



Climate Council of Australia

**Submission to: Northern Territory's Climate
Change Response**

Addressed to: Northern Territory Department of the Chief
Minister – Environment Division.

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31 October 2019

About the Climate Council

The Climate Council is an independent non-profit organisation funded by donations by the public. Our mission is to provide authoritative, expert advice to the Australian public on climate change.

To find out more about the Climate Council's work, visit www.climatecouncil.org.au.

The Climate Council of Australia congratulates the Northern Territory on its desire to step up action on mitigating climate change. A net zero target is a good first step. This is necessary—but not sufficient—to align the Territory Government’s policies with the global goals contained in the **Paris Agreement**.¹

The Climate Council recommends the following:

1. **The Territory Government should set interim targets enshrined in legislation.**

While an aspiration to meet a net zero target in 2050 is better than nothing at all, if the global community is to meet even a 2°C temperature goal—emissions-intensive economies like the Northern Territory must immediately, permanently and drastically reduce its emissions. In 2019, total emissions from the Northern Territory are likely to be higher than more than 80 countries. The Northern Territory’s extraordinarily large contribution of greenhouse gas emissions mean that it must set a rapid trajectory toward zero.

Recent moves to increase conventional and unconventional gas extraction in the Territory is likely to put the aspiration out of reach even before it is formalised. For example, the Inpex project has added 35% to the Northern Territory’s annual emissions and the proponent has its operating life going well beyond 2050. Offsetting is not a scientifically valid approach to manage this problem.

2. **These targets should be informed by commissioned, independent expert advice.**

The model followed by the Victorian Government, as required by their *Climate Change Act*, requires the Victorian Government to seek independent expert, science-based advice on setting interim targets. Advice commissioned by the expert panel saw the panel set interim targets set in accordance with the State’s equitable share of the global emissions budget for a given temperature goal.²

This submission shows one such pathway for the Northern Territory. The choice of targets should be informed by information that is specific to the Territory. Simply applying a global goal of 'net zero by 2050' to the Territory, is not enough. Should the Government choose to align its targets with a high temperature goal, then the future costs of adaptation must be planned for.

3. Climate Change policy requires a truly whole-of-government approach.

An emissions reduction goal that would see the Northern Territory meeting its equitable share a target of even 2°C—let alone **well below** 2°C or 1.5°C—above pre-industrial temperatures will not happen accidentally. It must be planned for and implemented accordingly.

No matter how generous the allocation of the global emissions budget—and in this submission the Territory is assigned a share that is seven-and-a-half times what it would receive if the allocation was based on population alone—deep, immediate and enduring cuts in the NT will be required.

Overview

Greenhouse gas emissions from the extraction and burning of coal, oil and gas for human activities is accelerating climate change. The Northern Territory is already experiencing worsening climate impacts.

For example, sea levels in northern Australia are currently rising at about twice the global average.³ Much of the World Heritage-listed Kakadu National Park is only 1m above sea level and intrusion of saltwater into the iconic freshwater wetlands is already evident, accelerating since the 1950s.⁴

Heatwaves are becoming hotter, lasting longer and occurring more often,⁵ harming people, property, communities and the environment.⁶ Heatwaves have widespread impacts, ranging from direct impacts on our health to damage to ecosystems, agriculture and infrastructure.⁷ Unless the global community deeply and rapidly reduce greenhouse gas emissions, in 2030 the Red Centre could experience more than 100 days above 35°C every year (19 days more

than the current average). By 2090, there could be more than 160 days per year over 35°C. Kakadu National Park is threatened by extreme heat. Darwin could see an increase in hot days (temperatures above 35°C) from 11 (1981-2010 average) to 43 by 2030, and up to 265 by 2090.

This is already occurring. In January this year, Alice Springs had a suffered through a run of 15 days **in a row** where the average daily temperature was in the 95th percentile or higher for that time of year.⁸

The Territory's Climate Change Response mentions the **Paris Agreement's** goal of limiting global temperature increases to well below 2°C above pre-industrial temperatures, while pursuing efforts to limit global warming to 1.5°C above the same benchmark temperature. The net zero by 2050 goal for the Territory is likewise taken from the work of the Intergovernmental Panel on Climate Change in this report.

