ As is explained in [Part D](#) of this report, Australia should accompany its *FMIA Act* strategy framework with a suite of restrictive policy measures within a national plan for an orderly, cooperative and just phase-out of its production for export.

Instead, Australia is currently hedging its bets and hoping to have both thriving clean export industries and thriving fossil fuel export industries. Australia's aspiration to be a renewable energy exports powerhouse 'appears to be in addition to fossil fuel exports, not instead of them.'⁵⁷ For example, in its 'Future Gas Strategy', Australia expressly states that it has no policy to reduce gas exports; it commits to 'supporting an orderly energy transition in our region' by assuring its trading partners that it will meet gas demand until 2050 and beyond.⁵⁸ While the Federal Government is to be commended for the notable absence of any new funding for coal and gas in its May 2024 Budget, it is also continuing to generously support and actively promote fossil fuels exports:

► **Production subsidies.** Australia is continuing to grant substantial subsidies and tax breaks to its fossil fuel producers, and to developers of the infrastructure on which those operations depend.⁵⁹ Data collated by the Australia Institute indicates that, in 2023–24, Australian Federal and state governments provided AU\$14.5bn worth of supports and tax concessions to subsidize its fossil fuel production and major users, a 31% increase on the subsidies provided in the previous year.⁶⁰ Although Australia has committed to the G20 Leaders agreement 'to rationalise and phase-out inefficient fossil fuel subsidies that encourage wasteful consumption', it submitted its response to the G20 in June, 'concluding that we had no measures within scope of the Commitment'.⁶¹

While such large amounts of public investment are flowing into coal and gas, especially through the Fuel Tax Credit scheme and funding for carbon capture and storage plans, any meaningful displacement effect of the *FMIA Act* initiatives will be powerfully countermanded.

► **New fossil fuel project approvals and exploration licenses.** Australia is continuing to issue new exploration licenses and approvals for expanded and new coal, gas and oil projects. There are many proposed fossil fuel projects in the pipeline, particularly oil and gas projects but also a large number of metallurgical, and some thermal, coal projects.⁶² The approvals often permit operation for decades and are reinforced by (and themselves reinforce) government projections showing Australia's coal production staying steady or rising and its gas production potentially increasing into the future.⁶³

One argument which is frequently advanced against Australia taking steps to restrict its fossil fuel exports is that other coal or gas exporting countries will step in to fill the gap (sometimes termed 'leakage') and there will be no global emissions reduction gain from Australia's effort. It often referred to as the 'market substitution' argument or the 'drug dealer's defense' and it has been a successful soundbite for politicians. However, the argument has no sound basis.



First, the recommendations which are set out in [Part D](#) of this report call for an ambitious but orderly and cooperative phase-out by Australia, not a sudden halt to the exports. Central to the recommendations is allowing time for Australia and its major fossil fuel buying countries to transition cooperatively, with regard to their domestic energy transitions.

Secondly, industry experts and economists have explained that the market substitution argument rests on a weak economic assumption: that any decrease in Australia's exports would be fully 'substituted' by other sellers, with no effect on volumes of demand. But elementary economic principles of supply and demand predict that Australia's actions would alter global fossil fuel markets by creating a looming shortage. This should push up world prices, thereby dampening world demand and, over time, stimulating a stronger and earlier move away from fossil fuels – supported by the fact that renewable energy sources are cheaper and more available. What is least likely to occur, they point out, is that Australia's current buyer countries would simply keep buying the same quantities of coal or gas, at what would be higher prices, from new sellers over the full period during which Australia's coal or gas production would otherwise have continued.

B2 The missing policy and escalating climate change

Australia's missing policy setting restrictions on its fossil fuel exports, and its full role in escalating climate change, have not received proper scrutiny, for multiple reasons. In part, that has been because the extraction of its very large volumes of coal, gas and oil for export occurs largely out of sight, as does the political influence exerted by the fossil fuel exporting companies, both in Australia and in other buyer/seller countries and international meetings.⁶⁴ It is also partly due to a pervasive narrative which has the fossil fuel exports sector as too economically important in Australia to disrupt, perpetuating a misconception that it plays a much greater role in Australia's economy than it actually does (see [Part D2](#) of this report).

Scrutiny has also been successfully avoided by ministers shrugging off the exported emissions as solely our buyers' responsibility under the *Paris Agreement*. This reflects a mistakenly narrow reading of that *Agreement*, which contains nothing to suggest that a wealthy, advanced economy which is a major global exporter of fossil fuels should be absolved from carrying any responsibility to curb its exports.⁶⁵ The question of Australia's responsibilities under the *Paris Agreement* with regard to these exports is discussed in greater detail in [Part D1](#) of this report.

Issues have also been conflated, to draw attention away from the fossil fuel exports and the fact that they are not decreasing. For example, Australia's domestic energy reliability and its new fossil fuel project approvals (almost entirely for export) may be presented as one and the same issue, to confuse the discussion and avoid scrutiny. Issues have also been conflated, to draw attention away from the fossil fuel exports and the fact that they are not decreasing. The separate issues of Australia's domestic energy reliability and its new fossil fuel project approvals (almost entirely for export) tend to be rolled together in order to confuse the discussion and avoid scrutiny of the exports. For example, in March 2023 the Minister for Resources, Madeleine King, stated: 'Some fail to acknowledge this, but Australia's coal and gas resources are essential for energy security, stability and reliability, both domestically and across the Asia-Pacific, and will be needed for decades.'⁶⁶

Importantly, Australia's failure to restrict its fossil fuel production for export has negative outcomes which reach well beyond its own shores but inevitably, too, damage its own wellbeing.

- The failure increases 'carbon lock-in', making the energy transition more difficult. Existing technologies, infrastructure, institutions and behaviours which are inconsistent with a low carbon future will inhibit progress towards it and increase later disruption.⁶⁷ In this way, lock-in creates an inertia that favours the ongoing development and use of fossil fuels. With lock-in comes increased risk of significant stranded assets.⁶⁸
- Australia's failure also helps to create a phenomenon known as the 'green paradox',⁶⁹ in which fossil fuel producers, as a result of announced emissions reduction policies, increase their production in anticipation of a future global decline in demand for their product, effectively aiming to sell as much as possible while they still can.⁷⁰ The phenomenon is also linked to profound distortions in fossil fuel markets globally, including large and long-standing subsidies and the absence of a global carbon price or tax. Australia's policy actions in subsidizing fossil fuel production and approving new fossil fuel projects are directly enabling a green paradox to operate. Australia's plentiful production helps hold world prices down, driving sustained fossil fuel consumption and impeding contrary pressures towards a decline.
- Australia's failure undermines the *Paris Agreement* and directly works against its temperature goal. It signals to other countries that Australia's coal and gas supply will remain abundant. Such reliable assurances, coming from a stable country like Australia, give confidence to fossil fuel buyers and producers globally. In a world still hesitating to embrace the necessary global transition at scale, they encourage inaction and delayed action to limit climate change.
- Australia's failure undermines its own efforts, including the *FMIA Act*, to build alternative, clean export sectors. It generates competitive tensions (including for skilled labour) between the existing coal/gas and future clean export sectors. It places a self-imposed brake on our once-in-a-generation opportunity to become a clean exports powerhouse in our region.

Australia's failure to restrict its fossil fuel production for export also has outcomes which reach deeply inside its territory, helping to create a worsening climate for its own people and communities, as the next Part explains.



Escalating risks for people in Australia from every fractional increase in warming

Key messages

Australia's fossil fuel production for export is doubling back in the form of escalating climate risks, damage and destruction for its own population.

- ▶ Australia has already warmed by an average of 1.47°C since 1910.
- ▶ Extreme weather is occurring more frequently and intensely, with events beginning to compound and cascade.
- ▶ The bulk of Australia's population lives in areas which are highly exposed to future physical impacts of climate change.
- ▶ Everyone in Australia is now exposed to escalating climate risks and harms, especially from heat, but many communities are especially vulnerable.
- ▶ Our underlying socioeconomic systems are increasingly exposed to climate risks and harms, with cascading and compounding impacts.
- ▶ As Australia continues to warm, we will encounter biophysical limits to adaptation.

[Part B](#) of this report has explained that Australia is escalating the risks and harms to its climate-exposed population by continuing with its very large fossil fuel exports. Through continuing those exports, Australia is substantially contributing to the ongoing rise in global temperatures; failing to take steps which are within its control to restrict its fossil fuel production so as to slow the pace of climate change; and, weakening climate ambition in its buyer countries and beyond through assurances of plentiful supply.

What are the 'climate risks and harms' which Australia's exports are escalating and how will they be experienced by its population? This Part summarises the broad changes to Australia's climate that are occurring, and those which are projected to occur with further warming. It then explores the risks of climate-driven harms to which people in Australia are increasingly exposed and which are escalated by every fraction of a degree of warming.

'Every fraction of a degree of avoided warming matters and will be measured in lives ... lost or saved.'

Climate Council, ['Impacts at 1.5 and 2 degrees of warming'](#).

C1 Escalating changes to Australia's climate

The Earth is getting warmer – and Australia is getting hotter.

1. The Earth

Average global temperatures have already risen and greenhouse gas concentrations already in the atmosphere mean that our climate will continue to change for some decades.⁷¹ Current global plans for expanding fossil fuel production indicate that temperatures will increase further as the world releases more emissions into the atmosphere. There is a near-linear relationship between cumulative emissions and global warming.⁷² The 10 warmest years in the historical record have all occurred in the past decade (2014-2023), with 2023 being the hottest year on record as the Earth's global mean temperature reached 1.45°C.⁷³ All further warming will steadily move the world towards higher climate risk.⁷⁴ There is some evidence that global warming has accelerated over the past 15 years.⁷⁵

Temperature

- › The global mean near-surface temperature in 2023 was $1.45 \pm 0.12^\circ\text{C}$ above the 1850–1900 average.
- › 2023 was the warmest year in the 174-year observational record, clearly surpassing the previous joint warmest years, 2016 at $1.29 \pm 0.12^\circ\text{C}$ above the 1850–1900 average and 2020 at $1.27 \pm 0.13^\circ\text{C}$.
- › The past nine years, 2015–2023, were the nine warmest years on record.
- › Record monthly global near-surface temperatures have been observed for the ocean – from April through December – and, starting slightly later, the land – from July through November.
- › The 10-year average 2014–2023 global temperature was $1.20 \pm 0.12^\circ\text{C}$ above the 1850–1900 average, making it the warmest 10-year period on record.

Source: World Meteorological Organisation, [State of the Global Climate 2023](#), at 3.

2. Australia

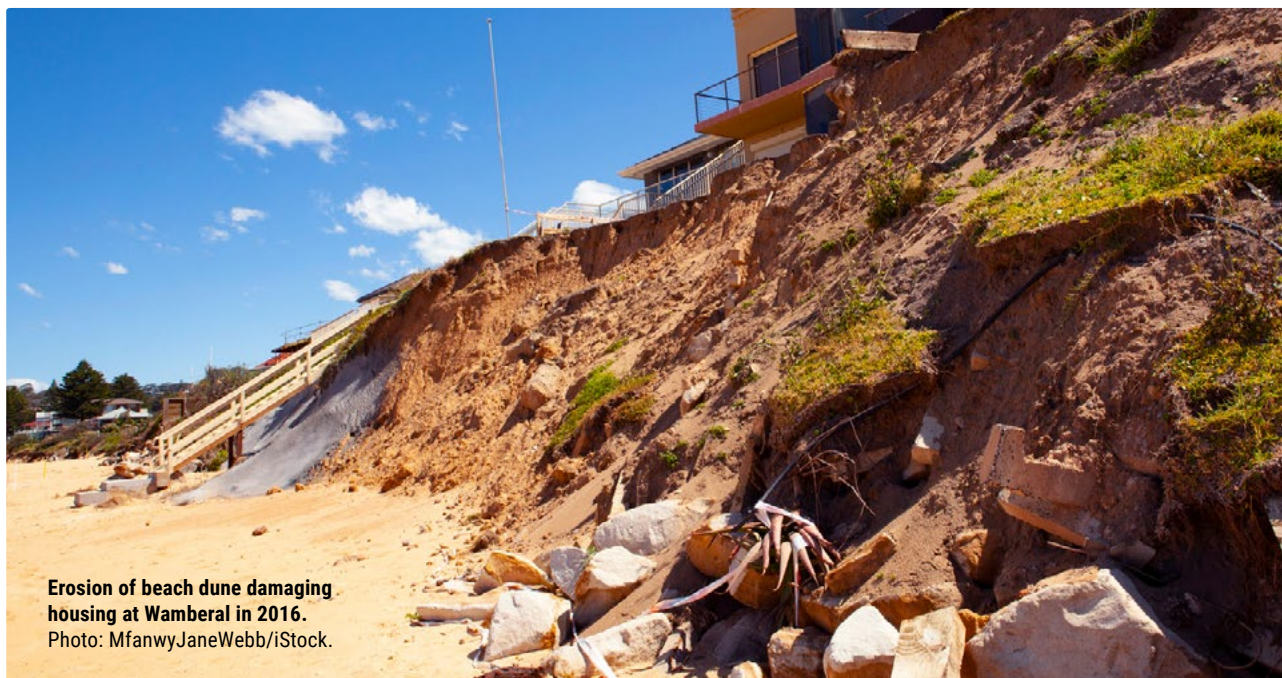
The Black Summer fires of 2019-2020 in eastern Australia illustrate what such warnings about global warming mean at the more local level. The 'magnitude and ferocity of the fires would have been virtually impossible without climate change' driven by global temperature rise.⁷⁶

