

## **Second Climate Action Darwin Submission to NT Fracking Inquiry - Response to the [Interim Report](#)**

by Grusha Leeman and others  
31 August 2017

Thank you for for considering Climate Action Darwin's response to the Interim Report on the Fracking Inquiry. Climate Action Darwin is a community based group who work together to support a vision for a safe climate and a sustainable future. We currently have 270 members.

It is commendable that this Inquiry is comprehensive. There are a broad range of facts across the economic, cultural, health, social and environmental facets that discount the expansion of the gas industry as a sensible plan. Indeed each could stand on their own as valid reasons to halt the industry.

However, it is due to the undeniable threats to our fragile and vital climate that Climate Action Darwin is again presenting a submission, to reiterate that this is the overwhelming reason to ban all fracking plans.

### **The Final Fracking Inquiry Report CAN recommend no fracking**

Section 6 in the [Terms of reference](#) of this Inquiry states that:

*The Inquiry will identify priority areas for no go zones.*

Due to the climate change, the only responsible course is to recommend that the whole of the Northern Territory be a no-go zone for fracking.

### **Climate change is happening faster than expected**

Most concerningly, the effects of current greenhouse gas emissions are actually exceeding what has been projected by the IPCC estimates.

The Director of the Fenner School of Environment and Society at the Australian National University indicated such in the following quote:

*Both observed temperature and sea-level rise are tracking at or near the top of the envelope of model projections.*

(from: [https://crawford.anu.edu.au/research\\_units/eerh/pdf/EERH\\_RR108.pdf](https://crawford.anu.edu.au/research_units/eerh/pdf/EERH_RR108.pdf))

### **Climate change is tracking to the worst predictions**

If we continue with business as usual, approving more gas extraction, climate change is likely to track to the worst scenarios as outlined by the [Australian Government](#).

Allowing further fracking for gas in the Northern Territory is following the path of the worst future scenario expected by the IPCC (International Panel on Climate Change): that of [RCP8.5](#) which could see the temperature rises up to 5 °C by the end of this century, as shown in the fourth column of the following table.

If we ban new fracking projects, we have a better chance of realising a RCP4.5 scenario. This will save much of our economy and avoid the high costs of adaption.

## Projected temperature changes for Australia

	2090RCP4.5	2090 RCP8.5
Australia	1.9 (1.4 to 2.7)	4.1 (2.8 to 5.1)
Northern Australia	1.7 (1.3 to 2.6)	<b>3.7 (2.7 to 4.9)</b>
Rangelands	2.1 (1.5 to 2.9)	4.3 (2.9 to 5.3)
Eastern Australia	1.9 (1.3 to 2.6)	3.9 (2.8 to 5)
Southern Australia	1.7 (1.2 to 2.1)	3.5 (2.7 to 4.2)

**Table 1: Projected temperature change (°C) for Australia and regions with the confidence interval (10th and 90th percentile) given in brackets. Source: CSIRO and Bureau of Meteorology 2015.** From: <https://coastadapt.com.au/climate-change-and-sea-level-rise-australian-region>

Please note: A global temperature rise of 2°C will have serious detrimental effects on all aspects of our life on Earth. Given that we are likely to be more adversely impacted by climate change than other comparable countries, Australia has a strong interest in achieving deeper and more rapid reductions in global emissions. From: <http://www.climateinstitute.org.au/articles/media-briefs/why-avoiding-2-degrees-of-global-warming-matters-for-australians.html>

### The climate change models are likely to be conservative

To make matters even worse, it seems most climate models still don't even factor in some of the harder to measure, less predictable impacts and tipping points. For example: how vegetation will respond to changes in climate; or ice sheet collapses and carbon and methane release from thawing permafrost aren't yet included in climate models.

*"For these reasons my colleagues and I believe that the catalogue of abrupt shifts we found is actually at the lower end of what might occur in reality. Dangerous*