For the first time, the Climate Change Response outlines a positive vision for the Territory's future. However, far more is required if the Territory is to play its part in meeting those global goals. The Territory's greenhouse gas emissions per person are likely the highest in the world once land clearing is considered. As a consequence, the current vision, including the target of net zero in 2050, would not be sufficient even if it were binding. Decades of increasing emissions mean that the Territory's emissions must now rapidly decrease.

The Territory faces some disadvantages when it comes to reducing emissions, particularly through the low population density. However, these disadvantages faced by the Territory, while not insignificant, do not justify the past failures by NT governments to drive meaningful emissions reductions. Similarly, they cannot justify the rapid increase in the Territory's emissions in recent years. The NT Government needs to recognise the need to take targeted reductions at rates faster than would have been needed had the reductions in emissions started earlier.

At a certain point, emissions from the Territory must come down. The time for this action is now.

Table 1: Northern Territory emissions trajectory since 2005. Data: AGEIS

Sector	Percentage of total (2017)	Percentage change in 2017
Public Electricity and Heat Production	11.39%	+38.3% on 2005
Fugitive Emissions from Fuels	8.58%	+212.0% on 2005
Transport	8.09%	+52.2% on 2005
Direct Combustion & Other Energy	9.39%	-30.0% on 2005
Industrial Processes	0.95%	+32.9% on 2005
Agriculture	16.81%	+22.8% on 2005
Waste	1.17%	+73.3% on 2005
Land Use, Land-Use Change & Forestry	43.62%	+25.2% on 2005

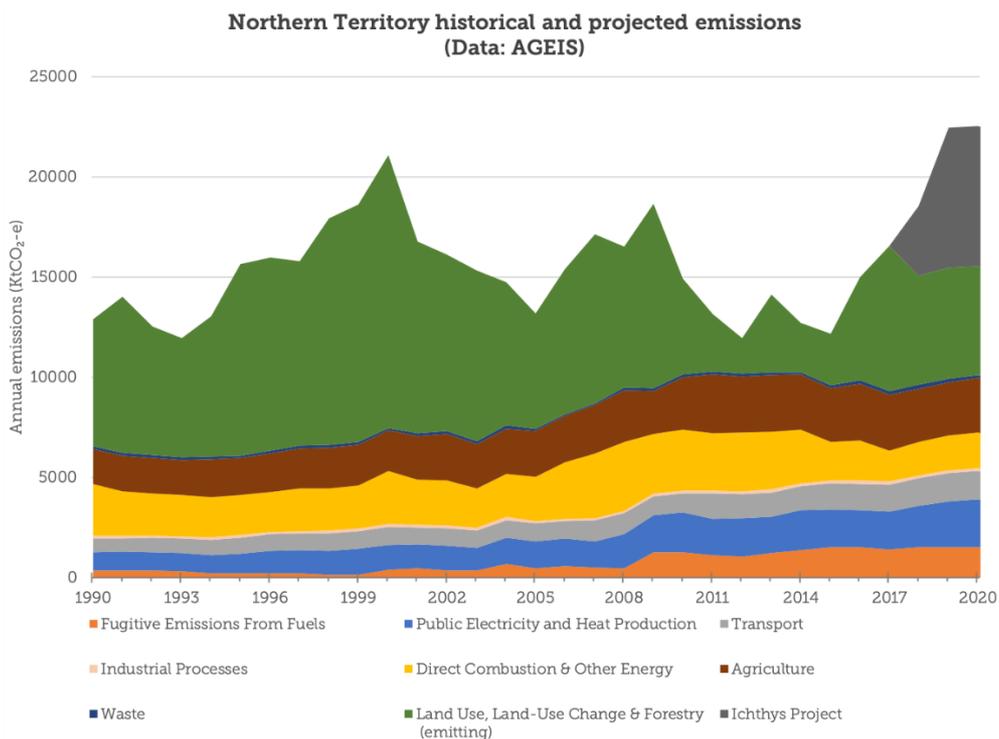


Figure 1: Northern Territory historical and projected emissions 1990–2020. Data: AGEIS with projections based on original analysis.

While emissions from virtually all sectors in the Northern Territory are increasing, the increase in emissions from the electricity sector is particularly difficult to accept. The Territory’s solar resource is literally one of the best in the world.⁹ Despite this, the Territory has a miniscule amount of solar generation, as shown below in Figure 2.

