



## ***Darwin – Climate Action Darwin***

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***Darwin Convention Centre, Darwin***

***Speakers: Grusha Leeman***

Grusha Leeman: My name is Grusha Leeman. I'm representing a large community group, Climate Action Darwin, and I'd like to thank you for being patient and hearing from me again. But I'd also like us all to respect that we're here on Larrakia land. But more, that we're pondering more disruption to aboriginal lands. It's the First Nations people that my heart goes out most to, for they're gifted with the culture of care taking country. And if we're to take care too, we would not even contemplate hydraulic fracturing.

In addition, it's our First Nations people who will suffer the most from climate change. And as Australians, reconciliation is vital and should begin with taking care. And instead of humbugging them to frack their country. That's enough humbugging. The task of this inquiry is to assess the risks to fracking for shale gas based on the most cutting edge and the latest literature. Let's anticipate the cutting edge data and the latest literature. So let's anticipate that we can encourage the NT government to also use the best science knowledge available.

And when they make their decision, that they stick to the facts rather than hopes as I'm sure this inquiry aims to do. It is commendable that this inquiry is comprehensive. And there's a broad range of facts across the economic, cultural, health, social, and environmental facets. That I consider to 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's due to the undeniable threats to our fragile yet awesome climate, that I'm again here to reiterate that this is the overwhelming reason to ban all fracking. All fracking plans. I won't report here of the catastrophic effects that we can expect from runaway climate change. And I do request that you take time to acquaint yourselves with our prospects. Particularly if we're to continue with business as usual.

A report by Washington based think-tank, Oil Tank International, using data from the Norwegian energy consultants, Rystad, figured out how close we are to the edge of catastrophe. The Rystad data showed that fossil fuel extraction in operation worldwide, contained 942 gigatonnes worth of carbon dioxide. And when the world leaders met in Paris, they said, "Every effort would be made to keep global temperature rise to less than 1.5



degrees". To have a fifty-fifty chance of meeting that goal, we can only release about 353 gigatonnes more of carbon dioxide.

Clearly, 942 is greater than 353. Much greater. To have just a breakeven chance of meeting the 1.5 degree goal, we solemnly set in Paris ... and we need if we want to keep living here with our lifestyle and our jobs, we'll need to close all of the coal mines and have a phase down of most of the oil and gas fields that we're currently operating. Long before they're exhausted. We simply cannot start new ones.

So unless someone can summon the likes of Harry Potter, or Wonder Woman to vanquish the potential gases, we must start a steep managed decline of the fossil fuel industry, immediately. We don't have to flick switches off tomorrow, but we just can't frack the Northern Territory. If we want to have a livable climate, we cannot keep doing what we're doing. Leaving fossil fuels in the ground is the only realistic option.

What's unrealistic is to imagine that we can somehow escape climate change. This is the science, this is the facts. The risks are clearly, utterly unacceptable. I must say it is commendable that you've dedicated a whole chapter to greenhouse gas omissions, chapter nine. Unfortunately, I find that it's alarmingly misguided. From the beginning, the report states that the greenhouse gas emissions may add to the risk of climate change.

Clearly a fence sitting denial viewpoint, this is not scientific. And appalling to be seen from a report from an Australian scientific inquiry. Fortunately, the very next paragraph makes it clear you do understand that greenhouse gas emissions are known to be major contributors to climate change. We're way past the time of giving space to deniers and I hope that you desist from using the word 'may', when it is known. Please stick to the facts, the science.

It's heartening that there's recognition of the immense task that our agreeing to the Paris Agreement is. And that the largest contribution to Australia's greenhouse gas footprint is stationary energy, which includes gas production and combustion. And that the methane is considered to have a warming potential of up to 87 over twenty years. And that methane is a major contributor to upstream greenhouse gas emissions for shale gas.