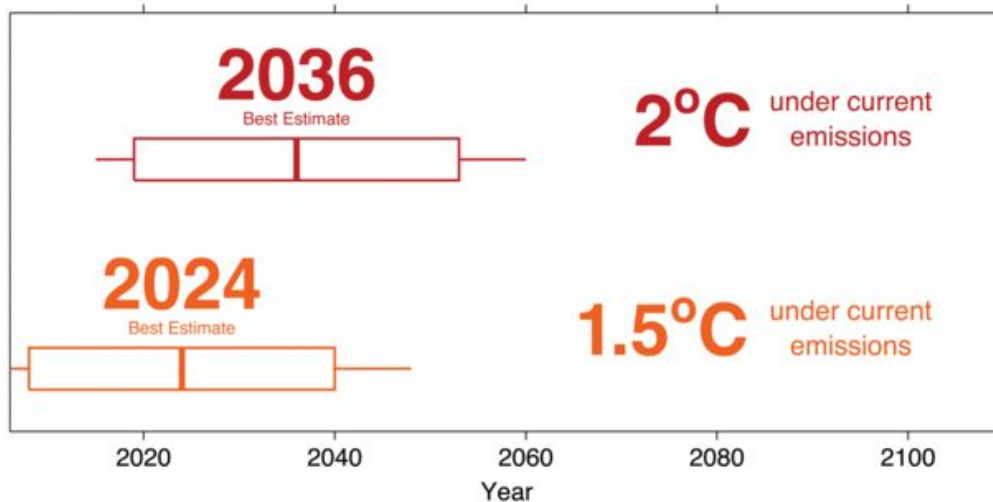
*climate change isn't restricted to 2°C global warming – to avoid unpleasant surprises we should limit it as much as possible.”*

<https://theconversation.com/what-climate-tipping-points-are-and-how-they-could-suddenly-change-our-planet-49405>

## Do we have more time to dither?

Not at all. We can expect to reach 1.5°C around the year 2024 if we follow our current emissions trend. The less ambitious 2°C ceiling could be surpassed in 2036.

### When will global warming reach 1.5°C and 2°C?



**Figure 1: Timeline showing best current estimates of when global average temperatures will rise beyond 1.5°C and 2°C above pre-industrial levels. Boxes represent 90% confidence intervals; whiskers show the full range.** From: <https://theconversation.com/we-have-almost-certainly-blown-the-1-5-degree-global-warming-target-63720>

*“Ignoring climate change will be the most costly of all possible choices, for us and our children.”* Peter Ewins, British Meteorological Office from: <http://climatesafety.info/the-bad-news/>

Even if we stopped all greenhouse gas emissions right now, we would likely experience about [another half-degree of warming](#) as the oceans “catch up” with the atmosphere.