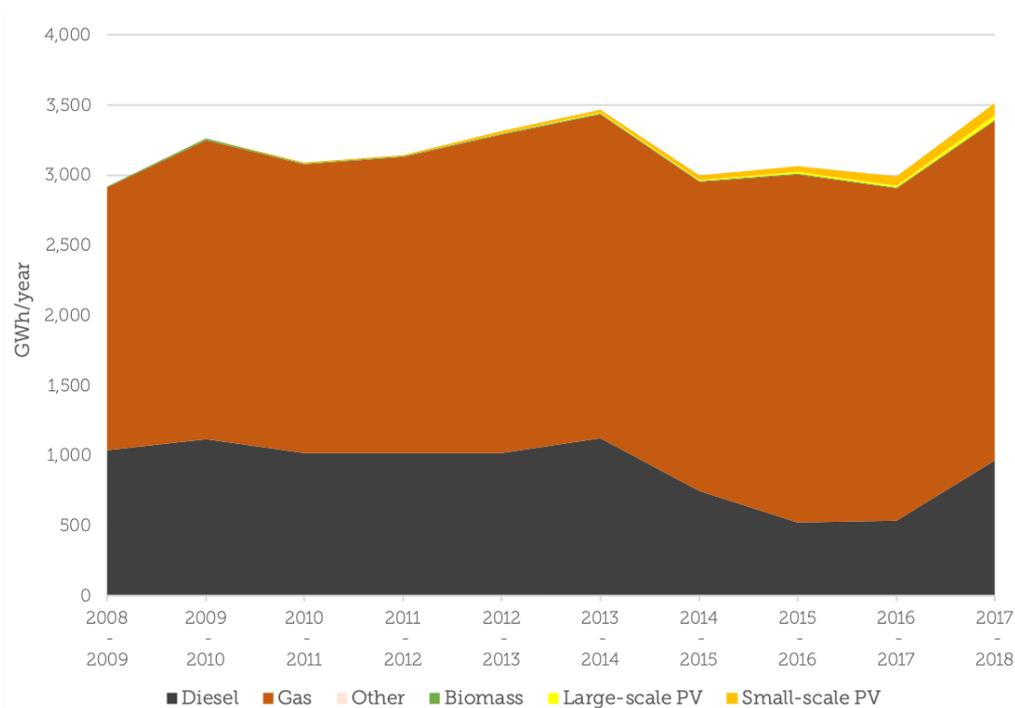


Figure 2: Northern Territory electricity generation by fuel type financial year 2009-2018. Data: Australian Energy Statistics.

The Northern Territory's per capita emissions are now higher than all but one country in the world (See Figure 3), even before considering the Territory's very high land-use emissions.

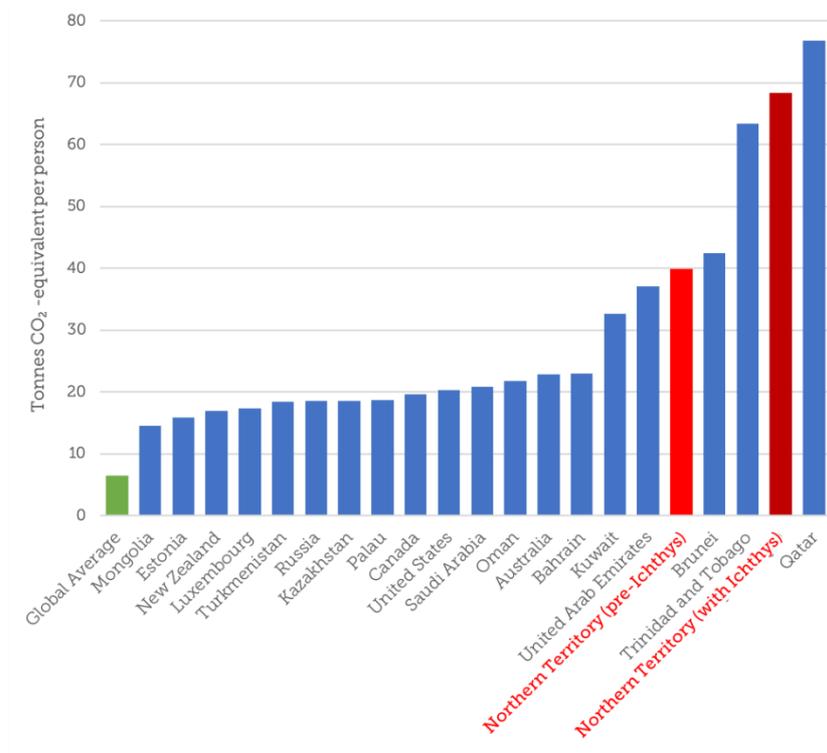


Figure 3: Northern Territory per capita greenhouse gas emissions compared with world's largest per capita emitting countries (not including LULUCF, 2016). Data: PIK