It's appropriate to see consideration of cradle to grave contributions of the greenhouse gas emissions, but it's likely that there's several underestimations in this report. It's not clear, for example, but it's possible that not all the upstream emissions were included in the quoted study. Things like, the long distance diesel tankers, the FIFO flights, and the concrete plugging that might have to be omitted. Concrete's a big emitter. I'm sorry, I couldn't quite see them in there. I mean, possibly they were included. It's not clear.

There's also the known fugitive omissions. It's welcome that finally if it's being made to be less polluting, but it's also difficult to rely on hypothetical rates of pollution from new technologies and practises. In section 9.4 it says,



"The parameters were adjusted to reflect potential emission reduction technologies ... adjusted to reflect potential emission reduction technologies, and the hypothetical well scenario for greenhouse gas emissions that are lower than historical practises". These look like hopes, and as such cannot be properly relied on until proven and completely adopted.

The fact that technologies like reduced omission completions are only recently being rolled out is a testament to show how shoddy this industry is and how sad it is that we're only now considering them. Yet we still see flares and venting. This rip and ship mentality, which is common in the Northern Territory, is a huge part of the reason we have climate change today. I hope such practises are ceased.

Then there's the hidden fugitive omissions. In the studies quoted in the report, it's not apparent. I mean, maybe they were there, I just couldn't see that they'd included them. That there was any mention of measurements taken for the fugitive methane omissions that were not associated with the direct activities, those further away from the well head. And this has been reported to be potentially very high.

And this means that the figures quoted are likely to be an underestimation and possibly a massive underestimation. It's very important to avoid the mistake of assuming that all the methane emissions are from the well head. Researchers from the Southern Cross University recently found that environmental fugitive omissions to be significant. They measured clearly much higher atmospheric methane omissions in the Queensland Gas Fields.

In section 9.6, it's a little staggering that the report states, "It's essential to undertake baseline monitoring of methane levels in soils and atmosphere before drilling commences". The first reason this is concerning is that if we wait until after the initial drilling has been done, it should be no longer, really a baseline measurement cos it's after. Before ... anytime a hole is drilled in the ground, potential pathways for gases to be released, can be created. They are created.

So, the so called baseline measurements, when done after exploration, should be much more extensive to ameliorate any possibility increases from exploration. The second reason that this quote is concerning, is why are there no suggestions for monitoring methane in the waters? Only the soils and atmosphere were indicated for monitoring. However, in section 5.3.2, in your report, the Western Australia report recommended monitoring of groundwater for methane prior to hydraulic fracturing.

And yet, here in section 9.6, a section dedicated to the monitoring of greenhouse gases, the water monitoring is omitted. There are waters in the arid outback, people have lived there for tens of millennia, there's precious groundwater, springs, ephemeral water bodies, and periodically mass floodings that can close the Stuart Highway to traffic and turn the country a wonderful green.



Surely comprehensive monitoring would include determining whether fracking releases methane via the waters, wouldn't it? But nevertheless, monitoring and reporting in themselves do nothing to diminish risk. Like counting broken eggs, it's only use is to attempt to prevent it from repeating. Monitoring cannot prevent omissions that may occur. And yet, if they were reported to be increasing, would the operations then be shut down?

For that's the only way to prevent environmental fugitive omissions from recurring or increasing. Instead, there's a mention of focusing on the cost effective risk mitigation strategies in section 9.9. That's what venting and flaring are, no thank you. Cost effective too often means cheap and nasty. It's not acceptable. What's most glaring, in this chapter 9, this report, is the inadequacy of the greenhouse chapter. Is the pretence that the NT fracked gas replaces coal and is cleaner than it.

What's clear is that the major fact about greenhouse gas emissions is missing. It's now 2017, and we have no longer any more wriggle room for pollution. I first learned about how bad this was in 1989, when I first went to university in Sydney. Time's up. In an ideal world, we would have a strong emissions trading scheme, where our fuel would be subject to a guarantee of displacement. Whether it be send internationally or to the East, but alas, we've still too much room for the deniers and fence sitters.

