



## ***Climate Action Darwin – Hearing Transcript***

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**10 March 2017**

***Darwin Convention Centre, Darwin***

***Speakers: Grusha Leeman, Anna Boustead***

Anna Boustead: Anna Boustead.

Grusha Leeman: Grusha Leeman. We're here for Climate Action Darwin.

Hon. Justice

Rachel Pepper: Thank you very much, and thank you for, as I said, having the endurance to stay until this late hour, and for taking your time out to present to us tonight. Thank you.

Grusha Leeman: Oh, thank you for taking the time to listen to us.

Anna Boustead: Yeah. It's been a long day.

Hon. Justice

Rachel Pepper: When you're ready.

Anna Boustead: Thank you. So, as we stated, we're representing Climate Action Darwin. Climate Action Darwin is a diverse group of local community members in the Darwin region concerned about a lack of action on climate change mitigation and adaptation. We have several hundred members, and in the group formed out of a number of concerned locals who got together in 2009 to get together and say, "We want to see more climate action happening in the Northern Territory." It grew from the national days of climate action in Darwin, and in 2015, over 500 people attended the peoples' climate match.

We have a diverse membership including parents, business owners, teachers, students, scientists, policy experts, musicians, and members of church groups, and this is a photo...

Oh, what are we up to now?

Hon. Justice

Rachel Pepper: We might just pause while we try to prevent this.

Anna Boustead: Okay. Thank you.

Hon. Justice



Rachel Pepper: Thank you. You'll be providing, or actually you have provided, if you want to provide us another copy with the photos again in due case, that's fine.

Anna Boustead: Sure. Thank you.

Hon. Justice  
Rachel Pepper: Thank you.

Anna Boustead: Yeah, so slides three, four, and five are photos of the rallies in 2015 and 2014 and 2013 where hundreds of Darwinites turned out to show their concern about climate change, and they represented many organisations across a huge scope of areas and that is equivalent to thousands of supporters, so thousands of people in Northern Territory in the Darwin region concerned about climate change.

Grusha Leeman: So, we know Climate Action Darwin, one of the things that we know is that we're concerned about greenhouse gas emissions, but also, we know that Shale gas is a way of increasing greenhouse gas emissions, so that's why we're here. The greenhouse gas emissions in the world is so high that we're now on track for a four-degree Celsius forming before 2100, and that's... And so, the OPCC had done a scenario trying to work out how we can keep below two degrees Celsius which is what 195 governments, including our own, have agreed that we should stay below. We're going to need a substantial reduction in...

So basically, the emission so far is the grey bar across the bottom and the budget is the amount more of pollution that we can out into the atmosphere to keep the world to be a livable planet, but we've already passed 100% chance of success to keep within two degrees, which is considered to be the edge between tolerable and absolutely catastrophic, because we've already received one percent now and we already know we're getting it bad, and so the OPCC aren't giving any greater chance than 66% which is our best hope, so any two thirds hope that we can keep within two degrees, but it could bring us to three degrees which we'll see a lot of mass population deaths. Not just sicknesses. Not just job losses. Not just...

Hon. Justice  
Rachel Pepper: It'll be mass extinctions.

Grusha Leeman: Mass extinctions for humans, yes. And, so I just wanted to show you that that's the budget and that we need to really stop now. Australia... Can we have the next one. Yup, so Australia's agreed. It's one of the countries that's agreed, and to fulfil our two degree warming, we've decided to keep 26 to 28 percent below the 2005 levels, and so we're putting in a little bit of contribution, but it's not really quite enough, and the world's largest collaboration of scientists there at OPCC have agreed that we need rapid reduction in the burning of fossil fuels if we're going to keep below the two degree Celsius rapid reduction, and the next one is showing that Australia, even though we're only point three percent of the world's population, we have one point five percent of the world's carbon emissions. We are one of the highest countries in the world per capita, so we are keeping well above



our weight and if you go then to the next one, the Northern Territory is the highest in Australia, so Territorians, we are kicking above our weight. We are one of the worst polluters in the world, so if anybody is going to be considered the first, we need to stop here. This is where we should stop in the Northern Territory, stop digging up fossil fuels. It's time to stop.

Anna Boustead:

Yes, so as the previous graph showed, we know that climate change is happening now. The Northern Territory is already a major contributor of global greenhouse gas emissions through the burning of fossil fuels, hot savanna fires, and land clearing. We know that global temperatures are rising around one degree on average since 1911, and the sea level is rising in the top end, particularly quickly at around seven to eight millimetres each year, and that's driven by warmer ocean temperature.

This most recently has caused massive mangrove deaths along the top end coast line and is leading to the decline in a small mammal populations throughout the Northern Territory and one of the drivers for that is hotter seasonal fires. And particularly along the coastline, we've seen the evidence of sea level rise given that our coastline is extremely flat and it's been along the top end equivalent to seventeen centimetres over the last twenty years alone, so it's a significant impact.