As shown above, Australia is already a high emitter on a per capita basis. It is the highest per person emitter of greenhouse gases in the developed world and the highest among all large countries.¹⁰

Even among Australian sub-national Governments, and even before taking the Ichthys project into account, the Northern Territory's emissions are a clear outlier at three times the national average.¹¹

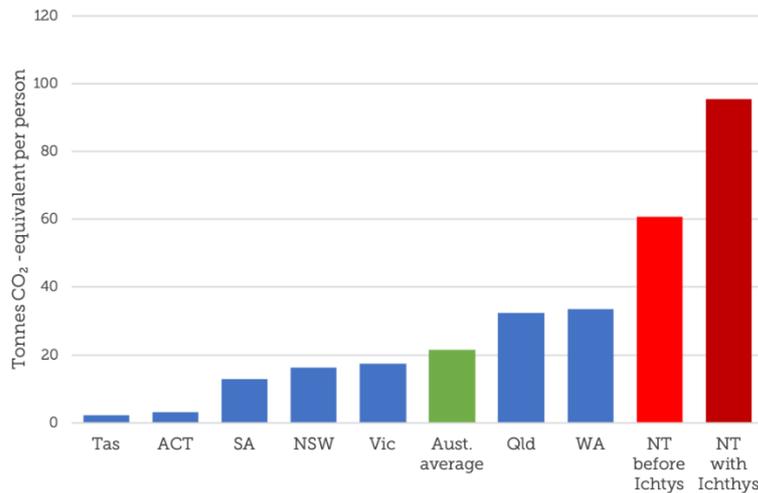


Figure 4: Australian State and Territory greenhouse gas emissions per person (including LULUCF, 2017). Data: AGEIS.

In 2019, total emissions from the Northern Territory are likely to be higher than more than 80 countries.¹² The list of countries with lower annual emissions includes including seven developed countries, most of which have significantly higher populations.¹³

Put simply, the Territory might think itself to be small in terms of its total contribution to climate change, but this is incorrect. There is no realistic prospect of limiting global temperature increases in line with the **Paris Agreement's** goals unless extraordinarily high emitters, such as the Northern Territory, make deep, immediate and enduring cuts to their emissions.

An emissions budget for the Northern Territory

The Northern Territory Government's Climate Change Response notes that there is a considerable need to link emissions reduction goals to the best available scientific evidence. Reference is frequently made to the Intergovernmental Panel on Climate Change's special report **Global Warming of 1.5°C**, released last year.

The IPCC's special report represents the best available scientific evidence of the impact of failing to limit global temperature increase in line with the goals of the **Paris Agreement**, so reliance on this report is entirely appropriate. Governments around the world must

align their emissions reduction goals with the full scope of scientific evidence brought to bear.

Despite this, aside from very high-level statements relating to the importance of reducing emissions, there is very little in the Climate Change Response that is aligned with the considerable information contained in that report.

While the international community must reduce emissions to net zero by 2050, this is a necessary, but not sufficient, target for those who are extraordinarily high emitters. The Northern Territory is such an emitter. The global goal of reducing emissions cannot be achieved while large emitters further increase their emissions.

The global carbon dioxide emissions budgets for targets between 1.5°C and 2°C and above pre-industrial levels are contained in Table 2.2 of the IPCC special report. The table below is the result of converting the global greenhouse gas emissions budget to one which is usable by national and sub-national governments.¹⁴

The remaining emissions budget for all greenhouse gases from 1 January 2018 for limiting global temperature increases to a given goal is shown in Table 2, below. For reference when considering the totals in the table: in 2016 alone, the international community emitted 47.2 gigatonnes of greenhouse gases.¹⁵

Table 2: Total remaining emissions budgets for temperature goals between 1.5°C and 2°C above pre-industrial levels