Australia's climate has already changed due to global warming. It is presently the driest inhabited continent on earth⁷⁷ (although not the driest country), with around 70% of land classified as arid or semi-arid.⁷⁸ In November 2022, the CSIRO reported that Australia had warmed on average by 1.47°C since national records began in 1910.⁷⁹ The graph below displays escalation in the frequency of very warm days in Australia. Very warm day- and night-time temperatures that occurred only 2% of the time in the past (1960-1989) occur five to six times more frequently (2005-2019) and the frequency of extreme heat events is increasing.⁸⁰

Australia is also experiencing more frequent and intense heatwaves.⁸¹ At the world's current average global temperature level of 1.2°C above pre-industrial levels, 'peak heatwaves that occurred only once per 30 years in pre-industrial times in Australia can now be expected every 5 years'.⁸² Once the world reaches 1.5°C of warming (just 0.3°C higher than current levels), these 'can be expected every 2.7 years.'⁸³

'Flash droughts' are also becoming more common in Australia, with 'higher temperatures more often coinciding with dry conditions, as relative humidity falls across many parts of Australia'.⁸⁴ A flash drought is 'characterised by the sudden onset and rapid intensification of drought conditions, over a period of weeks or months.'⁸⁵ A flash drought hit much of inland New South Wales in 2019, and similar events occurred in 2017 and 2018 along large areas of Australia's eastern seaboard. Flash droughts can have devastating economic, social and environmental impacts, and their rapid onset and intensification can give little time for farmers to prepare. In late 2023, a flash drought occurred in the Upper Hunter region of NSW and, early in 2024, one began in western Victoria. For both areas, an abrupt drop in rainfall occurred at the same time as record maximum temperatures were recorded in those regions.

But the changes already occurring in Australia are not limited to extreme heat, heatwaves and drought. Extreme weather events generally in Australia have become more intense and are occurring more often.⁸⁶ Australia is experiencing increased heavy rainfall intensity.⁸⁷ Ocean warming and sea level rise are also occurring, and at an increasing pace. Sea level rise has been extreme in some Australian coastal areas, accompanied by severe storms and storm surges.⁸⁸



Extreme weather events in Australia have also begun to occur concurrently and to compound each other. 'Compound extremes' are 'instances where multiple destructive events or elements occur at the same time or in close succession, exacerbating one another such that the overall impact is worse than if each had occurred in isolation.'⁸⁹ The events may be similar in nature, such as two tropical cyclones hitting the same area in close succession, or they may be quite different, such as heavy rainfall falling on burned areas and triggering landslides. Compound extremes 'can inflict immense human suffering, economic costs and environmental damage', and the widespread destruction they cause can hamper urgent relief efforts.⁹⁰

It is clear that there is ample, reliable data to document the changes now occurring in Australia's climate and to enable robust projections of what lies ahead for the different global warming scenarios (eg 1.5°C, 2°C and 3-4°C of warming) and across individual, broad regions of Australia.⁹¹ However, one wild card for Australia is the effects of 'tipping points'. What characterises a tipping point is that, once active, it triggers a cascading set of changes which cannot be stopped.⁹² One example is the thawing of permafrost, releasing stored methane, a potent greenhouse gas, which would amplify global temperature rise in a self-reinforcing loop.⁹³

Once tipping points become active, the situation cannot be changed by countries reducing their emissions or by any existing technological intervention. Climate change impacts are then experienced on a very long timescale;⁹⁴ some will appear within decades and some will be effectively irreversible.

Globally, some tipping points are known to be already 'active',⁹⁵ such as the polar ice melts. This is particularly alarming because it indicates that tipping points may be activated even at the current annual average warming level of around 1.2°C degrees above pre-industrial levels.⁹⁶ It is also becoming clear that the tipping points might be connected: once one or two become active, such as melting polar ice and permafrost, they may contribute to the destabilising of others to form a 'tipping cascade'.⁹⁷

Climate tipping points are nearer than you think – our new report warns of catastrophic risk

'Tipping points' happen when a system is pushed past a threshold beyond which change becomes self-sustaining. This means that even if the original pressure eased off, the change would keep on going until the system reaches a sometimes completely different state.

Think of rolling a boulder up a hill. This takes a lot of energy. If that energy input is stopped then the ball will roll back down. But when the top of the hill is reached and the boulder is balanced right at the very top, a tiny push, perhaps even a gust of wind, can be enough to send it rolling down the other side.

The climate system has many potential tipping points, such as ice sheets disappearing or dense rainforests becoming significantly drier and more open. It would be very difficult, effectively impossible, to recover these systems once they go beyond a tipping point.

It can be hard to comprehend the consequences of crossing these tipping points. For example, if parts of the Amazon rainforest die, countless species would be lost, and warming would be further amplified as billions of tons of carbon currently locked up in trees and soils makes its way into the atmosphere. Within the region, this could cause trillions of dollars of economic impacts, and expose millions of people to extreme heat.

Given the sheer scale of risks from tipping points, you may assume that economic assessments of climate change include them. Alas, most assessments effectively ignore tipping point risks. This is perhaps the most frightening conclusion of the new [report](#).

Source: J Dyke and D Armstrong MaKay, [The Conversation](#), 7 December 2023.

At present, scientists do not know enough about specific risks to Australia from activating tipping points.⁹⁸ This means that tipping points are not yet being sufficiently included in climate modelling or impact projections for Australia and may represent significant risks on top of the climate changes currently predicted.⁹⁹

C2 Escalating climate risks and harms facing people in Australia

1. A word about risk

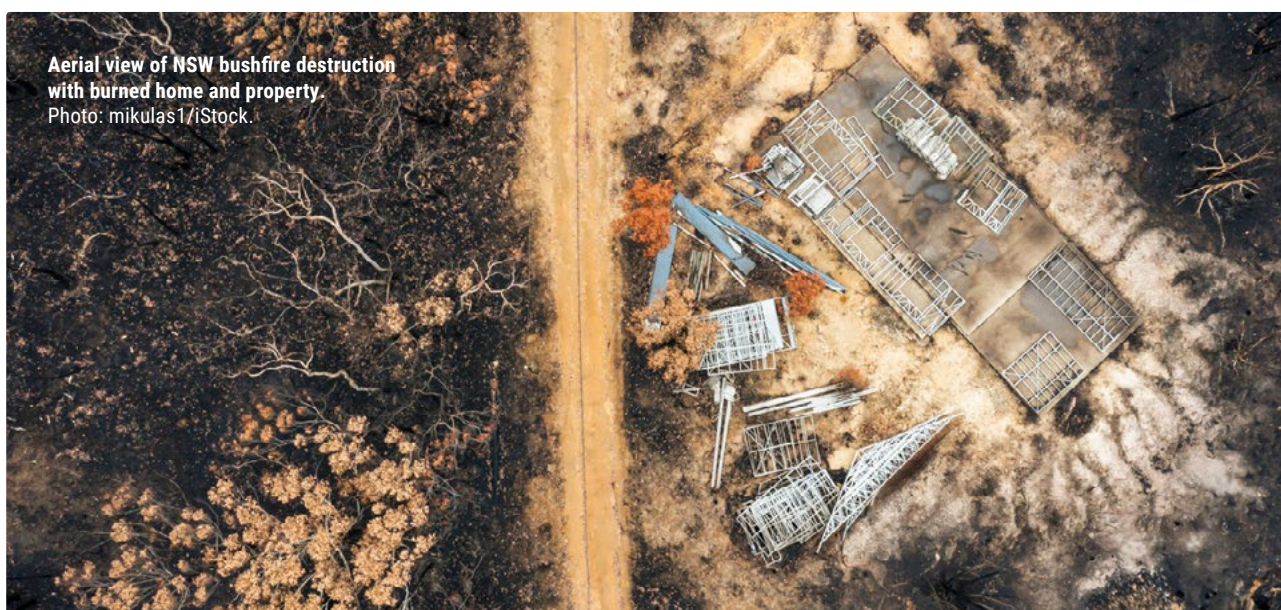
Climate scientists generally assess and communicate the potential adverse impacts of climatic changes for people and communities through identifying the existence and intensity of 'risk'.¹⁰⁰ The inherent uncertainties in weather mean that predictions about exactly 'what, when, where and to whom' can only be made a short time in advance. Climate scientists can, however, simulate future climates and make projections which include levels of probability and likely intensity of extreme weather events for particular regions as global temperatures incrementally rise. From this, scientists can predict escalating risk levels for people who are both exposed and vulnerable to particular climate-related hazards.

The risks identified in this context derive not only from the climate hazards themselves but also from responses to those hazards. These may be human responses or ecological responses, and they have the capacity to reduce or increase the impacts of the hazards for people and communities. For example, prior action on adaptation (a human response) may reduce or even avoid adverse impacts of flooding on some riverine communities, while an outbreak of mosquito-borne disease (an ecological response to flooding) is likely to intensify adverse impacts.

2. Escalating risks to people and communities

In varying ways, everyone in Australia is now exposed to escalating climate risks. It is becoming common to see Australian news stories about beachside properties being undermined by storm surges, and even more common to read about property losses to bushfires or displacement by floods. These communities live with escalating risk because they are directly exposed to these climate hazards and the hazards are intensifying as global average temperatures rise.

The bulk of Australia's population lives in areas which are highly exposed to the physical impacts of climate change,¹⁰¹ either in the temperate coastal regions or the more arid interior. The eastern seaboard states are particularly highly exposed to future physical impacts of our deteriorating climate.¹⁰²



Heat as a critical hazard

The profoundly dangerous climatic trend of increasing heat, which is now established in Australia, presents risks to which effectively all are exposed. For example, the populous eastern seaboard states have been experiencing more frequent, more intense and longer lasting heatwaves in recent decades. Heatwaves are already the deadliest natural hazard in Australia.¹⁰³ This trend is projected to continue and to escalate with further global temperature rise.¹⁰⁴ Advances in attribution science now permit rapid calculation of the role of human-induced climate change in the intensity of heatwaves.¹⁰⁵

‘Scientists expect that by 2100, climate change-fueled extreme heat will kill more people across the globe annually than COVID-19 did in 2020.’

Steffen and Bradshaw, [‘Hitting Home’](#), 2021, at 6.

Heat stress (a combination of temperature and relative humidity) is predicted to become more common in all areas of Australia as its climate warms,¹⁰⁶ adding a further layer of risk. This includes parts of Australia’s populous eastern seaboard area.¹⁰⁷ Heat and humidity in combination are known to have particularly adverse outcomes for health. A temperature of 35°C + 100% humidity marks the upper human physiological limit, but much lower levels also have serious health, productivity and socioeconomic impacts.¹⁰⁸

Deaths caused by heat, including in combination with humidity, are currently under-recorded.¹⁰⁹ A 2019 study found heat-related health issues in Australia have been grossly underestimated.¹¹⁰ Heatwave-related deaths and health impacts are predicted to grow for people whose health, age, socioeconomic status or geography make them more vulnerable to such risk.¹¹¹ This is a large proportion of people in Australia – but our population at heightened heat risk is also expanding due to our high urbanization and the wide incidence in Australia of ‘urban heat islands’. These are areas where the physical environment, typically closely clustered housing with dark roofs and surfaces, expansive concrete and few trees, attract and trap heat, often aided by the geography. Heat island effects in cities are known to create severe, heat-related health hazards.¹¹²



Mays Hill, Sydney, 2024. Photo: Sweltering Cities.

Case study: Extreme heat in western sydney

On 4 January 2020, Penrith was officially the hottest place on Earth at 48.9°C. Such temperatures are already pushing the limits of human endurance, and people in urban settings like Penrith may be regularly exposed to even higher temperatures than those officially recorded due to amplifying factors such as concrete and asphalt (Thompson 2020) – the ‘urban heat island’ effect. In particular, extreme heat endangers children, the elderly, people with existing health conditions and other vulnerable groups (Climate Council 2016).