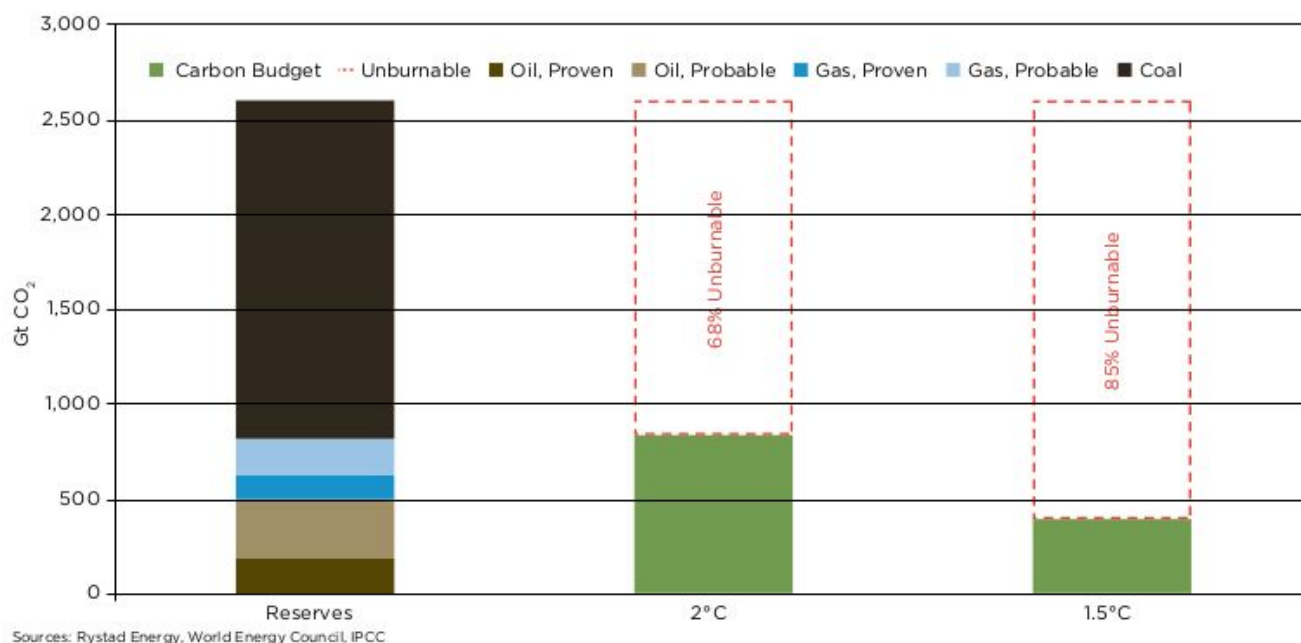
## Close to the edge of catastrophe

A [report](#) by Washington-based think tank, Oil Change International, using data from Norwegian energy consultants Rystad, figured out how close to the edge of catastrophe we’ve come. The Rystad data showed fossil fuel extraction in operation worldwide contained 942 gigatons worth of carbon dioxide.

When the world's leaders met in Paris, they said: Every effort, would be made to *limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.*

To have even a 50% chance of meeting that limit, we can only release about 353 gigatons more CO<sub>2</sub>. Clearly 942 is much greater than 353. To have just a break-even chance of meeting that 1.5°C limit, we need to close all coal mines and have a phase down of most of the oil and gas fields currently operating long before they're exhausted.

Figure 2 shows how only 68% of global fossil fuel reserves are unburnable if we are to have a fighting chance of staying below the 2 degree ceiling. If we wish to keep the world more like we know it then we must not burn 85% of the fossil fuel reserves!



**Figure 2: Global Fossil Fuel Reserves Compared to Carbon Budgets for Likely Chance of 2°C and Medium Chance of 1.5°C.** From: [http://priceofoil.org/content/uploads/2016/09/OCI\\_the\\_skys\\_limit\\_2016\\_FINAL\\_2.pdf](http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf)

We simply cannot afford to open up new gas mining projects! We don't have to flick the switches off tomorrow, but we must start a steep managed decline in the fossil fuel industry immediately. This reason alone should be enough to ban fracking in the NT. If we want to have a livable climate, we literally cannot keep promising profits from extracting and burning fossil fuels. Leaving them in the ground is our only hope for a sustainable future.

There is no alternative to a global effort at deep cuts of carbon emissions coupled with fast-tracked CO<sub>2</sub> sequestration: *We're simply talking about conserving the*

very life support system of this planet (including those which support human life).  
<https://theconversation.com/what-climate-tipping-points-should-we-be-looking-out-for-27108>

## **Technology will save us = wand waving**

As for the proposal that we can overshoot the climate targets, then at a later date suck carbon dioxide out of the air: this depends on scenarios that would be [no less realistic if they involved sorcery](#).

A “popular” proposal is to combine the capture and storage fantasy with biofuel plantations covering an area between one and three times the size of India, then harvesting the material they grow, burning it in power stations and burying the emissions. The use of a mere few hundred million hectares of fertile land would have to compete with all the other problems the biofuel wand is meant to magic away, such as the use of petroleum in cars and kerosene in planes, as well as the minor issue of feeding the world’s people.

All this nonsense is a substitute for a simple proposition: leave fossil fuels in the ground.

The reality is that this will require leadership by governments to ensure the right decisions are made for the longer term, beyond the typical three year political cycle.

## **Fracking is in direct conflict with the Northern Territory reducing its greenhouse gas emissions**

Contemplation of plans to continue down the fracking pathway is the very reason the NT Government presently has no targets to reduce greenhouse gases - they know that the gas is too dirty.

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## **Chapter 9: Greenhouse Gas emissions**

It is commendable that you have dedicated a whole chapter to greenhouse gas emissions. Chapter 9. Unfortunately, it is alarmingly misguided.

From the beginning, the Report states *GHG emissions may add to the risk of climate change...* Clearly a fence-sitting denial viewpoint. This understates the well-established scientific fact (by the IPCC) that emissions from burning fossil fuels are a prime cause of human-induced climate change. It is appalling that this statement is included in a report from an Australian scientific inquiry; clearly emissions **do** contribute to climate change.

Fortunately, the very next paragraph makes it clear you do understand that: *GHG emissions are known to be major contributors to climate change*. We hope you desist from using the word “may”, when this is known.

It is heartening that there is recognition of:

- the immense task that our agreeing to the Paris Agreement is;
- gas production is a part of the largest contributing sector to Australia's GHG emissions;
- the largest contribution to Australia’s GHG footprint is stationary energy which includes gas production and combustion, (9.1);
- methane is considered to have a warming potential of up to 87 over 20 years (9.2) and
- that methane is the major contributor to upstream GHG emissions for shale gas (9.3).