		Percentage chance of meeting temperature goal	
		67% chance	50% chance
Global temperature	1.5°C	32 Gt CO ₂ -e	192 Gt CO ₂ -e
	1.6°C	182 Gt CO ₂ -e	382 Gt CO ₂ -e
	1.7°C	332 Gt CO ₂ -e	567 Gt CO ₂ -e
	1.8°C	482 Gt CO ₂ -e	747 Gt CO ₂ -e
	1.9°C	632 Gt CO ₂ -e	927 Gt CO ₂ -e
	2.0°C	782 Gt CO ₂ -e	1,112 Gt CO ₂ -e

These global budgets are amendable to down-scaling in order to inform national and sub-national targets in line with the very best scientific evidence.¹⁶

This process has been followed by other Australian sub-national Governments, most notably, by the Victorian Government earlier this year.¹⁷ It takes the global emissions budget and uses that to calculate emissions targets that are based not on what is considered feasible, or politically expedient, but based on what is **necessary**.

This forces future policy development to be oriented to the scale of the challenge.

The global emissions budget can be shared between national governments in accordance with a number of effort-sharing approaches.¹⁸

Of these, the most generous established method that can be applied to Australia, and the one applied here, is the form of contraction-and-convergence relied upon by the Garnaut Review.¹⁹ This form of effort-sharing sees relatively high-emitting countries rapidly decrease their emissions toward a central point on the path to a global goal of net-zero emissions. Less developed countries, being those who are at a far lower state of development than China or even India, are permitted a small amount of headroom in line with the principle of common but differentiated responsibilities in the **United Nations Framework Convention on Climate Change**.

Even though this method requires developed countries to rapidly reduce their emissions, it presents a net advantage to them not available under other approaches. This approach sees Australia receive 0.97% of the global emissions budget for a goal of 2°C above pre-industrial temperatures, despite having only 0.33% of the global population. Calculating the trajectory from 2018, as has been done here, also gives Australia an advantage as a result of the country’s near total failure to mitigate greenhouse gases at any time since the creation of the UNFCCC.

For reference, when reading this table, in the 2018 financial year Australia’s emissions were 534 million tonnes of carbon dioxide equivalent greenhouse gases, meaning—at current emissions levels—Australia will have exhausted its fair share of the global emissions budget for a 67% chance of staying below 1.5°C part-way through 2018.

Table 3: Australia’s share of the total remaining greenhouse gas emissions budget under Garnaut contraction and convergence (0.97% of total)

		Percentage chance of meeting temperature goal	
		67% chance	50% chance
Global temperature	1.5°C	310 Mt CO ₂ -e	1,862 Mt CO ₂ -e
	1.6°C	1,765 Mt CO ₂ -e	3,705 Mt CO ₂ -e
	1.7°C	3,220 Mt CO ₂ -e	5,500 Mt CO ₂ -e
	1.8°C	4,675 Mt CO ₂ -e	7,246 Mt CO ₂ -e
	1.9°C	6,130 Mt CO ₂ -e	8,992 Mt CO ₂ -e
	2.0°C	7,585 Mt CO ₂ -e	10,786 Mt CO ₂ -e

From the national level, the budget can be further down-scaled to the sub-national level using a similar allocation process.²⁰ The most generous of these for the Northern Territory is, again, contraction and convergence with a 2050 contraction point. Doing so, results in the following budgets for the Northern Territory.

For reference, in 2017, even before the Inpex project came online, the Northern Territory emitted 16.5 million tonnes of greenhouse gases:

Table 4: Northern Territory's share of the Australian greenhouse gas emissions budget per temperature goal

		Percentage chance of meeting temperature goal	
		67% chance	50% chance
Global temperature	1.5°C	7.8 Mt CO ₂ -e	46.6 Mt CO ₂ -e
	1.6°C	44.1 Mt CO ₂ -e	92.6 Mt CO ₂ -e
	1.7°C	80.5 Mt CO ₂ -e	137.5 Mt CO ₂ -e
	1.8°C	116.9 Mt CO ₂ -e	181.1 Mt CO ₂ -e
	1.9°C	153.3 Mt CO ₂ -e	224.8 Mt CO ₂ -e
	2.0°C	189.6 Mt CO ₂ -e	269.7 Mt CO ₂ -e

It is worth reiterating that the method of allocating the global budget to the Northern Territory that is used here is incredibly generous. This means that the Territory is receiving a budget allocation which is seven-and-a-half times what it would receive if the allocation were based on population alone.²¹

But even with this generous allocation of the global emissions budget, lower order targets like a two-in-three chance of limiting global temperature increases to 1.5°C cannot be met unless every tonne of greenhouse gas emitted from the Territory from mid-2018 is drawn back out of the atmosphere before the end of the century.