We might imagine in this age of not replacing old coal plants, where solar and wind power are increasing, that even without leadership from our governments, that lower carbon energies are replacing the old dirty coal plants. Maybe in place like South Australia, but overall alas no, many reports predict a continued rise or maintenance levels in fuels sources. So it's disingenuous to hope that our gas will help with our still rising greenhouse gas levels.

Indeed, it's to be expected that in a business as usual world, which we seem to be still embracing even after Paris, that this gas be used in addition to present fuel sources. That's what the study's saying. We continue to ramp up our consumption and still have no targets for a phase out of fossil fuels. Our gas extraction possibilities, which is what they are I hope, are simply not part of any strategy to bring stationary energy emissions to zero.

It's 2017, no one should be using coal. If all we say for an energy source is that it may be slightly cleaner than a fuel that we know we must retire, then we've nothing to say in its favour at all. And yet, the preliminary assessment of the life cycle greenhouse gas emissions in section 9.8.3, repeats that this ill-founded and illogical justification of the role out of more gas mining.

Assuming without any basis of evidence, that the 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. Let's stick to the facts please. Gas is a dirty fuel. You can only elevate our greenhouse gas emissions. Leaving it in the ground would be much more beneficial.



Now there's a section called Air in 4.2.4, and this section discusses the main greenhouse gases, which are minute components of air. Methane is currently at 1.8 parts per million and carbon dioxide is now 409 parts per million. Both are rapidly rising, but they cannot be detected without instruments, being invisible and smell-less. And, as it's not their composition in the air that is of importance to the air, their potency as greenhouse gases, it would be less deceptive to put them under a section called greenhouse gases or climate change.

There are issues of importance to air as fracking does pollute it, these of course are tucked in the section in a chapter called Public Health, as if only humans live and breathe air. But back to section 4.2.4, the air section, however deceptively labelled it is rewarding that there are many critical climate change aspects covered. And to learn that this was the major issue for a significant number of community participants. Of course, it is, it's a science.

However, the interim report seems to suggest that it's merely better measurement and monitoring of methane that we request, ignoring utterly that there are dire consequences from extracting anymore fossil fuels. In section 5.3, I have a question. How safe are the cement plugs over time? There are earthquakes, yes, in the middle of this continent there are earthquakes. And floods, and fire, and the endless baking sunshine.

As wells are plugged with anything, anything will eventually fail. And they will eventually leak. Just because it may be safe for quite a while, doesn't really make it okay. This is peoples country we're talking about. And our climate. The NT's littered with badly rehabilitated mining ventures, many mitigated in their effects at great tax payer cost.

If we're to save our planet from 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. Because it's nicer to phase out fossil fuels rather than going cold turkey, we must start now. We could have started a few decades ago, but now's now.

Our federal government's known to be pretty pathetic on climate change, yet where they're failing increasingly, states and local governments are acting decisively to turn the corner on fossil fuels and roll-out renewable energy. Like more and more governments across the United States of America and Europe, they're deciding that fracking is just too greater risk.

Already, Victoria's banned fracking, Tasmania has a moratorium and a growing list of councils is declaring their regions frack-free. Increasingly also, towns and cities such as Canberra, Adelaide pledge to be one hundred percent renewable in the short term. We don't need or want new gas. The NT too can ban fracking and switch to a jobs rich renewable energy economy. We have the ability to go one hundred percent renewable.



The NT is extremely rich in sunshine. We require and unprecedented roll-out of solar and wind power, storage and efficiency technologies, and conservation solutions. Especially for public and active transit. We don't require fracking. It's time we stopped wondering what monitoring and regulations we need to expand more pollution causing fossil fuels, and move to the future. The future is one hundred percent renewable.