Extreme heat in Sydney demonstrates how climate change can exacerbate existing socio-economic inequalities. Western Sydney experiences higher summer temperatures than suburbs nearer the coast. For example, over the 2019-20 summer, western Sydney recorded 37 days over 35°C compared to six in the east of the city (Amin 2020). This matches the marked socio-economic divide between Sydney’s affluent east and the fast-growing western suburbs, with incomes, job opportunities, and access to education all split along the so-called “latte line” that divides the cities’ eastern suburbs and north shore from the west (Gladstone 2018).

Very high temperatures in schools make it harder for students to concentrate, contributing to reduced learning outcomes (Pfautsch et al. 2020). Research from the University of Western Sydney revealed that for students in Sydney’s western suburbs, extreme summer heat in schools is often compounded by the poor design of buildings, inadequate shade and surfaces that absorb much heat (Pfautsch et al. 2020).

Without far stronger action to address climate change and support communities to adapt to new extremes, we risk further entrenching inequalities.

Source: Steffen and Bradshaw, ‘[Hitting Home: The compounding costs of climate inaction](#)’, 2021, at 8.

Exposure + vulnerability

There are many communities in Australia which are not only exposed to climate hazards – they are also particularly *vulnerable* to them. Studies have characterised vulnerable communities as made up of those who are ‘socially, economically, culturally, politically, institutionally or otherwise marginalized’.¹¹³ The UN High Commissioner for Human Rights has identified the marginalised (climate-vulnerable) communities as including, ‘women, children, older persons, indigenous peoples, minorities, migrants, rural workers, persons with disabilities and the poor.’¹¹⁴ This aligns closely with the findings of the Australian Academy of Science, which added two further climate-vulnerable groups: those living with medical conditions and outdoor workers.¹¹⁵ The UN High Commissioner has subsequently added ‘future generations’ expressly to the list.¹¹⁶

Marginalised people and communities are climate-vulnerable for multiple reasons. Because climate change will increase the frequency and intensity of extreme weather events, understanding the dynamics of the climate vulnerability of these population groups has become particularly urgent. Many factors can create climate vulnerability, including the characteristics of a particular weather hazard, the effectiveness of warning systems and geographic location (such as living in areas that are more subject to heat or flooding; hazards which will intensify with a worsening climate). There are also socioeconomic factors which predispose to higher climate vulnerability. Housing status and the nature of accommodation are significant factors, including living in temporary housing or in housing which is poorly climate-adapted.¹¹⁷ Others identified are income level, insurance cover, available services, fairness, support networks (family and friends), employment, age, health status and dependent children.¹¹⁸

A critical insight has been the identification of a dynamic relationship between climate vulnerability and social inequalities. The relationship has been summarised by the UN Department of Economic and Social Affairs (DESA) as,

‘characterized by a vicious cycle, whereby initial inequality causes the disadvantaged groups to suffer disproportionately from the adverse effects of climate change, resulting in greater subsequent inequality.’¹¹⁹

The IPCC’s reports support this finding and predict that increased climate risks will also increase existing vulnerability in Australia, through ‘exacerbat[ing] existing ... social inequalities and inequities’.¹²⁰ These include inequalities and inequities ‘between Indigenous and non-Indigenous Peoples and between generations, rural and urban areas, incomes and health status.’¹²¹ The IPCC concluded in its 2020 report on ‘Risk’ that what places these groups at escalated climate risk is the insufficiency of resilience, equity and justice, adaptation and transformation, each of which it describes as ‘entry points’ for risk.¹²² In similar vein, DESA has identified channels through which the inequality-aggravating effect of climate change materializes.¹²³ A 2022 study reviewed evidence of the health risks of climate change for Indigenous Australian populations in New South Wales compared to non-Indigenous populations. It concluded that reducing the inequality *now* between Indigenous and non-Indigenous populations will build climate resilience and help prevent climate impacts from driving even deeper inequality.¹²⁴

Climate risks have begun to materialise now for many vulnerable communities in Australia. For example, in 2019, a group from the Torres Strait Islands complained to the UN Human Rights Committee that sea level rise was increasingly causing their community harms which were potentially existential, including flooding and inundation of villages and ancestral burial grounds, the destruction of traditional lands through erosion and salinification, and reduced ability to practice and pass on traditional culture.¹²⁵

The UN Committee found that Australia was failing to adequately protect the community from adverse impacts of climate change, resulting in the violation of the complainants’ rights to enjoy their culture and to be free from arbitrary interferences with their private life, family and home.



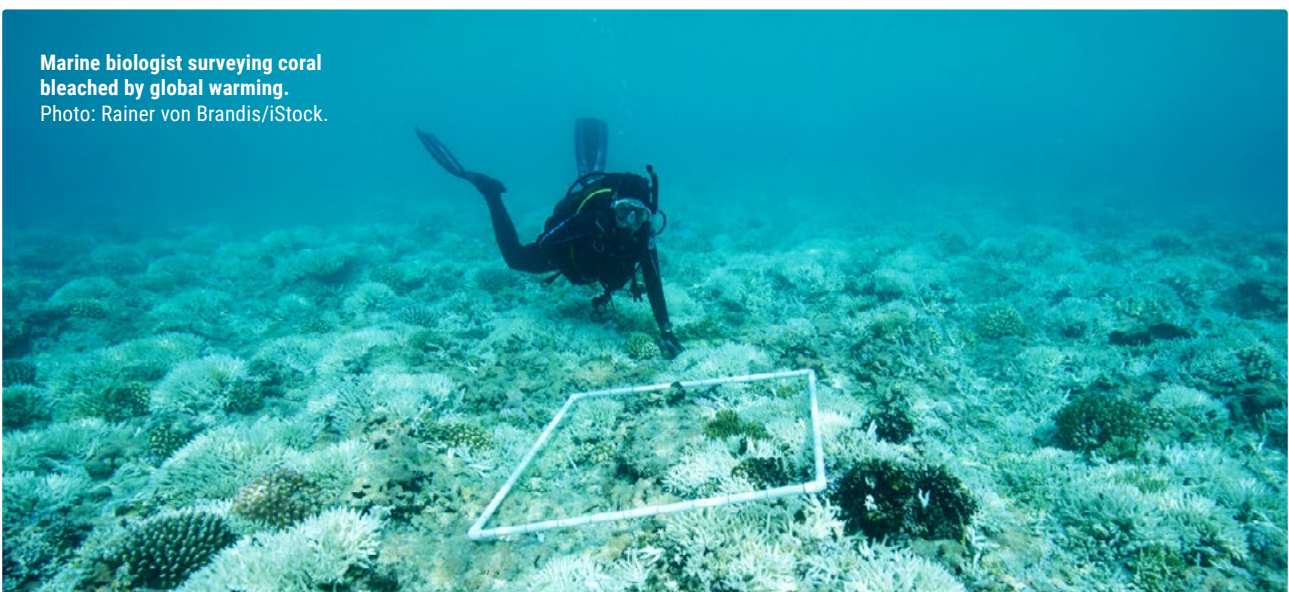
High tides in January 2012, Saibai Island in the Torres Strait Islands.
Photo: Brad Marsellos/McGill Centre for Human Rights and Legal Pluralism.



In another example, many categories of outdoor worker are already vulnerable to heat risks¹²⁶ and heat stress during the hottest parts of the day.¹²⁷ Australia suffered \$5.8 billion in lost productivity due to heat stress in 2018.¹²⁸ Heat exhaustion and heat stroke are particularly relevant to physically demanding jobs,¹²⁹ and construction workers are particularly at risk due to the dynamic and informal nature of their work.¹³⁰

Senior management in construction do not necessarily adjust productivity expectations despite hot conditions, and workers may be reluctant to stop work due to fear of missed wages. This can mean that workers push themselves beyond safe limits and are at risk of occupational heat stress.¹³¹

In a third example, thousands of jobs may be lost with the loss of the Great Barrier Reef. Marine tourism in the Great Barrier Reef Marine Park supports a large local economy and more than 60,000 jobs.¹³² This economy is directly threatened by transformational damage to – or even permanent collapse of – the Reef due to ongoing warming of the climate and oceans.¹³³



The climate hazards projected to intensify in Australia due to incremental global warming also escalate risks confronting our critical underlying systems.¹³⁴

3. Escalating risks to our underlying systems

A worsening climate also exposes people in Australia to escalating risks and harms from impacts on the major systems on which their social and economic lives depend. The following systems have been identified as 'exposed' to escalating, climate-driven risk,¹³⁵ to greater or lesser extents depending on variable circumstances:

- › governance systems and institutions
- › essential service providers (may be unprepared or overloaded beyond a point which can be managed)
- › food and water systems (may be rendered insecure, yields may decrease)
- › energy systems (may be profoundly disrupted)
- › economic systems ('cost of living' may rise above levels which can be managed, property may be lost or damaged, livelihoods may be lost, supply chains may be disrupted)
- › social systems (internal displacement and migration, reduced social cohesion, lost traditions and lifestyles)
- › settlement systems (some urban areas may become unsafe eg heat islands or flooding, housing may become more scarce/expensive, transportation may become difficult)
- › health systems (heat, vector-borne and water-borne diseases, simultaneous extreme weather events, psychological stress may strain systems beyond capacity)
- › human-related natural systems (natural systems which support economic bases may be lost or damaged eg tourism, forestry, fishing, farm production)
- › natural environments (loss of amenity eg beaches, national parks, smoke-free air).

Australia is fortunate in being a highly developed country with the resources to buttress our underlying human systems in response to extreme weather challenges as they occur. The most pervasive systems risk in Australia's cities generally is that posed by rising temperatures and prolonged heatwaves, with subsequent impacts for social and health services and for infrastructure (eg energy, water). In addition, more restricted access to finance and property insurance is likely to lead to increased rental reliance by multiple socio-economic groups.

Australia's exposure to systems risk is heightened by the phenomenon of compounding extremes (see [Part B1](#) of this report). The IPCC has described compounding extremes as now cascading across socioeconomic and natural systems, with 'complex connections generating new types of risk, exacerbating existing stressors and constraining adaptation options.'¹³⁶ The IPCC cites the 2019–2020 southeast Australia bushfires, as a powerful example of compounding and cascading impacts across multiple systems, which:

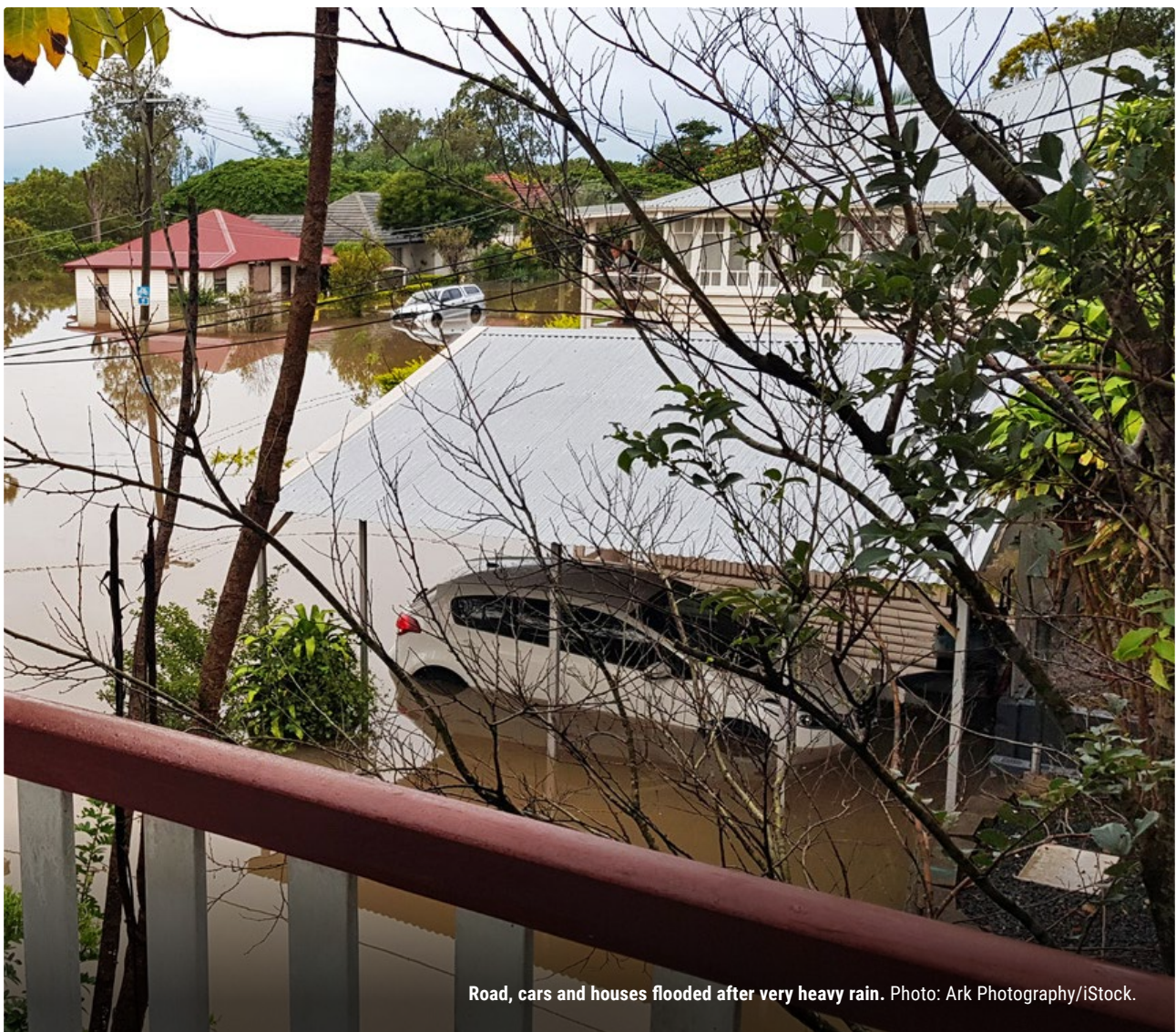
*'burned 5.8 to 8.1 million hectares, with 114 listed threatened species losing at least half of their habitat and 49 losing over 80%, over 3,000 houses destroyed, 33 people killed, a further 429 deaths and 3230 hospitalisations due to cardiovascular or respiratory conditions, AUD\$1.95 billion in health costs, AUD\$2.3 billion in insured losses and AUD\$3.6 billion in losses for tourism, hospitality, agriculture and forestry.'*¹³⁷