### **Cradle to grave issues**

It is appropriate to see consideration of the cradle to grave contributions of GHG emissions, but it is likely there are several underestimations in the Report.

It’s not clear, but it is possible, that not all the upstream emissions were included in the quoted study. Things like long distance tankers, FIFO flights and concrete plugging seem to have been omitted. Together over decades these can be notable.

Secondly, there are the hidden Fugitive emissions to consider. In the studies quoted in the Interim Report, there was no clear mention of measurements taken for fugitive methane emissions that are not associated with the direct activities: those that are off-site. As this has been reported to be potentially very high, the figures quoted are likely to be an underestimation. Most likely a massive underestimation. It’s important to avoid the mistake of assuming all methane emissions are from the wellhead.

In the last CAD submission we requested that the [Melbourne Energy Institute Report](#) about methane emissions from unconventional oil and gas production be considered. Please examine this report this time.

Researchers from Southern Cross University recently also found environmental fugitive emissions to be significant. They demonstrated there are clearly elevated atmospheric methane emissions in Queensland gas fields. The link for their video is [here](#), it is well worth watching.

Thirdly, although it is awesome that finally efforts are being made to be less polluting, relying on projected figures as fact is just not acceptable. Section 9.4 states: "*the parameters were adjusted to reflect potential emission reduction technologies*"... and "*the hypothetical well scenario has GHG emissions that are ... lower than historical practices*". It is difficult to rely on hypothetical rates of pollution from new technologies and practices that have not been tested in the field. These look like hopes, and as such cannot be relied on until proven, and completely adopted.

The fact that technologies like Reduced Emission Completions are only recently being rolled out is a testament to the immaturity of this industry. It is alarming that we still see intent for flares and venting. This cheap and nasty mentality has been a major contributor to climate change today.

## **Monitoring must be comprehensive but does not equate to cleanliness**

Monitoring and reporting in themselves do nothing to diminish risk; they only exist to prevent mistakes from repeating. If emissions were reported to be increasing would the operations be shut down? For that would really be the only way to prevent environmental fugitive emissions from recurring.

The pressure to appear clean is the fundamental reason why monitoring must be comprehensive and properly independent and monitored in itself.

Instead there is mention of focusing on "cost-effective risk mitigation strategies" [section 9.9] which include venting and flaring. Cost-effective usually means cheap and nasty strategies are chosen before those which are less polluting.

It is concerning that the Interim Report states: "*It is essential to undertake baseline monitoring of methane levels in soils and atmosphere before drilling commences*" [Section 9.6].

Firstly, if we wait until after initial drilling (during exploration) has been done, the test is no longer a "baseline measurement". Any time a hole is drilled into the ground, potential pathways for gases are created. So-called "baseline measurements" completed after exploration should be much more extensive to ameliorate any possible increases from exploration.

Secondly, why is there no recommendation to monitor methane levels in groundwater? (only soils and atmosphere were indicated for monitoring).

In section 5.3.2, the Interim Report quotes a WA report which recommended monitoring of groundwater for methane prior to hydraulic fracturing, yet here, in 9.6, a section dedicated to monitoring for greenhouse gases, water monitoring is omitted.

There *are* vast water sources in the arid outback: people have lived there for tens of millennia. This includes precious groundwater, springs, ephemeral water bodies, periodically mass floodings, and rivers. Comprehensive monitoring should determine whether shale gas fracking releases fugitive methane via water sources.

## **Shale gas is dirty**

The most glaring inadequacy in the Greenhouse chapter is the pretence that the NT fracked gas replaces coal and therefore should be seen as 'better' or 'cleaner'. It is still a fossil fuel, it still contributes to climate change. Indeed it's possible that shale gas is as polluting as coal when all the emissions are actually accounted for. In 2017, we no longer have any wriggle room for more pollution.

Our shale gas extraction possibilities are not part of any strategy to bring stationary energy emissions to zero. That would be impossible.

If all we can say for an energy source like shale gas is that it may be slightly cleaner than coal, then we have nothing to say in its favour at all.

The preliminary assessment of life-cycle GHG emissions (9.8.3) repeats this ill-founded and illogical justification for the roll out of more shale gas mining, assuming without any basis of evidence, that the shale gas will displace coal, and falsely concluding that this is a good deal, when of course we should instead be displacing coal with large scale renewables.

Shale gas is still a dirty fuel. Mining and burning it will only elevate our GHG emissions. Leaving it in the ground will deliver the best outcome for our climate.