The Northern Territory's emissions are extremely high: far too high given the world made its first agreements to reduce emissions back in 1992.

The steady increase in emissions in that time is an abrogation of the Territory Government's responsibility to its communities and the global community.

The rapid increase because of Inpex's Ichthys project coming online, which occurred even after the Paris Agreement was signed, is not consistent with those goals. Even with the climate impact of the Territory's recent gas developments being vastly understated on the Government's numbers,²² in the past two years the Territory's emissions have increased by 35% as a result of the Inpex project.

Opening up the Betaloo Basin to new gas projects cannot be allowed to occur.

Conventional natural gas might be marginally cleaner than coal, but there is considerable uncertainty whether the same is true for unconventional gas.²³ But gas of either kind is, or is not cleaner than coal, this could only be relevant if: (a) there was evidence that the gas was replacing higher emitting sources, and (b) the improvement was far greater than it is.

There is no evidence whatsoever of the former.²⁴ Once the full project life of gas plant is considered—it becomes clear that gas is not sufficiently less polluting than coal such that transitioning from coal to gas can bring any country into line with the scale of reductions required to meet a 1.5°C or well below 2°C goal.²⁵ Greenhouse gas emissions are produced both from gas power stations and gas production (for instance, methane from gas leaks). Methane is 86 times more potent as a greenhouse gas than carbon dioxide over a 20-year period. Development of new gas is entirely out of step with the Northern Territory Government's net zero emissions by 2050 aspiration.

The remaining emissions budgets for holding global temperature increase to even 2°C above pre-industrial levels require far greater cuts than gas can possibly provide.

Offsetting these emissions is not a scientifically-valid approach. Consuming one carbon dioxide equivalent tonne of fossil fuel and sequestering the same in vegetation are not equal and opposite processes. Carbon held in vegetation sinks, will eventually be released back into the atmosphere as a warming agent. As coal or gas sequestered deep underground it cannot escape into the atmosphere at scale without human intervention.

As such, while nature-based drawdown of carbon dioxide is necessary to repair past harm to the atmosphere, and might be used to offset emissions from the land uses sector (where emission and sequestration are equivalent) they cannot be used to grant social licence to fossil fuel developments.

Figure 5 below is the result of allocating greenhouse gas emissions budget contained in Table 4 to the Northern Territory. Even with the exceedingly generous allocation methods relied on in this submission; even assuming that the Inpex project operates for half its proposed operating life; and even assuming that the Betaloo Basin never leaks a single tonne of methane or uses a single electron, to limit global warming to 2°C below pre-industrial levels the Northern Territory must reach net zero far sooner than 2050.

To do its fair share of a 2°C goal using these assumptions, the Northern Territory must hit zero in 2037, and drawdown 191 million tonnes of past emissions. This scale of drawdown of past harm would require the Northern Territory to procure further sequestering abatement equivalent in scale to all abatement currently contracted for under Commonwealth Government's entire Emissions Reduction Fund.