A more recent example of climate-amplified compounding extremes cascading across multiple human systems occurred in Queensland in 2023. Fires, storms, a cyclone and flooding struck in quick succession. In October, Queensland's Western Downs region experienced ferocious bushfires. Dozens of houses and two lives were lost in the town of Tara. Almost immediately after, a supercell thunderstorm struck Queensland's south-east, destroying A\$50 million worth of crops and farming equipment, followed shortly after by Tropical Cyclone Jasper in north Queensland. Catchments flooded across the region, causing widespread damage to roads, buildings and crops.¹³⁸

The IPCC has also projected that ‘non-climatic’ risks will increasingly interact with climatic risks in ways that will make the overall risks to our underlying socioeconomic systems more difficult to manage.¹³⁹ Non-climatic risks include poor or misguided responses to climate-driven hazards, or they may arise where competing interests direct sub-optimal responses to hazards. They may also result from sheer lack of preparedness for simultaneous, extreme weather events or for areas rapidly becoming unsafe due to escalating risk of flooding or escalating heat island effects.

Added to this, scientists have warned that activating tipping points or triggering a ‘tipping point cascade’ may lead to transformative human systems changes which could push many communities outside their adaptive capacity.¹⁴⁰ On a global scale, such human systems changes include disruptions to food production, trade and supply chains, large volumes of climate migration, and growing conflict. While Australia is an island geographically, it is not one climatically or geopolitically.

Climate change may also activate what are called ‘socio-economic tipping points’ within Australia. A socio-economic tipping point may become active quite abruptly.¹⁴¹ Possible examples involving underlying systems include the collapse of house prices in a region of coastal towns due to increasing flood risk from sea level rise; the anticipation of increasing heat and aridity causing people to migrate out of a region, leaving insufficient ‘community’ for others to stay;¹⁴² and increasing flood risk causing the collapse of an established natural hazard insurance system.¹⁴³



Road, cars and houses flooded after very heavy rain. Photo: Ark Photography/iStock.

C3 Adaptation and escalating risks

Even if the world immediately reduces its emissions aggressively, the climate will continue to change for decades and likely longer. Adaptation action is critically important for reducing the direct and indirect risks of harms from climate change in Australia. The term ‘adaptation’ refers to steps that are taken to moderate or minimise the harmful impacts of a climate-related change.¹⁴⁴ Examples of adaptation are ‘greening’ cities to reduce heat stress, preventing building in hazardous locations, creating ‘living shorelines’ for coastal protection, developing effective disaster response systems and using ‘river remodelling’ to stop urban flooding where it has been made more common and intense by global warming. Many First Nations communities are in urgent need of multiple, appropriate adaptation actions.¹⁴⁵

The main focus of Australia’s adaptation action to date has been developing high-level, national strategies. The Federal Government is in the process of developing a National Climate Risk Assessment and National Adaptation Plan, establishing the processes which will guide future decisions on adaptation.¹⁴⁶ The Plan needs to address what the IPCC has described as ‘large gaps remain[ing], especially in effective implementation, monitoring and evaluation’ by Australia.¹⁴⁷

But as Australia continues to warm – escalated by the contribution of its own exported emissions – it will encounter biophysical limits beyond which adaptation action becomes ineffectual or impossible.¹⁴⁸ For example, studies of adaptation options available for Lismore, a NSW town which has suffered very severe flooding and losses in recent years, have concluded that none can prevent future floods of the magnitude the town has been experiencing.¹⁴⁹ In another example, saltwater encroachment on coastal farmland in northern Australia simply may not now be preventable. These limits will tighten further as climate changes intensify, progressively reducing the effectiveness, and ultimately the availability, of presently existing adaptation options.¹⁵⁰

Human responses can also place limits on adaptation options. For example, budgetary and ‘realpolitik’ considerations may act to place acceptance boundaries around the scale of adaptation actions which use public funds. One study noted, too, the presence of strong community concerns about associated risks from adaptation measures (eg unintended diversion of flood waters to new areas).¹⁵¹ ‘Maladaptation’ actions can create new sets of problems. The IPCC has drawn attention to the fact that already marginalised people are especially vulnerable to poorly conceived or inequitable adaptation responses.¹⁵²



A national fossil fuel exports phase-out plan for Australia

Key messages

Australia must urgently implement an ambitious national plan to phase-out its fossil fuel exports in an orderly, cooperative and just manner.

- › For Australia's actions and policies to be consistent with the *Paris Agreement's* temperature goal, it is imperative that Australia implements a plan to phase out its fossil fuel production for export.
- › Australia's economy is quite diverse and not particularly dependent on fossil fuel production.
- › Australia's economy would benefit from avoiding current costs related to its fossil fuel production, especially its exports.
- › Investment in Australia's new, clean export opportunities would benefit from a pathway less impeded by powerful competition from Australia's incumbent fossil fuel exporters.
- › Approvals in Australia of new fossil fuel projects should be halted backed by amendment of the EPBC Act to make the consideration of climate change impacts mandatory as a core part of any new project assessments.
- › Large fossil fuel exporters should be required by law to disclose their exported emissions and to undertake climate-related human rights due diligence in relation to those emissions.
- › Australia should take a lead in international efforts towards a cooperative phase-out of fossil fuel production, using all powers in its sphere of influence.

D1 A national policy implementing an orderly phase-out

In this Part, the report urges Australia to adopt a national policy under which its production of fossil fuels for export is actively phased out. It is in Australia's own interests to 'cut with both arms of the scissors'¹⁵³ – continuing to utilise the policy instruments available to restrict demand for fossil fuels but also making use of those available to restrict supply. The ongoing increase in global fossil fuel emissions, and other evidence set out in this report, raise fundamental doubt that measures to curb fossil fuel demand alone will deliver the emissions reductions necessary to avoid catastrophic climate change in the time remaining.

Australia has chosen to interpret its *Paris Agreement* obligations as being met by cutting with one arm of the scissors: by adopting measures to curb demand for fossil fuels in its territory, so as to bring down its domestic emissions. Australia has declined to add to this any direct actions to reduce supply of its fossil fuels, including through its exports. As Prime Minister Albanese has explained, countries which are 'Parties' to the *Paris Agreement* are not required to account under the international accounting protocol adopted by that *Agreement* for the emissions from these exports: '[T]he UN ... measure[s] emissions based upon where they occur, not where the product comes from. Japan doesn't have to account for its emissions if a Japanese car in Australia is emitting carbon dioxide.'¹⁵⁴

This statement is correct in so far as it simply describes the accounting system of the *Agreement* (the 'UN' system referred to). Article 13 of the *Paris Agreement* prescribes a global method of accounting for emissions, under which each Party is required to provide and maintain a national inventory report of its current, territorial anthropogenic greenhouse gas emissions. However, the statement only tells one part of a larger story. It implies that countries which export products like fossil fuels in large volumes – products which will foreseeably add substantially to existing atmospheric concentrations of greenhouse gases – are positively absolved by the *Paris Agreement* from taking any responsibility for that outcome. It also implies that fossil fuel countries would even be acting in a way that is contrary to the existing emissions reduction regime set up under that *Agreement*, rather than supportive of it, if they did responsibly take exports-focused mitigation action.

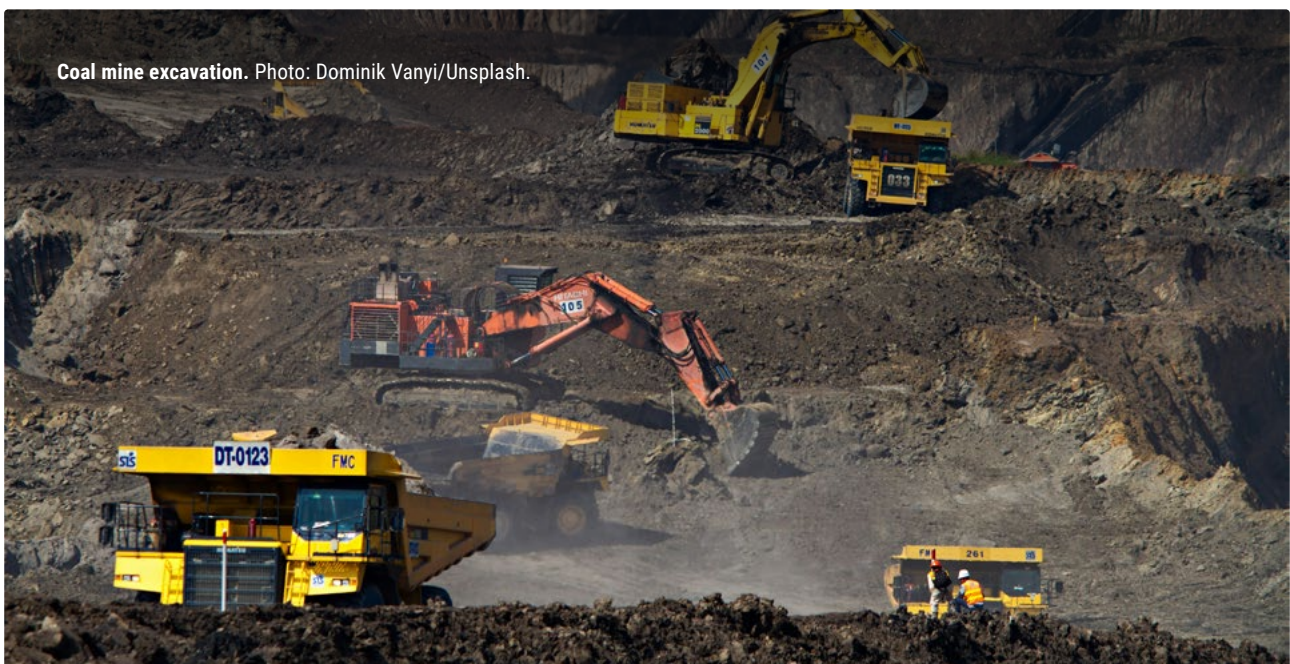
Far from discouraging Parties from taking action to reduce their fossil fuel production for export, the *Agreement* encourages each Party to take actions which reflect 'its highest possible ambition' (Art. 4.3) and 'to undertake ... ambitious efforts ... with the view to achieving' (Art. 3) the temperature goal of holding the increase in global average temperature to well below 2°C and pursuing efforts to limit the increase to 1.5°C (Art. 2.1). While these efforts 'shall' include 'domestic mitigation measures' (Art. 4.2), they certainly are not limited to those by the *Agreement*. The International Tribunal on the Law of the Sea provided support for this understanding in its recent Advisory Opinion, stating that the temperature and emissions goals of the *Agreement* are to be attained, '*inter alia*, through ... successive [NDCs and] through ... domestic mitigation measures'.¹⁵⁵ The *Agreement* adds that the temperature goal is to be achieved through Parties aiming for 'global peaking of greenhouse gas emissions as soon as possible', with 'rapid reductions thereafter' (Art. 4.1), and in a manner which 'reflect[s] equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances' (Art. 2.2).