## **"Air" is not a suitable title for greenhouse gases**

Section 4.2.4 of the Interim Report discusses the main greenhouse gases which are minute components of air: methane is currently at [1.8ppm](#) and CO<sup>2</sup> is [409ppm](#), both rapidly rising. It is not their composition in the air that is of importance, but their potency as greenhouse gases. It would be less deceptive to put them under the title of Greenhouse Gases or Climate Change since this issue is deserving of a section of its own.

It is pleasing to see that there are many critical climate change aspects covered in the report and that it is clear that climate change was a major issue for a significant number of community participants. However, the Interim Report seems to suggest it is merely better measurement and monitoring of methane that we request, ignoring our concern about opening new basins, extraction and ultimately burning the fossil fuel. There is no acceptable mitigation or offset for the extraction and export of shale gas, it simply causes unnecessary harm to our climate.



## **Rehabilitation leaves a legacy of pollution [Section 5.3]**

We put this to the panel: how safe are cement plugs over time? There are earthquakes, floods, fire and endless sunshine. How will they be prevented from failing? Is this even possible? Have the risks been properly assessed?

As you, and the public at large are well aware, the NT is littered with badly rehabilitated mining ventures, many mitigated in their effects at great taxpayer cost. It is highly likely that some plugs will leak even more methane in the years after the gas companies are gone, leaving us with more legacy messes.

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## **Shale gas is not a transition fuel**

Gas was once touted as a “transitional fuel” but now Australia, and the rest of the world, can leap directly to renewables: a new University of Melbourne [report](#) demonstrates the gas pathway as a detour. It is cheaper to employ solar and wind-power, pumped hydro and batteries, to provide baseload power and manage energy supply/demand fluctuations which are the major functions of gas in the electricity system.

Shale gas is not sufficiently less polluting than coal to garner any climate benefit. <http://www.climatecouncil.org.au/price-of-gas>

## **Shale gas is expensive**

Renewable energy such as wind and solar are now the cheapest kind of power it is possible to build right now – less than new gas plants.

<https://probonoaustralia.com.au/news/2017/05/renewable-energy-jobs-reach-10-million-worldwide/>

Investing in more gas will lock in high electricity prices and pollution for decades to come. The report: [‘Pollution and Price: The cost of investing in gas,’](#) shows that tackling climate change and protecting Australians from worsening extreme weather requires our electricity system to produce zero emissions before 2050.

Besides gas being similar in climate pollution to coal, a greater reliance on gas drives up power prices. Renewable energy can provide a secure, affordable alternative to new fossil fuels.

**THE COST OF INVESTING IN GAS**

**POLLUTION**

- POLLUTING GAS PLANTS**  
Some gas plants are as polluting as coal plants. Carbon dioxide (CO<sub>2</sub>) emitted by gas power plants: **360 - 910kg CO<sub>2</sub>/MWh**
- SUPPLY CHAIN EMISSIONS**  
Methane emissions from unconventional gas (e.g., coal seam gas) may cancel out any benefit of gas over coal.
- AGEING INFRASTRUCTURE**  
Gas infrastructure built 1960s onwards. Risk of failure and emissions.

**PRICE**

- EXPORTS RAISING PRICES**  
Liquefied Natural Gas exports are pushing up domestic gas prices.
- UNCONVENTIONAL GAS PRODUCTION**  
Increasing reliance on more expensive gas sources.
- LOW COMPETITION**  
Lack of competition between gas power companies is driving electricity price spikes in some markets.

**CLIMATECOUNCIL.ORG.AU** | crowd-funded science information

Source: <http://www.climatecouncil.org.au/price-of-gas>

## Turning away from fracking and going renewable

If we are to save our planet from the more dangerous and unpredictable impacts of climate change, we must stop all new fossil fuel development immediately. Every day is critical because greenhouse gases are cumulative.

Our Federal Government is weak on climate change policy, yet increasingly, state and local governments are showing leadership by acting decisively to turn the corner on fossil fuels and roll out renewable energy. Like more and more governments across the USA and Europe, they have decided that fracking is just too great a risk and that it is no longer worth continuing to pander to the fossil

fuel industry. Already Victoria has banned fracking, Tasmania also has a moratorium and a growing list of councils are declaring their regions Frack Free. Increasingly, towns and cities such as Canberra have pledged to be 100% renewable in the short term.

