

# Fracking and Northern Territory emissions

## Briefing paper, April 2018

### Key points

The Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory reported that unconventional gas development in the Northern Territory could result in greenhouse emissions that:

- Increase Australia's total greenhouse gas emissions by over 5%.
- Are equivalent to six times the Northern Territory's total 2016 emissions
- Are equivalent to 100 times more than the emissions savings under the Northern Territory Government's *Roadmap to Renewables: 50% by 2030* policy.

### NT Shale gas emissions vs Australia's emissions

The Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory assessed the emissions potential of an NT shale gas industry. It explored two production scenarios in its risk assessment: 365 PJ/year and 1240 PJ/year.

The 365 PJ/year scenario was assumed to be combusted entirely in Australia and found to increase Australia's greenhouse gas emissions by 26.5 Mt CO<sub>2</sub>e per year. The Inquiry reports this as a 4.5% increase in Australia's total emissions (Table 9.4, p228). In fact 26.5 Mt CO<sub>2</sub>e is equivalent to 4.9% of Australia's 543.3 Mt CO<sub>2</sub>e emissions to December 2016 cited in the Final Report (p209).

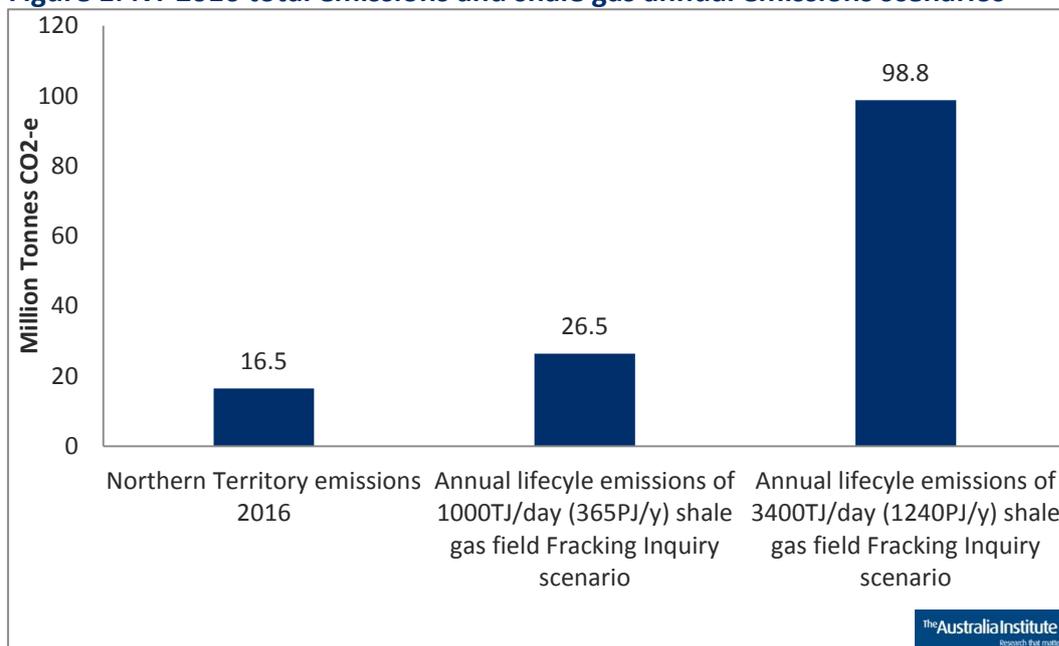
The higher 1240 PJ/year production scenario was found to result in 98.8 Mt CO<sub>2</sub>e per year (100 year GWP), which is equivalent to 18% of Australia's 2016 annual emissions. However in this scenario, 875PJ is assumed to be exported resulting in 58.9 Mt CO<sub>2</sub>e from combustion in customer countries and 38.9 Mt CO<sub>2</sub>e from lifecycle emissions within Australia, being equivalent 6.6% of Australia's 2016 emissions.