Aside from as they relate to the *Agreement's* mandatory reporting procedures, the above provisions are essentially hortatory in character and do not create specific, legally binding obligations for individual parties. But while the temperature goal does not have 'specific legal force applicable to the actions of individual Parties', it may nevertheless be developing into 'a benchmark against which ... each Party could set and calibrate its own mitigation efforts, as it sets its successive NDCs'.¹⁵⁶ It is hoped the scope and nature of States' obligations under international law (including under the *Paris Agreement* and more broadly) to ensure the protection of the climate system through limiting global temperature rise will be made clearer by the forthcoming Advisory Opinion of the International Court of Justice.¹⁵⁷

Can Australia credibly claim that its actions in relation to fossil fuel production for export are consistent with the purposes of the *Agreement* and reflect Australia's highest possible ambition? The question must be answered in the current context, which informs understanding of the above provisions. Important elements of that context include the fact, as noted 'with significant concern' in the 2023 Global Stocktake Report, that despite progress, 'emissions trajectories are not yet in line with the temperature goal of the *Paris Agreement*, and that there is a rapidly narrowing window for raising ambition and implementing existing commitments in order to achieve it'.¹⁵⁸ The Report also noted with concern that 'the carbon budget consistent with achieving the *Paris Agreement* temperature goal is now small and being rapidly depleted'¹⁵⁹

Also important to the context is Australia's role as a very significant producer of fossil fuels and, through that, contributor to global warming, both historically and currently. It is the world's 2nd largest coal and LNG exporter, the 5th largest emitter by total lifecycle emissions associated with its fossil fuel production and the 2nd largest by lifecycle emissions from its fossil fuel exports. Relevantly, it is also a country with substantial renewable energy and other resources, and is exceptionally well placed to develop alternative domestic energy sources and export industries.

Australia is also a wealthy country, comfortably within the category of 'developed countries' identified in the *Agreement* to take the lead in global decarbonization efforts. It is, and plans to continue, selling the greatest proportion of its (subsidized) exported fossil fuels to three of the world's wealthiest and most highly developed countries (Japan, Korea, Taiwan).¹⁶⁰ Only a comparatively small quantity of Australia's exported fossil fuels go to developing countries. These factors are important elements of context as they remove justifications for Australia based on principles of equity or matters of national capabilities.



Coal mine excavation. Photo: Dominik Vanyi/Unsplash.

Taking these factors as a whole, this report argues that, for Australia's climate actions and policies to be consistent with the *Agreement's* temperature goal and purposes, and for them to reflect Australia's highest ambition, the second arm of the scissors must also be deployed: Australia must adopt measures to progressively restrict its production of fossil fuels for export.¹⁶¹ There is nothing in the *Agreement* to prevent Australia from doing this or from including in its NDC, alongside its domestic emissions reduction targets, new targets for reducing its fossil fuel production for export, together with details of its plan to achieve those targets over time (for example, stopping new approvals and winding down subsidies).

Indeed, Articles 6.8 and 6.9 of the *Paris Agreement* provide a possible framework for a phase-out by Australia, as a voluntary, cooperative 'non-market approach' to achieving the *Agreement's* temperature goal. The purpose of the framework established by Art. 6 for such approaches is to enable 'higher ambition in mitigation and adaptation actions and to promote sustainable development and environmental integrity'. Under this framework, the cooperative initiative could be included in Australia's 2025 NDC or in a joint NDC by Australia and its (advanced economy) buyer countries. The opportunity to use Article 6.8 for achieving the *Agreement's* temperature goal was noted in the 2023 Global Stocktake Report, which emphasized,

*'...the urgent need to strengthen integrated, holistic and balanced nonmarket approaches in accordance with Article 6, paragraph 8, of the Paris Agreement, in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through mitigation, adaptation, finance, technology transfer and capacity building, as appropriate.'*¹⁶²

As a signal from a large and stable fossil fuel producer like Australia, adopting targets and a plan to phase out fossil fuel exports could well be game-changing globally. Given Australia's status as one of the world's largest fossil fuel producers and exporters, and its considerable 'soft power' in global affairs, it is likely that action by Australia to phase out its fossil fuel production for export would greatly assist the world to meet the *Agreement's* temperature goal. It could slow the pace of global warming considerably, reduce future climate damage and buy the world – and climate-exposed people in Australia – valuable time.

Australia should begin the phase-out by:

- ▶ Halting all approvals of new fossil fuel projects in Australia backed by amendments to the Commonwealth's Environmental Protection and Biodiversity Conservation Act (EPBC Act) to require mandatory consideration of climate change impacts as a core part of new project assessments. 'Impact' should be defined to encompass the harm caused by emissions fueling climate change and the definition of 'unacceptable impact' in ss. 74B-D of the current Act should be changed to include major contributions to greenhouse gas emissions wherever they occur.¹⁶³
- ▶ Ensuring that large fossil fuel exporters from Australia are required by law to disclose their downstream scope 3 emissions (the emissions occurring overseas from the exported fossil fuels)¹⁶⁴ and to undertake climate-related human rights due diligence to assess actual and potential adverse impacts, including impacts of their exported (scope 3) emissions.¹⁶⁵ Some large fossil fuel exporters already disclose these emissions voluntarily, which typically comprise around 90% of their total. For example, the large coal exporter, Glencore, has disclosed scope 3 emissions for 2023 from 'use of sold products' as constituting 89% of its total annual emissions.¹⁶⁶

These steps should be accompanied by legislation establishing targets, timelines and a concrete plan for a managed phase-out of its fossil fuel production for export. Targets for reducing emissions from Australia's fossil fuel exports should preferably focus, for simplicity, on percentage reductions in production for export, rather than on more complicated systems for reductions in emissions which will occur overseas.¹⁶⁷ The phase-out might be modelled on Australia's highly successful system of controls for implementing the *Montreal Protocol* in a stepwise, time-bound manner. Federal legislation introduced in 1989 utilised licensing, quotas, labelling and reporting obligations to control the manufacturing, importing and exporting of ozone depleting substances and equipment which contains or uses them.¹⁶⁸ Controls might also include a tax on production by volume.¹⁶⁹

D2 Australia will benefit from being ambitious

From an economic management perspective, Australia will benefit from being ambitious in planning the phase-out.

The role the coal and gas industries play in both Australia's economic mix and its exports sector may, at first glance, make a phase-out seem too costly. Research by the Australian National University (ANU) confirms that phasing out fossil fuel production will inevitably have an impact on revenue flows for the Commonwealth budget and for some state budgets.¹⁷⁰ The Queensland Government benefits more from those revenues than other Australian states due to progressive coal royalties,¹⁷¹ although around 70% of its coal production is metallurgical, for which global demand is forecast to continue longer than thermal.¹⁷² In NSW, coal royalty rates are to rise from July 2024.

However, some widespread assumptions about the role fossil fuel exports play in our economy are overstated or unfounded, for example: 'If Australia today said we are not going to export any more coal, what you would see is a lot of jobs lost, you would see a significant loss to our economy, significant(ly) less taxation revenue for education, health and other services...'¹⁷³

It is important to clarify again that this report is proposing an orderly and cooperative phase-out of fossil fuel production for export by Australia, *not an abrupt halt* (see discussion in D3).

The ANU research revealed that Australia's economy is not as economically dependent on coal and gas production as is often assumed, and that revenues in Australia from those sectors are not as large as is often represented. The research estimated royalties and taxes on fossil fuel extraction at approximately \$8 billion in 2019-2020, and total net fuel excise together with customs duty collections at about \$12 billion. Combined, the research concluded, this made up about '3% of overall non-grant government revenue collections at the state and federal levels', described by the authors as a 'relatively modest share'.¹⁷⁴

Putting this into perspective, Australian personal income tax generated more than 11 times as much revenue over the same period.¹⁷⁵ In another illustration, royalties from Western Australia's gas industry are forecast to contribute only 1.3% of state government revenue in 2024/2025, which is less than half of the expected vehicle registration fees for that year.¹⁷⁶

Many factors and considerations besides impacts on revenue flows also need to be included in a full calculation of the costs and benefits to Australia of implementing an orderly phase-out of fossil fuel production for export.

- Aspects of Australia's fiscal regime for oil and gas production 'have allowed many operators of major projects to pay little or nothing in royalties or resource rent taxes. Despite LNG projects being highly profitable, to date none has paid Petroleum Resource Rent Tax.'¹⁷⁷
- Most currently operating or proposed coal or gas projects are, or expect to be, in receipt of subsidies or other financial supports from governments, statutory bodies or governmental agencies (see B1 in this report).
- Even though Australia produces large quantities of fossil fuels, Australia's economy itself is actually quite diverse and not particularly fossil fuel dependent.¹⁷⁸ In terms of countries' fossil fuel intensity measured by GDP, in the financial year 2019-2020 Australia ranked a long way back at 29th. Fossil fuel extraction contributed only around 4.5% to Australia's gross value added.¹⁷⁹ Australia's economy is set to become even more diverse if the goals of the *Future Made in Australia Act* are realised.
- The number of jobs in the fossil fuel industry has been repeatedly inflated. In 2023, only around 19,000 people were directly employed in the oil and gas extraction industry in Australia.¹⁸⁰ Currently, coal mining in Australia directly employs slightly more than 44,000 people, making up only 0.28% of Australia's workforce.¹⁸¹ Six times as many people are currently employed in the arts and recreation sector alone, described in labour statistics as a 'small employing industry'.¹⁸² Note that many other jobs result from the business generated by the local presence of fossil fuel industries, which are primarily located in regional Australia, and a 'just transition' must include policies and programs to fully support transition processes for affected workers (see discussion in D4).
- Even though fossil fuel production is not a particularly large part of Australia's economy, it does dominate the exports sector. Australia's total exports were valued at \$466 billion in 2022-2023, with gas and coal comprising almost one-half of that.¹⁸³ This leaves Australia markedly exposed to future sudden or substantial changes in international demand.



- The traditional assumption, that climate change mitigation actions are net-costly for an individual state, has been powerfully challenged by numerous studies, at both global and national levels.¹⁸⁴ At the global level, the Stern Review into the economics of climate change concluded that the benefits of taking strong and early action far outweigh the economic costs to the world from not doing so.¹⁸⁵ The warning is particularly relevant for Australia, with its high exposure to the physical impacts of climate change. Recent research has revealed that models widely used to predict the future impact of climate change on the world economy are generating overly optimistic predictions because they rely on the restrictive assumption that economies are unaffected by weather shocks in other countries. Once this assumption is relaxed, 'existing models predict catastrophic economic impacts from significant climate change, where all countries are badly affected to different degrees.'¹⁸⁶
- A further gain to Australia from phasing out its fossil fuel production for export is the reduction in domestic emissions which that would bring with it. The emissions occurring here in Australia just to produce fossil fuels which are purely for export are a substantial part of our total domestic emissions – equivalent to around half of the emissions from our total electricity generation.¹⁸⁷
- There are health co-benefits from Australia moving away from fossil fuel production for export. As continued fossil fuel use drives a worsening climate and extreme weather events become more frequent and more intense, other health burdens will steadily grow, as communities are increasingly exposed to bushfires, dust storms, thunderstorms, extreme heat, loss and damage and myriad mental health stressors.¹⁸⁸

D3 An orderly and cooperative phase-out

1. Australia's buyer countries

An essential component of an orderly and cooperative phase-out must be good faith dialogues by Australia with each of our main fossil fuel buyer countries: the high-income countries Japan, South Korea and Taiwan, and the emerging, middle-income economies China and India. All except Taiwan are *Paris Agreement* parties and all have made mid-century net zero commitments. This consultative and cooperative approach aims to minimise disruption to Australia's and our buyer countries' energy systems. It also aims to minimise 'leakage' (see earlier discussion in B1).

Australia has already established a number of international 'clean energy partnerships', including with our major coal and gas buyers Japan, Korea and India.¹⁸⁹ The partnerships are intended 'to advance practical action on climate change and build new clean energy industries' (particularly hydrogen, steel and solar). The partnerships have been established to 'deepen collaboration to tackle the global climate challenge, support regional and global energy transformation, build new clean energy trade opportunities for Australia, and increase and diversify clean energy supply chains.' While there is little information publicly available about these dialogues, their focus appears principally to be on investment and trade in new, clean energy industries.

The dialogues have recently been joined by another Australian policy initiative involving these buyer countries, the recently released 'Future Gas Strategy'. Principle 6 of the Strategy emphasizes 'Remaining a reliable trading partner for gas and low-emissions gases', so as 'to support the energy security and decarbonisation efforts of our trade partners.'¹⁹⁰ A key policy priority for Australia under the Strategy is maintaining gas exports for as long as they are demanded by our trading partners and others, 'through to 2050 and beyond'.¹⁹¹ Australia clearly anticipates strong, ongoing demand for its LNG, although market analysts like IEEFA are predicting a global glut in the second part of the decade¹⁹² and the IEA has predicted that global gas demand is likely to peak by 2030.¹⁹³

By contrast, the dialogues which this report urges Australia to initiate would focus on an orderly and cooperative, but also ambitious, phase-out pathway for Australia's production of fossil fuels for export. Such dialogues would powerfully support Australia's national interest. They would allow Australia to phase up its clean energy and green manufactured exports, less impeded by competitive tensions with fossil fuel exports, while it simultaneously phased out its fossil fuel exports under an ambitious but orderly plan.