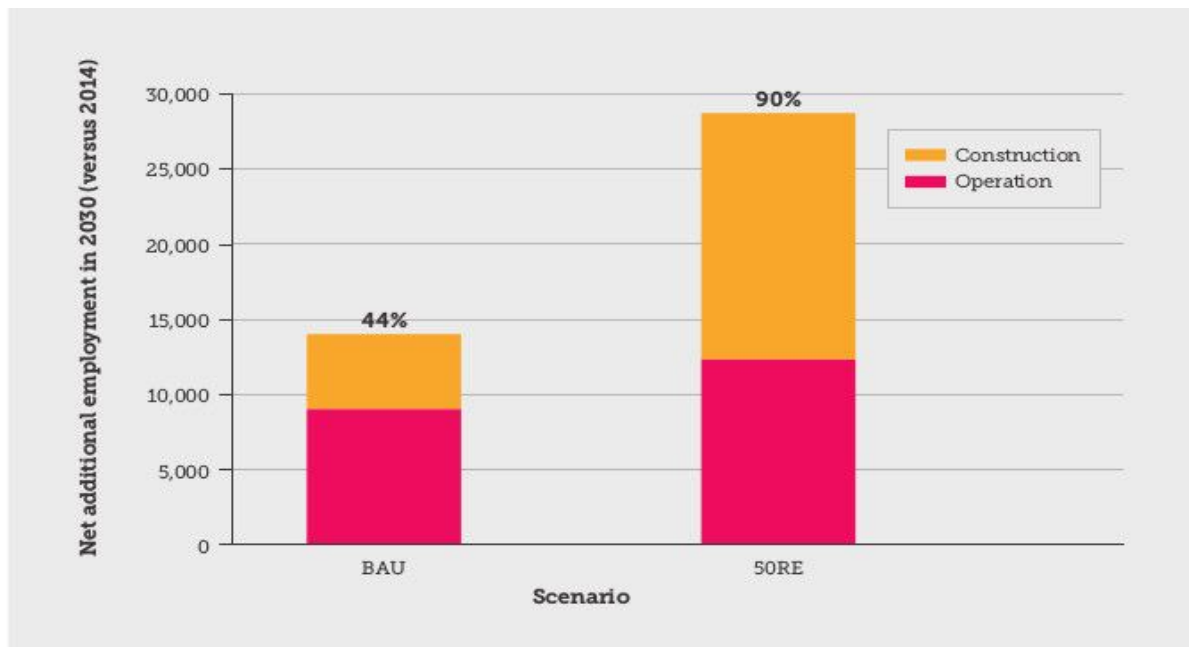
The NT can join other states in showing leadership for the sake of our water, land and climate by banning fracking and switching to a jobs-rich renewable energy economy. We have the capacity to go 100% renewable through a well-paced, well-considered strategy to reduce emissions to zero. The NT is rich in sunshine and we are in the privileged position of hosting electricity grids independent of the National Electricity Market.

It's time we stopped wondering what monitoring and regulations we need in order to expand pollution and take decisive action for the future. If we don't, we may find ourselves left behind in the renewable technology market.

The future is 100% renewable. Let's put our focus and limited tax dollars there.

### **More jobs in a renewable economy than in a fracked one**

A good start to understanding the awesome potential of avoiding catastrophic climate change by shifting our efforts from fossil fuels to renewable energy sources is by reading the 2016 Climate Council report: [Renewable Energy Jobs: Future Growth in Australia](#), though as is often the case the NT is rarely mentioned.



**Figure 3: Net additional employment in the electricity sector in 2030 versus 2014, Business As Usual (BAU) and 50% Renewable Energy (50RE) scenarios.** From: <https://www.climatecouncil.org.au/uploads/7b40d7bbefbdd94979ce4de2fad52414.pdf>

This [Report](#) compares two scenarios for the national energy sector - business as usual renewable energy growth (34% renewable electricity in 2030) and 50% of electricity derived from renewable sources in Australia by 2030.

Both scenarios show increased uptake of renewable electricity will create employment nationwide:

- 50% Renewable Electricity (50RE) scenario in 2030 will lead to over 28,000 new jobs, nearly 50% more employment than a business as usual (BAU) scenario [Note: 28,000 does not include the NT!].
- Jobs are created in the construction, operation and maintenance of renewable energy installations, as well as in related industries.
- Job losses in fossil fuel electricity generation are more than compensated for by increased employment in the renewable energy sector.

## **Renewable jobs are booming and the RE industry is leading investment across the world**

Building renewables and a smart grid will generate millions of mostly blue collar jobs around the world, according to a recent report from the intergovernmental [International Renewable Energy Agency](#).