## Shale gas emissions could be equivalent to six times the NT's entire current emissions

The Inquiry's estimates of lifecycle emissions from shale gas production of 26.5 Mt CO<sub>2</sub>e per year or up to 98.8 Mt CO<sub>2</sub>e per year are significantly greater than the Northern Territory's total 2016 emissions.<sup>1</sup>

Total NT emissions in 2016 were 16.5 Mt CO<sub>2</sub>e.<sup>2</sup> As shown in Figure 1, lifecycle shale gas emissions could be six times the Northern Territory's annual emissions:

**Figure 1: NT 2016 total emissions and shale gas annual emissions scenarios**



Sources: Australian National Greenhouse Accounts (2017) *State and Territory Greenhouse Gas Inventories, 2015*; Scientific Inquiry into Hydraulic Fracturing in the Northern Territory (2018) *Final Report*; author's calculations

<sup>1</sup> Scientific Inquiry into Hydraulic Fracturing in the Northern Territory (2018) *Final Report*, Table 9.4, p 228 Accessed 4/4/18 <https://frackinginquiry.nt.gov.au/inquiry-reports/final-report>

<sup>2</sup> Australian National Greenhouse Accounts, *State and Territory Greenhouse Gas Inventories, 2016* Accessed 4/4/18 <http://www.environment.gov.au/system/files/resources/a97b89a6-d103-4355-8044-3b1123e8bab6/files/state-territory-inventories-2016.pdf>

## Northern Territory electricity emissions

In 2016, emissions from electricity generation in the NT were 1.8 Mt CO<sub>2</sub>e, or 11% of the Territory's total emissions.<sup>3</sup> This is a lower proportion than in other Australian States and Territories, largely because land use emissions make up a much larger proportion of emissions in the Northern Territory than in other states and Territories.

The Northern Territory Government has committed to a target of 50 per cent renewable energy by 2030. The target is focused on the electricity sector.<sup>4</sup>

No modelling has been undertaken to estimate the emissions reductions of the target. However, a simple comparison the annual emission scenarios from shale gas fields identified by the Fracking Inquiry with the annual emissions from electricity generation in the Northern Territory illustrates the magnitude of shale gas emissions compared to the potential emissions reduction of the renewable energy policy.

Electricity generation in the NT has increased from 2922 GWh in 2009 to 2997 GWh in 2015. This is an overall increase of 75 GWh, an average increase of 0.4% per year.<sup>5</sup>

In order to provide a *Business as Usual* (BAU) case to measure potential emissions reductions against, we assume the same rate of growth in electricity generation from 2015 to 2030 and that the emissions intensity remains constant. Under these assumptions, emissions from electricity generation would increase by approximately 6% from 1.8 Mt CO<sub>2</sub>e per year in 2016 to 1.9 MT CO<sub>2</sub>e per year in 2030.<sup>6</sup>

Currently only 4% of the Northern Territory's electricity generation is from renewable sources, with 96% coming from gas and diesel.<sup>7</sup>

If we then assume the renewable energy target reduced the Northern Territory's emissions from electricity generation by 50% from the BAU case by 2030,<sup>8</sup> the emissions reduction in the year 2030 would be around 0.95 Mt CO<sub>2</sub>e per year.

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<sup>3</sup> Australian National Greenhouse Accounts *State and Territory Greenhouse Gas Inventories, 2016*, (February 2018 update) Appendix 2, Table 12 p 29. Accessed 6/4/2018  
<http://www.environment.gov.au/system/files/resources/a97b89a6-d103-4355-8044-3b1123e8bab6/files/state-territory-inventories-2016.pdf>

<sup>4</sup> Northern Territory Government (2017) *Roadmap to renewables: Fifty per cent by 2030*,  
<https://roadmaprenewables.nt.gov.au/?a=460760>

<sup>5</sup> Office of the Chief Economist (2016) *Australian Energy Statistics*, Table O. Accessed 2/2/18  
<https://industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx>

<sup>6</sup> Over 15 years from 2015 (1.3 mt) x 0.4% /year = 6% over 15 years.