For most major developed economies, national security is increasingly being linked to energy security. NATO, for example, has been placing strong emphasis on the links between the two, saying recently: 'Energy security plays an important role in the common security of NATO Allies. The disruption of energy supply could affect security within the societies of NATO member and partner countries, and have an impact on NATO's military operations.'¹⁹⁴ Whether a security justification can be marshalled by Australia for expanding its fossil fuel exports, particularly to Japan which buys around 1/3 of Australia's exported LNG, is questionable. Certainly, the topic of energy security has become a politically sensitive one for Japan, but that does not mean that an orderly and cooperative fossil fuels exports phase-out by Australia would place at risk the national security of either country.¹⁹⁵

Japan is deploying rising volumes of renewable energy and is reconsidering its nuclear sources,¹⁹⁶ but it is also indicating its interest in future carbon capture and storage technologies.¹⁹⁷ Along with Korea, it has also indicated a clear preference for 'blue' hydrogen (made using fossil fuels), rather than green hydrogen.¹⁹⁸ If implemented, these policies and actions would keep both countries tied to fossil fuel imports and slow their pledged transitions to net zero. Australia must engage immediately with these 'clean energy partnership' countries to bring its fossil fuel phase-out plans, as well as its clean export future plans, squarely into the negotiations. Coordinating efforts will mitigate supply chain risks for all our energy partners and allow synergies and opportunities to be maximized.¹⁹⁹

Some practical aspects of the phase-out process, too, will require high levels of cooperation. One is the prevalence of long-term contracts in the LNG exports sector, while another is the limited alternatives yet available to metallurgical coal for steel and aluminium production. But however difficult the diplomatic or practical paths may be, the dialogues to plan our mutual, managed phase-outs are urgent and unavoidable if the countries involved are to meet their decarbonisation commitments, maintain a climate which is safe for humanity, and avoid future energy supply instability.

2. Other fossil fuel-exporting countries

Given its position as a major fossil fuel producing country with vast renewable energy resources and outsized influence globally, Australia could be pivotal in stimulating a concerted international effort away from fossil fuel production. Australia has the capability and the credibility to do this and should do so to maximum impact in its sphere of influence.²⁰⁰ It should seek particularly to engage other high-income, fossil fuel exporting countries, like Norway and Canada. It should also open discussions with other coal and gas exporting countries in the Asia-Pacific region, coordinating efforts to minimise 'leakage' from Australia's phase-out: that is, the possibility that other exporters will step in to supply some of the fossil fuels where Australia is withdrawing (see discussion in B1).

At present, there is no treaty or other international instrument addressing the need to phase out fossil fuel production globally. Some success has been had with voluntary or informal initiatives to strengthen emissions pledges beyond the *Paris Agreement*. More than 100 countries 'have now pledged or proposed net-zero emissions targets and also endorsed the Global Methane Pledge to cut methane emissions by 30% from 2020 to 2030.'²⁰¹

At the COP28 meeting in Dubai, a tentative first step was taken towards addressing the grave problem of still-increasing fossil fuel production, the final statement of the First Global Stocktake calling on all Parties,

'to contribute to the following global efforts, in a nationally determined manner, taking into account the Paris Agreement and their different national circumstances, pathways and approaches:

(b) Accelerating efforts towards the phase-down of unabated coal power;

*(d) Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science.'*²⁰²

Beyond this statement, the Powering Past Coal Alliance has slowly grown in membership, with 48 countries (notably including the US) now participating.²⁰³ Australia joined the Global Methane Pledge at COP26 in 2021, pledging to reduce methane emissions by 30% over the decade.²⁰⁴ An initiative called the 'coal transition accelerator' was launched at COP28 by France, together with Canada, the European Union, the United States and a handful of other countries.²⁰⁵ At the same time, Australia and Norway joined the 'clean energy transition partnership', through which 41 members aim to end international public finance for fossil fuels.²⁰⁶ The main voluntary initiative to facilitate a managed global phase-out of oil and gas production is Beyond Oil and Gas Alliance (BOGA),²⁰⁷ while an NGO initiative focused on all fossil fuel types is the Fossil Fuel Non-Proliferation Treaty (FFNPT).²⁰⁸

Australia is not a member or endorser of any international initiatives related to reduced production other than the Global Methane Pledge.





D4 A just phase-out

There are many stakeholders beyond our main buyer countries whose interests will be affected by an Australian fossil fuels exports phase-out. The term 'Just Transition' has been coined to describe a transition away from fossil fuels which is conducted in a manner that does not allow the costs of the transition to fall unfairly on some groups and which minimises both existing and new inequalities. This report urges Australia to ensure that the orderly phase-out of fossil fuel exports includes a 'Just Transition' for affected and stakeholder communities in Australia.

One group of stakeholders is communities in Australia which have depended for long periods on the economic opportunities afforded by local coal and gas operations. The Federal Government has prepared legislation to establish a national Net Zero Economy Authority before the end of 2024, to 'ensure the workers, industries and communities that have powered Australia for generations can seize the opportunities of Australia's net zero transformation.'²⁰⁹ The Bill has been referred to a Senate committee, which is due to report.²¹⁰ The Bill should be substantially improved to meet the standards of a 'just' transition, particularly in relation to its energy industry jobs plan. Section 6 restricts the Bill's scope to closing coal and gas power stations and tied coal mines. Yet coal mining and oil/gas extraction are much larger employers, and the bulk of these jobs are associated with exports. The definition in the Bill 'risks creating two classes of workers: one that is eligible for assistance and another that is not.'²¹¹

A second is Australian Indigenous communities. While Australia's transition to clean energy offers opportunities and benefits to many communities, reaching Australia's net zero targets will reportedly require an estimated 43% of new renewable energy infrastructure to be sited on Indigenous lands.²¹²

The transition will also require a massive increase in production of critical energy transition minerals (including lithium, cobalt, copper, nickel and rare earths), resources which are concentrated on or near Indigenous lands.²¹³ Unless the resources are developed very differently to past mining on Indigenous land, this aspect of the transition threatens to be far from 'just'. A First Nations Clean Energy Strategy is currently being co-designed by federal, state and territory governments and a consultation paper has been released for feedback.²¹⁴ Engaged in that process is the First Nations Clean Energy Network 'of First Nations people, community organisations, land councils, unions, academics, industry groups, technical advisors, legal experts, renewables companies and others, working in partnership to ensure that First Nations communities share in the benefits of the clean energy boom.'²¹⁵ Free, prior and informed consent must be at the heart of the process.

A third group of stakeholders is landholders affected by new clean industries and infrastructure. While many farmers and landholders strongly support the deployment of renewable energy, many also have significant concerns about (amongst other things) 'the level and quality of consultation by Transmission Network Service Providers (TNSPs) and large-scale renewable projects with landholders.' There is a need for 'national or state policies or guidelines to create an equitable framework that supports impacted businesses and community needs'.²¹⁶

Endnotes

- 1 Climate Change Authority, '[2035 Emissions Reduction Targets](#)', 15 May 2024, referencing 'Climate Change Authority 2021'. See also Y Parra et al., 2019. '[Evaluating the significance of Australia's global fossil fuel carbon footprint](#)', Climate Analytics.
- 2 Steffen and Bradshaw, 2021. '[Hitting Home: The Compounding Costs of Climate Inaction](#)', Climate Council, at III.
- 3 A Morton, '[Chris Bowen says agreement on global fossil fuel phase out central to Australia's renewable energy plans](#)', *The Guardian*, 11 December 2023.
- 4 UNFCCC 2015, '[Paris Agreement](#)', Article 2, 1(A).
- 5 P Friedlingstein et al, 2023. '[Global Carbon Budget 2023](#)', *Earth System Science Data*, 15:12, at 3.1.
- 6 World Meteorological Organisation, '[State of the Global Climate 2023](#)', at 3.
- 7 CSIRO, '[Australia's Changing Climate](#)'.
- 8 DCCEEW, Australian Energy Update 2023, Table N.
- 9 '[Climate Change Act 2022](#) (Cth).
- 10 DCCEEW, '[Australian Energy Update](#)', September 2023, at 39; Climate Analytics, '[Australia's global fossil fuel carbon footprint](#)', 2024.
- 11 At the Federal level, no measures are in place in the '[Climate Change Act 2022](#) (Cth), the Safeguard Mechanism or the '[Environmental Protection and Biodiversity Conservation Act \(EPBC Act\)](#) 1999 (Cth) or other legislation or regulation to restrict production of fossil fuels.
- 12 Department of Industry, Science and Resources, '[Commonwealth of Australia Resources and Energy Major Projects 2023](#)', at 19. Department of Industry, Science and Resources, at 20.
- 13 Department of Industry, Science and Resources, at 23.
- 14 Department of Industry, Science and Resources, at 20 and 23.
- 15 Department of Industry, Science and Resources, at 22.
- 16 Department of Environment, Science and Innovation, 2024, '[Winchester South coal mine approved](#)', 7 February. The Australia Institute, 2023, '[This can't be allowed to continue – Gregory Crinum expansion approved](#)', 2 September.
- 17 Climate Analytics, '[Australia's global fossil fuel carbon footprint](#)', 2024.
- 18 Department of Industry, Science and Resources, '[Resources and Energy Quarterly March 2024](#)', at 48.
- 19 Department of Industry, Science and Resources, '[REQ, March 2024](#)', at 57.
- 20 The Coal Trader, '[Australian Thermal Coal Exports Rise 13% YoY in 2023](#)'.
- 21 Climate Analytics, '[Australia's global fossil fuel carbon footprint](#)', 2024; Australia's 'holding steady' prediction is based on some questionable assumptions: A-L Knight, '[Australia's thermal coal exports decline further and faster than expected](#)', IEEFA, 3 April 2024.
- 22 Climate Analytics, 'Report', 2024, at 19.
- 23 Department of Industry, Science and Resources, '[REQ, March 2024](#)', at 70.
- 24 Australian Government, '[Future Gas Strategy](#)', May 2024. The Strategy 'maps the Australian Government's plan for how gas will support our economy's transition to net zero in partnership with the world.'
- 25 SEI, Climate Analytics, E3G, IISD, and UNEP, 2023. '[The Production Gap: Phasing down or phasing up? Top fossil fuel producers plan even more extraction despite climate promises](#)' ('*Production Gap Report 2023*'), at 36.
- 26 Climate Analytics, '[Australia's global fossil fuel carbon footprint](#)', 2024.
- 27 IPCC, AR6, WGIII, '[Summary for Policymakers: Climate Change 2022: Mitigation of Climate Change](#)', at Part C.
- 28 IPCC, AR6, WGI, '[Summary for Policymakers: Climate Change 2021: The Physical Science Basis](#)', at 29.
- 29 P M Forster et al., 2023. 'Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence', *Earth System Science Data*, 15, at 2312.
- 30 SEI et al, '[Production Gap Report 2023](#)'.
- 31 SEI et al, '[Production Gap Report 2023](#)', at 2.
- 32 SEI et al, '[Production Gap Report 2023](#)', at 12 and citing IEA (2022). '[World Energy Outlook 2022](#)'.
- 33 F Green et al., 2024. 'No new fossil fuel projects: The norm we need', *Science*, Vol. 384, No. 6699.
- 34 IPCC, 2023. '[Summary for Policymakers](#)', *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. And see H Ritchie, 2023, *OurWorldInData*.
- 35 Climate Action Tracker, '[The CAT thermometer explained](#)'.
- 36 International Energy Agency (IEA), '[CO2 emissions in 2023: Executive Summary](#)', March 2024.
- 37 See e.g., I Parry, '[Five things to know about carbon pricing](#)', IMF, September 2021.
- 38 Department of Industry, Science and Resources, REQ March 2024, '[Historical data March 2024](#)'.
- 39 UNDP, '[Human Development Report 2023-2024](#)', Table 1, at 274. Focus Taiwan, '[Taiwan the 14th richest country in the world](#)', December 2023 (Taiwan is not included in the UNDP's human development classifications).
- 40 The Coal Trader, '[Australian Thermal Coal Exports Rise 13% YoY in 2023](#)'; Statista, '[Leading markets for LNG exports from Australia 2023](#)'. Australia sells much smaller quantities, mostly thermal coal, to a small handful of developing countries, including Vietnam.
- 41 For a thorough exploration of the ethical dimension of Australia's continuing fossil fuel exports, see J Moss, *Carbon Justice: The Scandal of Australia's Real Contribution to Climate Change* (UNSW Press, 2021).
- 42 See IPCC, 2023, '[Climate Change 2023: Synthesis Report](#)', Contribution of Working Groups I, II and III to the Sixth Assessment Report of the IPCC.
- 43 IPCC, 2018, '[Special Report on Global Warming of 1.5°C: Summary for Policymakers](#)'. The IPCC has also used 'Reasons For Concern' graphs (also referred to as 'burning ember' graphs) to illustrate aspects of heightening climate risk at fractionally higher temperatures.
- 44 IPCC, 2018, '[Special Report: Summary for Policymakers](#)', at B.5.
- 45 SEI et al., '[Production Gap Report 2023](#)', at 55.
- 46 The transformation will be assisted by the November 2023 revisions and expansion of the '[Capacity Investment Scheme](#)'.
- 47 Clean Energy Regulator, '[Safeguard Mechanism](#)'.