Grusha Leeman:

Okay, so I recognise we've had one degree Celsius of warming, and everyone in Darwin knows that the rest of Australia is having a very hot summer. We've had a bunch of hot years. The hottest decade ever, and temperatures one of the ways that we like to feel that we've got climate change, and in Darwin we have a long-term average temperature of eleven, or it used to be eleven when CSIRO did a report, they said it was eleven but now I look at the bureau of meteorology website and it says eleven point five, and the reason that it's gone up...

I looked at all the days in the last decade that we're over thirty-five point zero degrees, which is what they report as hot days, and we now have an average of nineteen. That's the blue line. Last year, we had twenty-nine days that were over thirty-five degrees, so we're above the average of eleven or eleven point five. There's only one year in the last decade that was below the eleven point five average, and I was interested that people didn't really consider when you say thirty-five degrees, that would include thirty-four point nine or thirty-four point eight. Know that it's a whole number because there's the blue line that excludes all the numbers that are thirty-four point nine, thirty-four point eight, or seven, or six, and so I just rounded it up to a whole number for thirty-five degrees, so it starts at thirty-four point five. It's a dark red line and it's for the same data set. It's quite significantly higher, so the number of days goes to fifty-nine.

Last year, we had fifty-nine days that were over a whole number thirty-five in 2016, and as you can see, the trend lines are going up, and the next graphs shows about ten years ago. The CSIRO predicted that by 2030 that Darwin will have... The blue line shows sixty-nine days a year over thirty-five. That's the thirty-five point zero, so I've used the same amount that they've gone up in the last decade and showed that it could go up to over a



hundred, so that's... And then CSIRO said that by 2070 Darwin could have three hundred and eight days a year over thirty-five point zero, or if you count, that is thirty-four point five, that's every day of the year, and so this is just for Darwin, and I don't know if you know about the northern territories, but Darwin is one of the more, the nicer places to live in the Northern Territory. There are other places that get way hotter than this.

Panel (unsure): You mean just not as hot.

Grusha Leeman: Yes. It's mild in Darwin relatively compared to other places. People that go outback, they know that it gets forty degrees regularly, you know, and imagine that when you say you have months and months, ten months of the year as it could be, but by 2070 when my children are elders, that could mean that there's plenty of days when it's forty degrees in Darwin, which we never see. We've never had a day forty degrees in Darwin ever. You have them in Melbourne way over forty, but no, we don't get them in Darwin. Not at the moment. But yes.

Anna Boustead: So, the next slide which you can't see is a photo saying of people at the rally in 2015 saying, "I'm hot already," and so no fracking.

Our point is that shale gas fracking contributes much more greenhouse gas pollution than coal, natural gas, or oil. Methane is an extremely strong greenhouse gas being eighty-six times more powerful than carbon dioxide, and fugitive emissions in shale gas fields have not yet thoroughly been measured in Australia; however, recent studies, which came out in the last couple of years from the U.S. show that methane's climate impact is greater than coal, natural gas, or oil.

Grusha Leeman: And also, since the days back in the far B.C. days... Is it 18,000 days up until the industrial times, there was pretty steady methane level across the world. Was it 800,000 B.C. to 2014 the levels don't go very high, but in the last decade or so, they've gone much higher, and since the right graph is since the industrial revolution and we've had almost triple in methane levels, so even before we start doing lots of shale gas wrecking in the Northern Territory, the globes already had enough methane.

Anna Boustead: So, a recent study, which came out from about is in reference to shale gas industry in the U.S. found that significant quantities of methane are emitted into the atmosphere which is an estimated twelve percent of total production considered over the full life cycle. That includes from the well to delivery to consumers. It's based on satellite data. Methane is a powerful greenhouse gas and when methane emissions are included, the greenhouse gas footprint of shale gas is significantly larger than that of conventional and natural gas, coal, and oil. And you can see that our graph demonstrates the relative footprints of shale gas conventional gas, oil, and coal, and you can see that the footprint of shale gas is significantly higher when compared to the other three fossil fuels.

And the percentage of methane that's emitted does depend on what fraction is burned as fuel at the site of course, so this graph also shows that



if you have a large proportion of fugitive emissions then you therefore have a large proportion of pollution.

Grusha Leeman:

We also are concerned that the argument for increasing the Northern Territory shale gas industry is based upon false economics, and we, as the community, have not been presented with any independent economic analysis to show that there's an economic or social case for increasing the Northern Territory to shale gas industry where only expected to accept the [inaudible 00:14:36] from industry bodies and government bodies, and we're yet to see any analysis of that from an independent source.