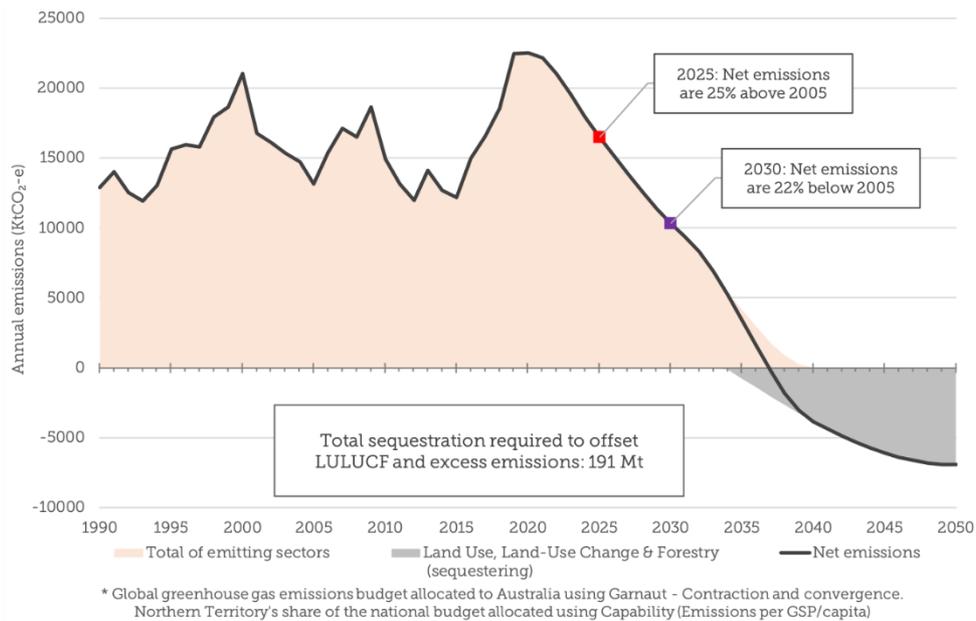


Figure 5: Indicative pathway for Northern Territory emissions in line with a 2°C emissions budget

Notably, this doesn't even get the Territory to a well-below 2°C target, the global goal mentioned in the Territory's Climate Change Response. That would require even deeper emissions cuts.

There is no room for further delays and no more room for self-serving justifications.

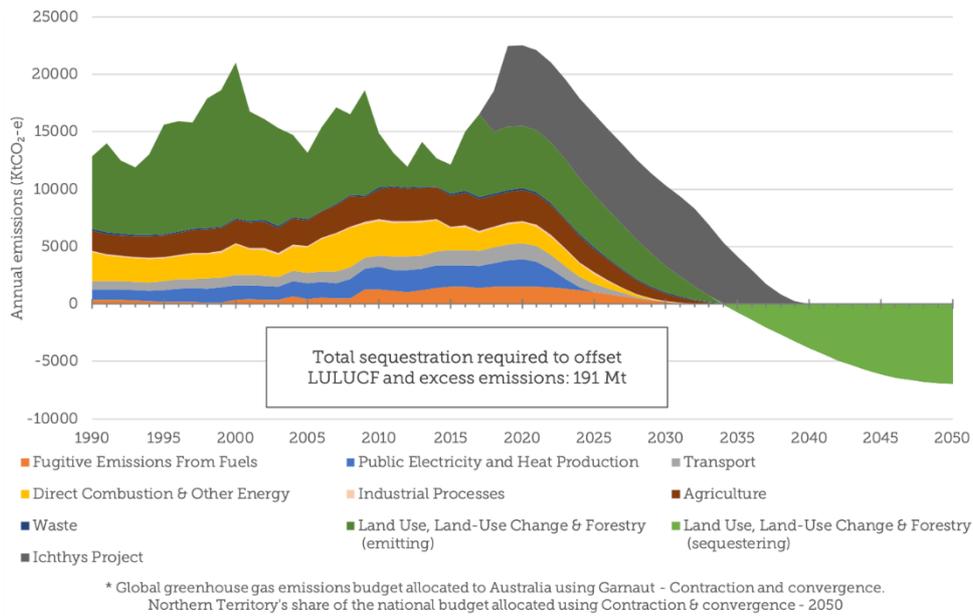


Figure 6: Possible sectoral breakdown in line with the indicative pathway in Figure 5.

Endnotes

¹ Joeri Rogelj et al., "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development," in *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, ed. Valérie Masson-Delmotte et al. (Geneva, Switzerland: World Meteorological Organization, 2018), <https://www.ipcc.ch/sr15/>.

² Malte Meinshausen, Yann Robiou du Pont, and Anita Talberg, "Greenhouse Gas Emissions Budgets for Victoria," Briefing paper, 2019, <https://www.climatechange.vic.gov.au/reducing-emissions/interim-targets>.

³ Andrew Campbell and Stephen Garnett, "A Wet Warning from Australia's Top End on Rising Sea Levels," *The Conversation*, accessed November 4, 2019, <http://theconversation.com/a-wet-warning-from-australias-top-end-on-rising-sea-levels-22934>.

⁴ "Kakadu's Wetlands Will Be Partly under Salt Water in Just over 50 Years," *ECOS* (blog), November 27, 2018, <https://ecos.csiro.au/kakadu-wetlands/>.

⁵ CSIRO and Bureau of Meteorology, "State of the Climate 2018" (Commonwealth of Australia, December 19, 2018), <http://www.bom.gov.au/state-of-the-climate/State-of-the-Climate-2018.pdf>.