- 48 P Versteegen and R Campbell, 2023. [‘The new Safeguard Mechanism and the Santos Barossa gas project’](#), Australia Institute.
- 49 For example, the Mechanism permits the use of offsets of doubtful integrity instead of actual emissions reductions, which is ‘enabling and even increasing emissions from fossil fuels’ domestically: Climate Action Tracker, [Australia](#), December 2023. The Mechanism should be ‘aligned with the global goal of net zero emissions, not just the Australian goal of net zero emissions. That is, the mechanism accounts for projects that may have a low impact on Australia’s national emissions but will drive up global emissions’, such as fossil fuel export projects: Climate Council, [‘Climate Policies for a Sensible Government’](#), Briefing Paper, May 2022, at 8.
- 50 J Peel, ‘Legal opinion – gaps in the Environment Protection and Biodiversity Conservation Act and other federal laws for protection of the climate’, [Report for the Climate Council](#), 2023, at 9.
- 51 *Environment Council of Central Queensland Inc v Minister for the Environment and Water* [2024] FCAFC 56, Full Federal Court, 16 May 2024, para. 140.
- 52 Climate Action Tracker, [‘Australia’](#).
- 53 Prime Minister of Australia, [‘A future made in Australia’](#), speech given 11 April 2024, and see Climate Council, [What Does a Future Made in Australia Mean for Climate?](#)
- 54 Federal Government, Budget 2024-2025, [‘Investing in a future made in Australia’](#).
- 55 B Cahill, Centre for Strategic and International Studies, [‘US Energy Exports Boom: Defining National Interests’](#), January 2024. See also Oil Change International, [‘Biden’s Fossil Fuel Fail: US oil and gas supply rises under the Inflation Reduction Act’](#).
- 56 F Green and R Denniss, 2018. ‘Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies’, *Climate Change* 150: 75. Actions might include restrictive measures, such as a cap on fossil fuel export production, production quotas, legislated reduction targets in production for export and a tax on production by volume.
- 57 T Hawking and P Hemming, [‘A Fair COP31’](#), Australia Institute, June 2023, at 26, citing Hansard at n.63.
- 58 Australian Government, [Future Gas Strategy](#), 2024, at 47 and 49.
- 59 SEI et al., *The Production Gap 2023*, at 54-55.
- 60 Australia Institute, [Fossil Fuel Subsidies in Australia 2024](#).
- 61 Australian Treasury, [‘G20 Commitment on Fossil Fuel Subsidies: SOP and Australia’s Response’](#), 2009.
- 62 Department of Industry, Science and Resources, [Commonwealth of Australia Resources and Energy Major Projects 2023](#), at 23.
- 63 Department of Industry, Science and Resources, [REQ, March 2024](#). And see A Morton, ‘Fossil fuel projects awaiting approval could blow Australia’s ‘carbon budget’ tenfold, climate groups say’, *The Guardian*, 1 December 2023.
- 64 SEI et al., *Production Gap Report 2023*, at 54.
- 65 For a deeper discussion, see Moss, J 2021, *Carbon Justice*, UNSW Press, Sydney, including at 5-7.
- 66 The Hon Madeleine King, Minister for Resources, [Resources Statement to Parliament](#), 29 March 2023
- 67 Carbon lock-in can occur where existing conditions relating to technologies, infrastructure, institutions and behaviours are inconsistent with, and limit progress towards, a low carbon future. Instead, the conditions act to inhibit the competitiveness of low-carbon alternatives. The barriers to decarbonisation interact to create an inertia that favours the development of fossil fuels: see K C Seto et al, 2021. ‘Carbon Lock-in: Types, Causes, and Policy Implications’, *Annual Review of Environment and Resources*, Vol. 41, at 427.
- 68 G Semieniuk et al., 2022. ‘Stranded fossil-fuel assets translate to major losses for investors in advanced economies’, *Nature Climate Change*, Vol. 12.
- 69 A Janzwood and K Harrison, 2023. ‘The political economy of fossil fuel production in the Post-Paris Era: Critically evaluating Nationally Determined Contributions’, *Energy Research and Social Science*, 102.
- 70 L Pellegrini and M Arsel, 2022. ‘The supply side of climate policies: keeping unburnable fossil fuels in the ground’, *Global Environmental Politics*, 22:4, at 6-7.
- 71 CSIRO, 2024, [Climate Change](#).
- 72 IPCC, AR6, 2021. [‘Summary for Policymakers’](#), in *Climate Change 2021: The Physical Science Basis (Working Group I)*, at 28.
- 73 World Meteorological Organisation, [State of the Global Climate 2023](#), at 3.
- 74 Centre for International Climate Research 2021, ‘From Emissions to Climate Risk – Scientific Knowledge Base’, [Chapter 2](#) in *Climate and Human Rights*, Norwegian Human Rights Institute, May 2021, at 18.
- 75 Hansen J et al., 2023. ‘Global warming in the pipeline’, *Oxford Open Climate Change*, 3(1)
- 76 Norman, Newman and Steffen, 2021. [‘Apocalypse Now: Australian bushfires and the future of urban settlements’](#), *Nature*, at 3.
- 77 Australian Academy of Science, 2021. [The risks to Australia of a 3°C warmer world](#), at 7.
- 78 Department of Climate Change, Energy, the Environment and Water, 2021. [Outback Australia: The rangelands](#).
- 79 CSIRO, [Australia’s Changing Climate](#).
- 80 ‘Expert report regarding the greenhouse gas and climate implications of the proposed Mount Pleasant Optimisation Project’, Professor Penny Sackett, ANU Institute for Climate, Energy and Disaster Solutions, [submitted](#) to NSW Independent Planning Commission, July 2022, at 45.
- 81 BOM, *State of the Climate 2022*, [‘Australia’s changing climate’](#).
- 82 Sackett, 2022, at 8.
- 83 Sackett, 2022, at 8.
- 84 M Speer and L Leslie, [‘Flash droughts are becoming more common in Australia’](#) *The Conversation*, 9 April 2024.
- 85 Steffen and Bradshaw, 2021. ‘Hitting Home’, at 20.
- 86 IPCC, 2022, ‘Australasia’. Chapter 11 in: [Climate Change 2022: Impacts, Adaptation and Vulnerability \(AR6, WG II\)](#), at 1584.
- 87 IPCC, 2022, ‘Australasia’, at 1583.
- 88 IPCC, 2022, ‘Australasia’, at 1583.
- 89 Steffen and Bradshaw 2021. ‘Hitting Home’, at 21.
- 90 Steffen and Bradshaw, at 21.
- 91 IPCC, 2022, ‘Australasia’.
- 92 The CSIRO in Australia has identified ‘nine global climate tipping points that are of such a scale that they affect the Earth system functioning’ They are major ice sheet collapses (Greenland; West Antarctic; East Antarctic), collapse of Arctic winter sea ice, collapse of Labrador Irminger seas, collapse of East Antarctic Sub-glacial Basins, Atlantic Meridional Overturning Circulation, dieback of the Amazon Rainforest and collapse of the Boreal permafrost: M Grose and A Pitman, [‘Dangerous global climate tipping points will affect Australia’](#), CSIRO, 6 February 2024.
- 93 Bradshaw et al., 2023. [Mission Zero: How today’s climate choices will reshape Australia](#), Climate Council, at 38.
- 94 Bradshaw et al., 2023, *Mission Zero*, at 40, and citing Steffen et al., 2018.
- 95 Bradshaw et al., 2023. *Mission Zero*, at 40, citing Lenton et al., 2019.
- 96 Bradshaw et al., 2023. *Mission Zero*, at 40, citing Armstrong McKay et al., 2022.
- 97 Bradshaw et al., 2023. *Mission Zero*, at 40, citing Armstrong McKay et al. 2022.
- 98 CSIRO 2024, Workshop Report, *Understanding Risks to Australia from Global Climate Tipping Points*, at iv.
- 99 CSIRO 2024, at v and 17. The CSIRO in Australia foreshadows for our region that the ‘main direct climate impacts of triggering tipping points [will be] significant extra sea-level rise, extra warming, changes to precipitation and droughts, changes to the fire regime, as well as changes to climate variability and extreme events’.

- 100 IPCC, 2020. *The concept of risk in the IPCC Sixth Assessment Report: a summary of cross Working Group discussions: Guidance for IPCC authors*, at 7.
- 101 Australia's population in 2023 was 26.8 million, of which 5.5 million lived in Queensland, 8.4 million in NSW and 6.8 million in Victoria: [Australian Bureau of Statistics](#), 2023.
- 102 The 2024 XDI Gross Domestic Climate Risk Dataset modelling for 2050 ranks Queensland, New South Wales and Victoria within the top 4% of areas in the world most exposed to future physical impacts. The Dataset models projections of aggregated damage to the built environment from extreme weather and climate change, including from flooding, forest fires and sea level rise: [XDI 2024 Gross Domestic Climate Risk Report](#).
- 103 H Mason et al., 2022. 'Systematic review of the impact of heatwaves on health service demand in Australia', *BMC Health Services Research*, 22.
- 104 Nishant et al., 2022. 'Future population exposure to Australian heatwaves', *Environmental Research Letters*, 17(6).
- 105 See, for e.g., [World Weather Attribution](#) and the role of climate change in this year's deadly heatwave across the Sahel and West Africa.
- 106 Climate Extremes, 'Projecting future heat stress in Australia using climate models'.
- 107 S Bradshaw et al., 2024. *Climate whiplash: wild swings between weather extremes*. T Lenton et al., 2023. 'Quantifying the human cost of global warming', *Nature Sustainability*, 6.
- 108 Raymond et al., 2020. 'The emergence of heat and humidity too severe for human tolerance', *Climatology*, 6(19).
- 109 T Longden et al., 2020. 'Heat-related mortality: an urgent need to recognise and record', *The Lancet*, 4.
- 110 T Longden, 2019. 'The impact of temperature on mortality across different climate zones', *Climate Change*, 157.
- 111 Franklin et al. 2023, 'Heatwaves and mortality in Queensland 2010–2019: implications for a homogenous state-wide approach', *International Journal of Biometeorology*, 67.
- 112 Australian Academy of Science, 2021. *The risks to Australia of a 3°C warmer world*, at 53 & 63.
- 113 IPCC 2014, 'Summary for policymakers', in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects (Working Group II)*, at 6. And see, for e.g., the UN [World Economic and Social Survey 2016: Climate Change Resilience—an Opportunity for Reducing Inequalities](#).
- 114 UNHCHR, [Key Messages on Human Rights and Climate Change](#), message no.1.
- 115 Australian Academy of Science, 2021, at 48-63.
- 116 OHCHR, 2015. [Understanding Human Rights and Climate Change](#), at 24-25.
- 117 UN DESA, 2016. [World Economic and Social Survey 2016](#).
- 118 S Lindley et al., 2011. [Climate Change, Justice and Vulnerability](#), York.
- 119 S N Islam and J Winkel, 2017. 'Climate Change and Social Inequality', DESA Working Paper No. 152, at 2.
- 120 IPCC, 2022, 'Australasia', at 1583.
- 121 IPCC, 2022, 'Australasia', at 1583.
- 122 IPCC, 2020, *The concept of risk*, at 5.
- 123 'First, inequality increases the exposure of the disadvantaged social groups to the "adverse effects of climate change" ("climate hazards," for short). Second, given the exposure level, inequality increases the disadvantaged groups' susceptibility to damages caused by climate hazards. Third, inequality decreases these groups' relative ability to cope with and recover from the damages they suffer': S N Islam and J Winkel, 2017, at 2.
- 124 Standen et al., 2022. 'Aboriginal Population and Climate Change in Australia', *International Journal of Environmental Research and Public Health*, 19, 7502.
- 125 [Daniel Billy and Others v Australia](#) (Torres Strait Islanders' Petition).
- 126 Hughes et al., 2016. 'The Silent Killer', at 12.
- 127 S Chapman et al., 2019. 'The impact of climate change and urban growth on urban climate and heat stress in a subtropical city', *International Journal of Climatology*, 39:6, at 3027.
- 128 Zhang et al., 2018. 'The MJA–Lancet Countdown on health and climate change: Australian policy inaction threatens lives', *Medical Journal of Australia*, 209:11.
- 129 Singh et al., 2015. 'Working in Australia's heat: health promotion concerns for health and productivity', at 240.
- 130 Fatima et al., 2023. 'Impacts of hot climatic conditions on work, health, and safety in Australia: A case study of policies in practice in the construction industry', *Safety Science*, Vol. 165, at Part 1.4.
- 131 Fatima et al., 2023, at Part 1.4
- 132 Deloitte Access Economics, 2017. [At what price? The economic, social and icon value of the Great Barrier Reef](#).
- 133 Great Barrier Reef Foundation, 'Climate Change'.
- 134 IPCC 2020, *The concept of risk*, at 4; Australian Academy of Science, 2021, at 8-11, 43.
- 135 From Australian Academy of Science, 2021; IPCC, 2022. 'Australasia', including at 1583; IPCC, 2023. *Synthesis Report: Summary for Policymakers*, at A.2.
- 136 IPCC, 2022, AR6. Working Group II, [Fact sheet – Australasia](#), at 1.
- 137 IPCC, 2022, AR6. 'Australasia', at 11.5.1, Box 11.1.
- 138 Poncet and King, 2024. 'What we know about last year's top 10 wild Australian climatic events – from fire and flood combos to cyclone-driven extreme rain', *University of Melbourne*, 29 February.
- 139 IPCC, 2022, AR6. 'Summary for Policymakers', in *Climate Change 2022: Impacts, Adaptation and Vulnerability (Working Group II)*, at B.5.
- 140 CSIRO, 2024. Workshop Report, at 17.
- 141 van Ginkel et al., 2022. 'A stepwise approach for identifying climate change induced socio-economic tipping points', *Climate Risk Management*, at 37.
- 142 van Ginkel et al., 2022, at 37, citing Kopp et al., 2016; Kabir et al., 2018; McLeman et al., 2017.
- 143 van Ginkel et al. 2022, at 37, citing Tesselaar et al., 2020. See also Climate Council, 'Uninsurable Nation', 2022.
- 144 UNFCCC, Topics: [Introduction: Adaptation and resilience](#).
- 145 IPCC, 2022. 'Australasia'. Changing climatic conditions already exacerbate social, economic and health inequalities experienced by many Indigenous communities in Australia.
- 146 DCCEEW, [Climate adaptation in Australia](#).
- 147 IPCC, 2023. 'Australasia', at 1640.
- 148 IPCC, 2014, AR5. 'Economics of adaptation', in *Climate Change 2014: Impacts, Adaptation, and Vulnerability (Working Group II)*.
- 149 Councillor V Ekins, Lismore Floodplain Management Committee, 'A new levee and river remodelling for Lismore?', *Echo*, 7 March 2022.
- 150 IPCC 2022, 'Summary for Policymakers', in: *Climate Change 2022: Impacts, Adaptation and Vulnerability (Working Group II)*, at C.2.
- 151 The study identified a suite of barriers that emerge from within societies, confirming the presence of opposition to adaptation initiatives being paid for by public funds. However, the study also suggests that, unlike biophysical limits, these barriers can be overcome with sufficient efforts, resources and willingness: G R Biesbroek et al., 2013. 'On the nature of barriers to climate change adaptation', *Regional Environmental Change*.
- 152 IPCC, 2014, AR5. 'Summary for policymakers', in *Climate Change 2014: Impacts, Adaptation, and (Working Group II)*, at 6.
- 153 F Green and R Denniss, 2018. 'Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies', *Climate Change* 150: 73-87.
- 154 Prime Minister Albanese, ABC's '7.30 Report', 26 July 2022.