So let's put our focus and limited tax dollars there. The take home message that I have for you is that the full life cycle greenhouse gas burden of our fracked gas is an unacceptable climate destroying disqualification. We have three choices. The first is a gradual managed decline of existing fossil fuel production and its replacement with renewable energy and low carbon infrastructure, which will offer a great potential for employment.

The second, is following fossil fuel production to continue at current rates for a while longer, followed by a sudden and sever termination in the sector with the dire consequences for both jobs and the economy. Third, continue to produce fossil fuels as we do today, followed by climate breakdown. This will also entail economic breakdown and no jobs. So why is this choice hard to make? Clearly option one is the only sensible choice.

It entails an end to exploration and all new gas projects. And instead a roll-out of renewables. Yet, here we are contemplating option three, as if we have another planet. Or a genie, to fix the pollution of our vital climate. Sticking to science and the facts, as this inquiry promises to do, means we simply cannot accommodate climate sceptics and climate cleaning dreamers. Or those thinking we can go and live on Mars.

For this, for that's what those who think we can safely expand the fossil fuel industry are, sceptics and dreamers. It's not safe. So let's stick to science and the facts. Climate change is real, and rampantly escalating. Fossil fuel production must halt, if we are to curb climate disaster. So, this inquiry is standing by science, risk minimization, and the facts. And on behalf of Climate Action Darwin, I congratulate you for your wisdom to call for the banning of onshore production of gas in the Northern Territory.

Justice Pepper: Thank you very much, Ms. Leeman. Do we have any questions from the panel? Dr. Jones?

Dr. Jones: Just a statement you made about a jobs rich renewable energy economy, would you care to elaborate on that? Because as with most projects, it's been my observation that these are infrastructure projects. Lots of people in construction, but very few afterwards. So, do you have any additional light to shed on that?

Grusha Leeman: I don't have the figures in front of me. I'm sure if you did a quick Google and asked for it, it would show you that there is a lot more jobs to be had on a long term level, not just for construction, in the renewable energies. It's happening across the world and it's a showing thing, that renewable energy does produce a much more sustainable jobs market. They're clean jobs and



they're jobs for the long term, not just for a short rip and ship mentality. We'll try and put it in our report ... give you a bit more focus.

Justice Pepper: Yeah, please. That would be good, we'd very much appreciate those figures.

Dr Beck: Ms. Leeman, thank you very much for your detailed critique of the greenhouse gas area, that's very helpful. I think it's relevant in terms of looking at some of the issues that you raise in terms of ... well let me just step back one. I think we all, most of us, would aspire to having a carbon free environment. It's just, over what time frame that we can get there in a cost effective, and I know you don't like that term, but nevertheless it's an important economic consideration. Now in regard ...

Grusha Leeman: It's cost effective for who, is what I'm asking.

Dr Beck: Well, I understand. But, in terms of the recent Finkel inquiry, that published a report that looks at the national electricity market, and they have looked at all the various forms of technologies that can produce electricity. And they clearly say that they are technology agnostic in the way that they approach it. Over the time frame between now and 2034, 35, the percentage of gas used to generate electricity will fall from about currently six percent to something in the order of about three percent. And that gas will transition from being used more for base load to more to support the introduction of renewable energies. It'll help balance out the fluctuations.

Grusha Leeman: But I'm sure you're aware, Australia isn't in a bubble. Australia isn't in a bubble. Sometimes we export our gas, and so it's the global picture that I was looking at, not just what happens around here.

Dr Beck: I understand that. But in terms of the total greenhouse gas emissions globally, then fugitive emissions are a relatively small percentage of the total global greenhouse gases. So, yes the globe has got an issue and they need to be reduced, but, trying to put some of the issues into context then fugitive emissions from gas operations are a relatively small percentage.

Grusha Leeman: Particularly if you don't count them, as has been done in Australia. When you don't actually think about them and if you don't monitor for them, as has been the case. And yes ...

Dr Beck: I accept ...