More than 9.8 million people were employed in the renewable energy sector in 2016, which could rise to 24 million by 2030 according to a 2017 International Renewable Energy Agency (IRENA) report, [Renewable Energy and Jobs – Annual Review 2017](#). The number of jobs in the solar and wind sectors has more than doubled in the last 4 years.

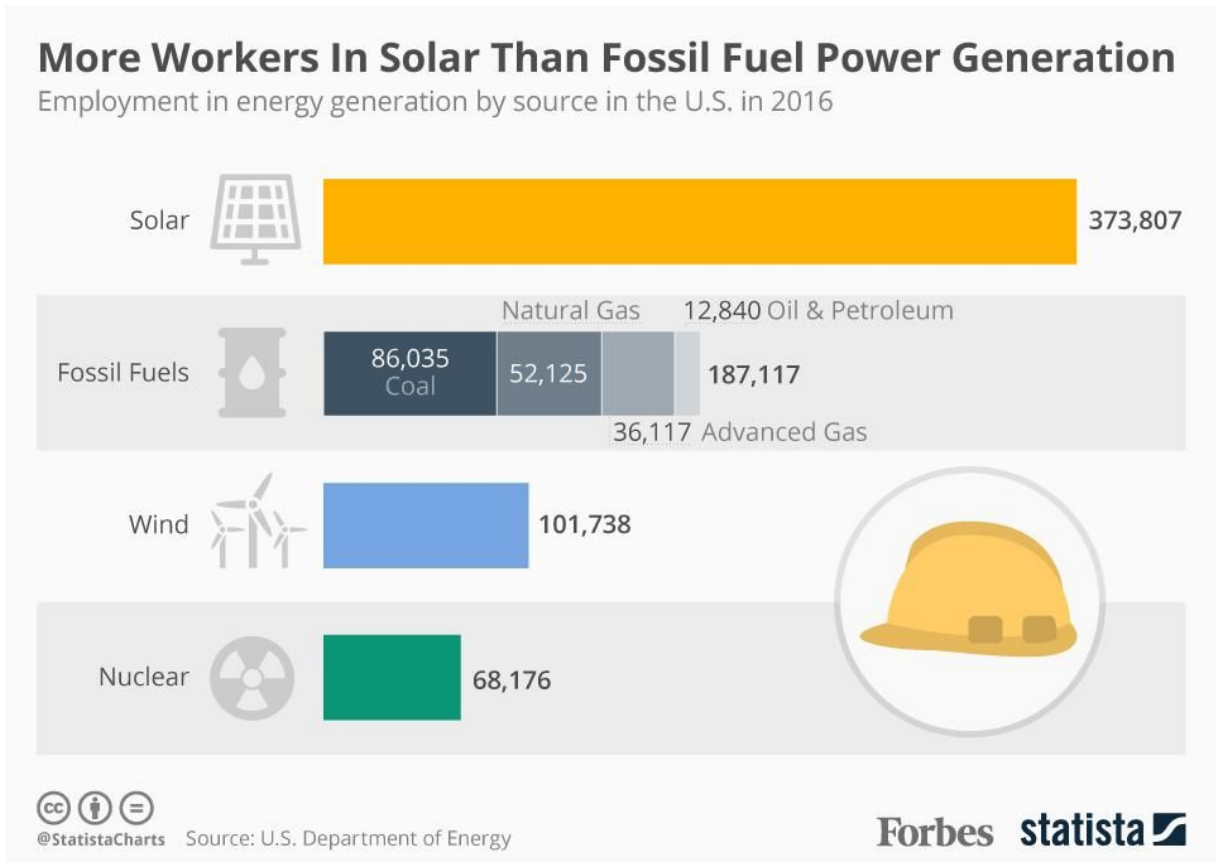
*“Renewables are directly supporting broader socio-economic objectives, with employment creation increasingly recognised as a central component of the global energy transition”* said IRENA director-general Adnan Z. Amin.