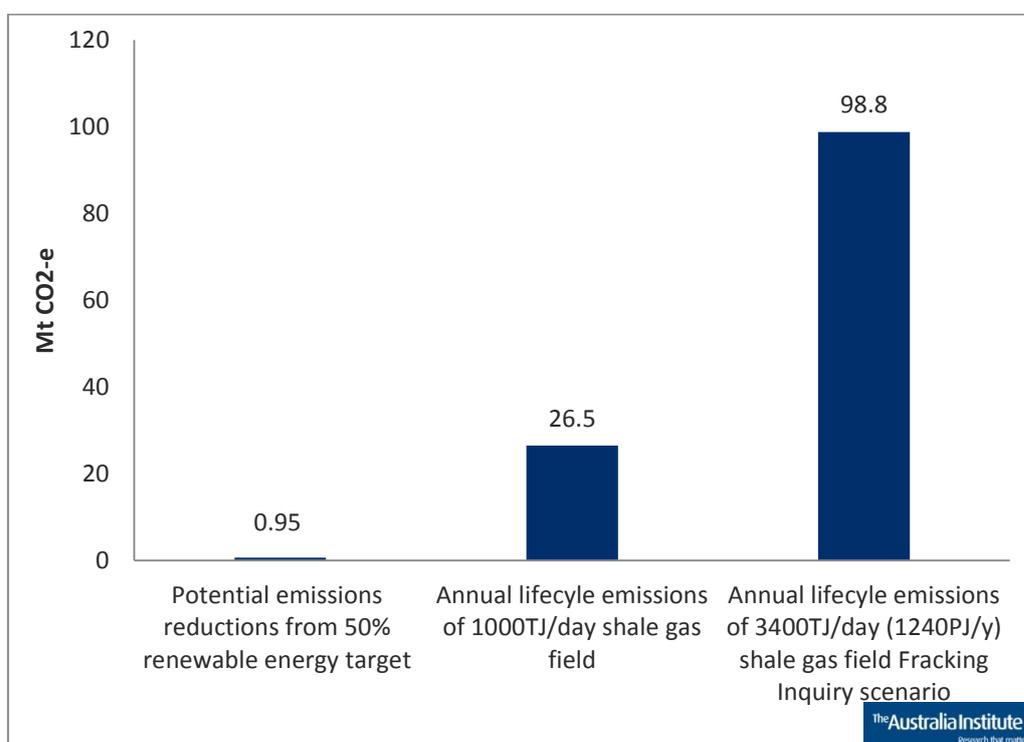
<sup>7</sup> Northern Territory Government Independent Expert Panel (2017) *Northern Territory Roadmap to Renewables, Fifty per cent by 2030*.

## Comparing electricity and shale emissions

As noted above, The Fracking Inquiry Final Report found that emissions under two shale gas production scenarios would reach 26.5 Mt CO<sub>2</sub>e per year or 98.8 Mt CO<sub>2</sub>e per year.<sup>9</sup> These levels would be reached before 2030 when the Roadmap to renewables policy would see 50% renewable energy generation.

As shown in Figure 3, under the Inquiry's 365 PJ per year scenario, the emissions would be equivalent to 27 times the estimated emissions reduction of the 50% renewable energy target. Figure 3 also shows that under the higher 1,240 PJ per year scenario, emissions from shale gas would be over 100 times greater than potential reductions under the renewable energy target in 2030.<sup>10</sup>

**Figure 2: Emissions impact of NT 50% renewable energy target and shale gas**



Source: Scientific Inquiry into Hydraulic Fracturing in the Northern Territory (2018) *Draft final report*, p 210; authors calculations

<sup>8</sup> Emissions reductions are likely to be marginally lower than this given 4% of generation is already from renewables so less than half of existing fossil fuel generation would be replaced.

<sup>9</sup> Over a 100 year timeframe, assuming methane emissions 1.8% of production. Measuring over a 20 year timeframe or assuming a higher rate of methane emissions could increase the global warming impact significantly.

<sup>10</sup> Most of the emissions would not be accounted for in Australia's National Greenhouse Accounts as the gas is assumed to be exported and combustion would occur in customer countries.

## Conclusion

The Northern Territory Government's 50% by 2030 Roadmap to Renewables policy is commendable. If it is not negated by contradictory policies, it will position the Northern Territory well to develop a clean, efficient and low-cost energy system suited to the 21<sup>st</sup> Century.

The Northern Territory is likely to be heavily impacted by global warming. The threat of increasing extreme weather events and extreme heat mean that global emission reductions are vital to the health and wellbeing of all Territorians, its unique environment and the viability of many of its most important industries.<sup>11</sup>

If the Northern Territory Government allows unconventional gas development to proceed, the resulting emissions will dwarf the potential emissions reductions achieved by other climate policies including the 50% by 2030 renewable energy policy.

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<sup>11</sup> Hanna and Ogge (2018) Cooked with gas: Extreme heat in Darwin, <http://www.tai.org.au/content/cooked-gas-extreme-heat-darwin>