⁶ Sarah Perkins-Kirkpatrick and Sophie Lewis, "Australia Burns While Politicians Fiddle with the Leadership," *The Conversation*, accessed November 4, 2019, <http://theconversation.com/australia-burns-while-politicians-fiddle-with-the-leadership-101905>.

⁷ Will Steffen, Lesley Hughes, and Sarah Perkins, "Heatwaves: Longer, Hotter and More Often," 2014, <https://www.climatecouncil.org.au/uploads/9901f6614a2cac7b2b888f55b4dff9cc.pdf>.

⁸ Mat Lipson, Steefan Contractor, and James Goldie, "Is It Hot Right Now?," October 31, 2019, <https://isithotrightnow.com/alice-springs/>.

⁹ Australian Renewable Energy Agency, "Australian Renewable Energy: Mapping Infrastructure," October 28, 2019, <https://www.nationalmap.gov.au/renewables/>.

¹⁰ Here, 'large' means those countries with a population of more than 10 million people. World Resources Institute, "Climate Watch," September 18, 2019, <https://www.climatewatchdata.org/ghg-emissions> [PIK data, 2016].

¹¹ "National Greenhouse Gas Inventory Trend," accessed November 2, 2019, <http://ageis.climatechange.gov.au/NGGITrend.aspx>.

¹² The Northern Territory's total emissions, excluding LULUCF, in 2019 are likely to be 16.9 Mt. With LULUCF included, it is likely that the Northern Territory's emissions will be higher than more than 90 nations, though reliable international data for all countries is lacking for emissions including land use. Based on PIK data (see note 10, above).

¹³ Macedonia, Luxembourg, Liechtenstein, Latvia, Malta, Montenegro, and Armenia.

¹⁴ This global emissions budget assumes: (1) a global temperature increase of 0.05°C between the beginning of the industrial revolution and the IPCC's reference temperature (the average global temperature of 1850-1900); (2) a neutral impact from greenhouse gases other than carbon dioxide whereby the effect of powerful greenhouse gases such as methane are offset by the cooling impact of aerosols; (3) two natural feedbacks which have already begun to take effect with global warming of 1.1°C (forest dieback and permafrost melting), both of which will amplify the effect of future warming;

¹⁵ Based on PIK data (see note 10, above).

¹⁶ Yann Robiou du Pont et al., "Equitable Mitigation to Achieve the Paris Agreement Goals," *Nature Climate Change* 7, no. 1 (December 19, 2016): 38–43, <https://doi.org/10.1038/nclimate3186>.

¹⁷ Meinshausen, Robiou du Pont, and Talberg, "Greenhouse Gas Emissions Budgets for Victoria."

¹⁸ Yann Robiou du Pont and Malte Meinshausen, "Warming Assessment of the Bottom-up Paris Agreement Emissions Pledges," *Nature Communications* 9, no. 1 (November 16, 2018): 4810, <https://doi.org/10.1038/s41467-018-07223-9>.

¹⁹ Ross Garnaut, *The Garnaut Climate Change Review: Final Report* (Cambridge University Press, 2008).

²⁰ Meinshausen, Robiou du Pont, and Talberg, "Greenhouse Gas Emissions Budgets for Victoria", https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0016/421702/Greenhouse-Gas-Emissions-Budgets-for-Victoria.pdf.

²¹ The Northern Territory has 0.0032% of the world's population. It receives 0.024% of the global budget under this approach.

²² The EIS for the Inpex project relied on a global warming potential for methane of 21 times that of carbon dioxide over 100 years. While this figure has its origins in the Intergovernmental Panel on Climate Change, it is from the second assessment report, released in 1996. The science has evolved in the past 20 years, and the Fifth Assessment Report has the global warming potential of methane as 28 times more powerful than carbon dioxide over 100 years.

²³ Dimitri Lafleur et al., "A Review of Current and Future Methane Emissions" (Melbourne Energy Institute, October 28, 2016), <https://energy.unimelb.edu.au/articles/a-review-of-current-and-future-methane-emissions>.

²⁴ Tim Baxter, "Nice Try Mr Taylor, but Australia's Gas Exports Don't Help Solve Climate Change," *The Conversation*, September 4, 2019, <http://theconversation.com/nice-try-mr-taylor-but-australias-gas-exports-dont-help-solve-climate-change-122715>.

²⁵ Andrew Stock et al., "Pollution and Price: The Cost of Investing in Gas" (Climate Council, 2017), <https://www.climatecouncil.org.au/resources/price-of-gas/>.