- 155 International Tribunal for the Law of the Sea, 'Request For An Advisory Opinion Submitted By The Commission Of Small Island States On Climate Change And International Law', [Advisory Opinion](#), 21 May 2024, para 74.
- 156 L Rajamani and J Werksman, 2018. [The legal character and operational relevance of the Paris Agreement's temperature goal](#), *Philosophical Transactions of the Royal Society*.
- 157 United Nations General Assembly, [Request for an advisory opinion of the International Court of Justice on the obligations of States in respect of climate change](#), 1 March 2023.
- 158 UNFCCC, 'Outcome of the First Global Stocktake', 13 December 2023, Proposal by the President, [Draft decision -/CMA.5](#), para. 24.
- 159 UNFCCC, First Global Stocktake 2023, para. 25.
- 160 See J Moss, *Carbon Justice*, 2021.
- 161 For a more expansive exploration, see G Piggot et al (2018). 'Swimming upstream: addressing fossil fuel supply under the UNFCCC', *Climate Policy*, Vol. 18, no. 9, especially at 1191-92.
- 162 UNFCCC, First Global Stocktake 2023, para 32.
- 163 And see the *EPBC Act* reform recommendations of the Climate Council in April 2024 [here](#).
- 164 See [Treasury Laws Amendment \(Financial Market Infrastructure and Other Measures\) Bill 2024](#) (Cth).
- 165 Legislation could be modelled broadly on Europe's recently introduced Corporate Sustainability and Due Diligence Directive (CSDDD), although the scope should be widened to include the exported emissions of large fossil fuel companies operating in Australia. It should require those companies to undertake risk-based human rights and environmental due diligence to assess actual and potential adverse impacts, including from their scope 3 emissions, and to prevent, mitigate, bring an end to and remedy such impacts in their operations and chain of activities: Corporate Sustainability and Due Diligence Directive (CSDDD), [Consolidated Text](#), 24 April 2024.
- 166 Glencore, [Sustainability Report 2023](#), at 74.
- 167 Climate Council, [Submission to Climate Change Authority](#), 7 July 2023, at 43.
- 168 See [Ozone Protection & Synthetic Greenhouse Gas Management Act 1989](#) (Cth), particularly s.3.
- 169 F Green and R Denniss, 2018, at 75.
- 170 P Burke, 2022. 'On the way out: Government revenues from fossil fuels in Australia', [TTPI – Working Paper 16/2022](#), Australian National University,
- 171 P Burke, 2022, at 18.
- 172 Queensland Treasury, [Queensland's Coal Industry and Long-Term Global Coal Demand](#), November 2022.
- 173 Prime Minister Albanese, ABC's ['7.30 Report'](#), 26 July 2022.
- 174 P Burke, 2022, at 5 and 6.
- 175 P Burke, 2022, at 5.
- 176 M Ogge, [New Analysis](#), Australia Institute, May 2024.
- 177 SEI et al., *Production Gap Report 2023*, at 55.
- 178 T Swann, [High Carbon From a Land Down Under](#), Australia Institute, 2019
- 179 P Burke, 2022, *On the way out*, at 2, and citing Department of Industry, Science, Energy and Resources, 2022.
- 180 ABS Dataset ABS dataset, [Labour Account](#) for coal mining, oil and gas extraction.
- 181 Australian Bureau of Statistics, [Labour Account Australia](#).
- 182 Australian Government, [Jobs and Skills Australia](#).
- 183 Gas (as LNG) comprised \$92 billion in export value, thermal coal \$65 billion and metallurgical coal (for industrial use eg steel making) \$61 billion: Australian Department of Industry, Science and Resources, [Australia's resources and energy exports passing a peak](#), December 2023.
- 184 See, for example, the work of the [New Climate Economy](#) in relation to developing countries; and see a 2015 study by the Grantham Institute [here](#).
- 185 N Stern, *The Economics of Climate Change: The Stern Review* (CUP, 2014).
- 186 T Neale, 'The Importance of External Weather Effects in Projecting the Economic Impacts of Climate Change', [UNSW Economics Working Paper 2023-09](#).
- 187 Climate Analytics, [Australia's global fossil fuel carbon footprint](#), 2024.
- 188 P Beggs et al, 2023. [The 2023 report of the MJA–Lancet Countdown on health and climate change](#), *The Lancet*. And see A Haines, 2017. [Health co-benefits of climate action](#), *The Lancet*, Vol. 1: 'Health co-benefits can arise through several pathways, including through reduced air pollution, increased physical activity, and dietary change.'
- 189 DCCEEW, [Australia's international climate and clean energy partnerships](#)'.
- 190 Australian Government, [Future Gas Strategy](#), May 2024, at 47-53.
- 191 Minister for Resources, 'Foreword', *Future Gas Strategy*, at 7.
- 192 See IEEFA, [Global LNG Outlook 2024-2028](#).
- 193 International Energy Agency, [World Energy Outlook 2023](#), Figure 1.3, at 29.
- 194 NATO, [Energy Security](#), 11 January 2024.
- 195 See, for e.g., the strong reaction from some stakeholders in Japan to the Australian Government's 2023 Safeguard Mechanism Reforms: S&P Global Commodity Insights, [METI minister flags significant impact on Japanese LNG from Australia's reform of Safeguard Mechanism](#), 16 Jun 2023.
- 196 Office of the Chief Economist, [REQ, March 2024](#), at 75.
- 197 Climate Action Tracker – [Japan](#).
- 198 T Mendez, [More Than Hot Air](#), Asia Link, University of Melbourne, 8 May 2023.
- 199 The *FMIA Act* promises to build on the cooperation already established between Australia and its third clean energy partnership country, India: Australia-India Economic Cooperation and Trade Agreement and ongoing clean energy negotiations.
- 200 See F Green, [Climate policy and our sphere of influence](#), *Inside Story*, 2 August 2012.
- 201 SEI et al., *Production Gap Report 2023*, at 13.
- 202 UNFCC, 'Outcome of the First Global Stocktake', Article 28(d), 13 December 2023.
- 203 [Powering Past Coal Alliance](#).
- 204 [Global Methane Pledge](#).
- 205 [Coal transition accelerator](#).
- 206 [Clean energy transition partnership](#).
- 207 [Beyond Oil and Gas Alliance](#).
- 208 [Fossil Fuel Non-Proliferation Treaty](#).
- 209 Department of Prime Minister and Cabinet, [Net Zero Economy Authority](#)'.
- 210 Senate Standing Committees on Finance and Public Administration (*Net Zero Economy Authority Bill 2024 [Provisions] and the Net Zero Economy Authority (Transitional Provisions) Bill 2024 [Provisions]*).
- 211 T Wood and A Reave, 2024. [Missed Opportunity?](#), Grattan Institute Submission to Senate Standing Committees.
- 212 A Pascale et al, 2023. [Downscaling – Net-zero transitions, Australian communities, the land and sea](#), Net Zero Australia, at 10.
- 213 C O'Faircheallaigh, 2023. 'Australia and Canada: A Test for Indigenous Engagement Strategies', in *Indigenous People and Mining: A Global Perspective*, Oxford University Press.
- 214 DCCEEW, [First Nations Clean Energy Strategy](#)'.
- 215 DCCEEW, [First Nations Clean Energy Strategy](#)'.
- 216 Farmers for Climate Action, [Submission to the NSW Parliament's Inquiry](#) into the feasibility of undergrounding the transmission infrastructure for renewable energy projects, November 2023.

About the Australian Climate Accountability Project

The Australian Human Rights Institute produces world-leading research and advances debate on critical human rights issues. Our strategic and rigorous research transforms practices to mainstream human rights, with a focus on business, climate, gender and health.

The Australian Climate Accountability Project is an applied research project of the Australian Human Rights Institute. The project aims to explore the climate-related risks and harms for people and communities in Australia – and for their human rights – escalated by our country's very large and still increasing fossil fuel exports.

This report is the first of two planned for release in 2024 by the project. It explores the substantial contribution of Australia's fossil fuel exports to global warming, a worsening climate and escalating risk of climate-related harms for people and communities in Australia.

The second report, due in late 2024, will explore the heightened risk of human rights harms attributable to Australia's fossil fuel exports, and the related human rights responsibilities and obligations of Australian governments and the fossil fuel exporting corporations involved.

This report provides accompanying background to the Climate Analytics report, '[Australia's global fossil fuel carbon footprint](#)'. The Climate Analytics research and report were commissioned by the Australian Human Rights Institute with the generous support of the seed grants program of the [Institute for Climate Risk and Response](#), established at UNSW to empower responses to the risks and opportunities of climate change.

Authors, acknowledgements and publication details

- › **Author: Gillian Moon**, Australian Climate Accountability Project Lead and Senior Visiting Fellow, UNSW
- › **Research assistance: Nina Cooke**

The author is grateful to Justine Nolan, Katrin Meissner, Sarah Perkins-Kirkpatrick, Ellen Tilbury, Fergus Green, Ed Coper, Wesley Morgan, Glen Klatovsky, Bill Hare and Hannah Grant for invaluable discussion and comments on earlier drafts. The author's thanks also to multiple individuals in climate change-related research and advocacy for their feedback and comments as this work evolved.

Our thanks especially to the Climate Media Centre and the Climate Council for communications assistance and a wealth of research from which this report frequently draws.