Grusha Leeman: If you look at all those old reports, it really looks like they are insignificant. But I think that any ... it's clear any additional emissions of methane are unacceptable. Like, it's ... we've already done our time with fossil fuels. It's time to consider that it's time to stop.

Dr Beck: I don't accept that we don't measure. There are estimates that are made and we make comment of that in our report. But I do ...

Grusha Leeman: There have been reports to show that there has been [crosstalk] ...



Justice Pepper: Can you just let the questioner please just finish his question, thank you.

Dr Beck: So, there have been some measurements and also estimates. But in the report you were making the observations that maybe were just focusing around the well head. Let me categorically reassure you that the estimates in the report are focused on life cycle from well head through to use. So that includes at the well head, the gathering facilities, the compressor stations, the distribution and transport, and final use of gas. So it's taking the full life cycle into account and those figures are based upon a comprehensive consideration of the full life cycle. And we include figures there that represent that.

In terms of gas field operations, we've also documented the recent measurements that have been done in the United States that show a continual trend down in the release of methane. Particularly from the introduction of new regulatory requirements in the United States. So ...

Grusha Leeman: Yep, I understand that. It's been very slow coming to actually care about what happens, what the pollution that these industries release. But I'm not talking about ... and it's great that there's cradle to grave considerations ... but I'm not talking about what happens at the well head. I'm talking about the fugitive emissions from further downstream. The ones that are actually fugitive because they're not noticed, because they're not within the pad, they're ... if you fracture it there can be kilometres away, quite possibly. I'm not saying that I'm an expert in this whole thing.

Dr Beck: No.

Grusha Leeman: I'm just saying that I've read reports that say that it's not necessarily right on the spot that you need to measure them, it can be further away. It could be in the river further over there or seeping out of the soil. It isn't a small project, they're going a long way underground, and it can come up in other places. And I'm not convinced this report didn't mention measuring the migratory methane emissions that are beyond the well head.

Dr Beck: Okay, a couple of points in response then. I just reiterate that we've used information from overseas to estimate the emissions, not only at the well head but all the way through to final use. So, that includes all the pipelines that distribute the gas. So, the ...

Grusha Leeman: I'm not talking about pipelines, I'm talking about rivers and fields and things further ... not necessarily a part of the infrastructure. They're beyond the infrastructure and there wasn't mention of that.

Dr Beck: Well, a couple of things in response to that then. Firstly, there is mention of baseline studies and we also are currently looking at the possible introduction of a requirement to measure gas at the gas field. Not at individual pieces of equipment and to set some performance standards against that. So that takes into account a lot of what you're saying in terms of looking at not individual pieces of equipment but an area, a large area.





- Justice Pepper: Any further questions? Yes, Professor Hart.
- Professor Hart: You commented on section 5.3 which is well integrity and abandonment of wells. You made the statement, they will fail. Can you provide us ... not necessarily now, but with any evidence that you can gather that would indicate to us why ...
- Grusha Leeman: Why?
- Professor Hart: Why they would fail?
- Grusha Leeman: Why wouldn't they? The aboriginal people have lived there for tens of millennia, they plan to live there for tens of millennia more. And within tens of millennia they will fail. Like it's ... what are we talking about? Concrete? Cos everyone's seen cracks in concrete. Steel? I mean, perhaps is it?
- Professor Hart: But it's not concrete on the surface.
- Grusha Leeman: No, but they said they were plugging it with concrete. I don't profess to know all the details, but I cannot imagine something that you can do to prevent ... once you've broken a hole ... to make it so that it's always going to be safe.
- Professor Hart: We're in a situation where we can't just make statements like that, that it will fail. We need to look at evidence, of longevity...
- Grusha Leeman: I haven't sorry. It might take a thousand years, I don't know. Sorry, I haven't spent a thousand years working on it.
- Professor Hart: That's okay. Yep. Fine.
- Justice Pepper: Thank you very much for coming this afternoon and for presenting again.