*“As the scales continue to tip in favour of renewables, we expect that the number of people working in the renewables sector could reach 24 million by 2030, more than offsetting fossil-fuel job losses and becoming a major economic driver around the world.”*

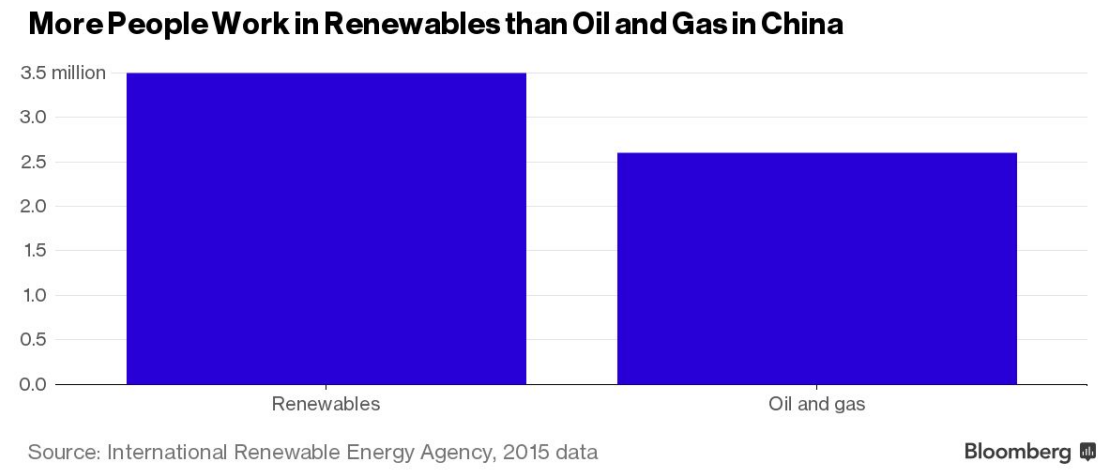
<https://probonoaustralia.com.au/news/2017/05/renewable-energy-jobs-reach-10-million-worldwide/>

The energy giants China and the USA have embraced the opportunities for increasing employment by going renewable as shown in the following graphs. In 2015, the number of jobs in solar energy overtook those in oil and natural gas extraction in the USA, helping drive a global surge in employment in the clean-energy business as fossil-fuel companies faltered.

<https://www.bloomberquint.com/technology/2016/05/25/clean-energy-jobs-surpass-oil-drilling-for-first-time-in-u-s>



**Figure 4: More people work in renewables than oil and gas and nuclear in the USA.**  
 Source: <https://www.forbes.com/sites/niallmccarthy/2017/01/25/u-s-solar-energy-employs-more-people-than-oil-coal-and-gas-combined-infographic/#6a5fb9d02800>



**Figure 5: More people work in renewables than oil and gas in China.**  
 Source: <https://www.bloombergquint.com/technology/2016/05/25/clean-energy-jobs-surpass-oil-drilling-for-first-time-in-u-s>

Besides the many social and economic benefits from a roll of renewable energy jobs, the gender balance will be improved, which could well reduce depression and suicide rates. There is an indication that the renewable energy sector employs larger shares of women than the broader energy sector.

<https://irenanewsroom.org/2016/05/25/8-1-million-people-now-work-in-renewables-new-study-finds/>

If it is jobs that are wanted: the future is clearly renewable.

## **Conclusion - Make the NT a fracking no-go zone**

The full lifecycle greenhouse gas burden of our fracked gas is an unacceptable climate destroying disqualification.

We have three choices:

- First: a gradual, managed decline of existing fossil fuel production and its replacement with renewable energy and low-carbon infrastructure, which offer great potential for employment.
- Second: allowing fossil fuel production to continue at current rates for a while longer, followed by a sudden and severe termination of the sector, with dire consequences for both jobs and economies.
- Third: continuing to produce fossil fuels as we do today, followed by climate breakdown rendering places like Darwin and the rest of the Territory virtually unlivable.

Clearly option one is the only sensible choice. It entails an end to exploration and all new gas projects, and the roll out of renewables. Yet here we are contemplating option three. Sticking to science and facts, as this Inquiry promises to do, means we simply cannot accommodate climate-sceptics and climate-cleaning dreamers.

Fossil fuel production must halt if we are to curb climate disaster. Climate Action Darwin compels you, the panel, to stick to the facts:

- ❖ Fact: climate change is real.
- ❖ Fact: climate change is already happening faster than predicted.
- ❖ Fact: we need to stop burning fossil fuels like fracked gas.
- ❖ Fact: what you, the panel, choose WILL make a difference.

Climate Action Darwin requests the Final Fracking Inquiry Report recommends a cessation to new fracking activities in the NT, by power of Section 6 in the [Terms of reference](#) which states: *The Inquiry will identify priority areas for no go zones, ie the whole of the Northern Territory.*

On behalf of the thousands of Territorians concerned about climate change as well as future generations, thank you for considering and referring to our feedback in your final recommendations.