There is no domestic demand for shale gas. The Northern Territory has plenty of natural gas and false economies driven by the over contracting of cheap gas into state to XY industries is now driving demand in eastern states and that's driven the pipeline project to the east coast; however, the economic benefit of supplying shale gas to the east coast is likely to be negative, and that was found in a report by the Australia Institute in 2016 and again we write it in another report by the institute for energy economics and financial analysis which talked about in reference to the northern gas pipeline project and the economic arguments for the project which we're very concerned that the pipeline will be used as a reason to drive shale gas wrecking, so hence our concern about the economic arguments supporting the pipeline.

And that report concluded that the pipeline is being conceived to compensate for a poor decision by the power of order to contract to buy too much gas and that the pipeline project is likely to fail as it is a bad decision, and that neither the pipeline nor the east coast onshore gas market has sufficient consumers or customers for this high-priced product.

And just getting to the northern territories commitment in terms of its commitment to renewable energy and the Northern Territory government has a 50% renewable energy target by 2030, and that currently sits at around three percent, so there's a lot of work to be done and we would like to see the focus on investment in infrastructure political efforts and ingenuity shift away from investigating polluting shale gas sources, and toward making the most of clean and free renewable energy sources and we look forward to talking to a renewable energy inquiry rather than a shale gas wrecking inquiry the next time, and the NT is a global solar hot spot. The opportunities are endless and large scale solar plants in Alice Spring, the Darwin airport, and rooftop solar at Casuarina Square which is actually the largest rooftop solar plant in Australia, which we did have...

Grusha Leeman:

[crosstalk 00:18:05]

Anna Boustead:

Ah. That one came up, so, and also, we know that the solar industry does generate jobs. There's currently 4,300 businesses and 30,300 people employed in the solar industry Australia wide, and the 2018 projection is for 21,300 jobs Australia wide, and we see this as an alternative vision to that are they shale gas industry in the Northern Territory.



Solar also has a lot of other benefits in powers remote communities by increasing their energy independence, it increases living standards, and connexions to country, and a recent experience in the [inaudible 00:19:07] community in the Tennant Creek, they found that a lot of people returned to the outstations into their communities when they are connected to solar and also provides local remote jobs with long term benefits rather than relying on the invest of destructive industries. There's added benefits such as reduced cost of diesel haulage for diesel generators or gas infrastructure and pipelines and it's cheaper and cleaner... That's what they look like

In conclusion, the Climate Action Darwin group feel we have a choice as to what future that we want. At the moment, the Northern Territory has a lot of potential opportunities in terms of renewable energies that's not exploiting. If we continue to invest in fossil fuel infrastructure and in supporting a shale gas industry, then we're likely to be taking our opportunities away from renewable energies.

But also, the climate impact of the shale gas industry itself is very concerning, and we see this as a choice and this is a little Melomys ... A little rat that unfortunately was declared extinct this week because of climate impacts. It's found on a little island off the tourist straight, and basically, it's habitat is just consistently shrinking due to the sea level rise, and it hasn't been seen since 2009, so yeah, this week, scientists decided that it was likely to be extinct.

It's one of the victims of climate change, but we don't have to keep going down this path. We can turn it around at this stage, there's absolutely no reason why we cannot do that, and finally, which I'll have to describe is one of a lady and two children who are her twin infant daughters at a rally in 2013, and they're holding up a sign saying, "I love solar," so we would just like to highlight the rights of future generations to live in a safe and happy world, and we should be keeping in mind in all these decisions the fact that future generations will be wearing the results of the decisions that we are making now, so we hope to see you at the renewable energy final next time. Thank you very much for your time.

Hon. Justice  
Rachel Pepper:

Thank you both for your detailed presentation. You've done a good job of referencing most of the slides. Some of them didn't have references, and you've obviously pulled that information from sources, if you could provide, even if it's by way of a reading list, just sort of attached to each number of the slide.

Grusha Leeman:

[inaudible 00:22:45]

Hon. Justice  
Rachel Pepper:

Oh, wonderful. Thank you, that's perfect. Thank you very much. Questions?

Yes. Dr. Jones.



Dr. David Jones: One thing which intrigued me, the greenhouse footprint of shale gasoline to be higher than conventional gas now. One of the problems with conventional gas is that it has both off shore and onshore contributions. If they put it together, maybe I could understand that, but if you just look at onshore conventional gas production then maybe they would be similar because they have very similar technologies in terms of putting pipes down and bringing things to the surface in the same kind of feeder arrangement, so you'd might just like to consider that particular mind a bit more.

Grusha Leeman: I think a lot of it's to do with fugitive emissions that are not being counted in Australia, and they've done no baseline studies in Australia, and it isn't possible to necessarily easily evaluate that, and that's one of the problems that's happening now...

Dr. David Jones: I think those U.S. figures were being used on that.

Grusha Leeman: Yeah, so in the United States, they've just discovered that their previous estimates in the ways of counting were inadequate, and so they've totally revised all the figures and new reports keep coming out regularly. It's a new thing to understand how bad it actually is, but I think that a lot of the greenhouse gas emissions from the shale gas is to do with the complexity of the drilling site and all the places where the emissions can be escaping from. There's detailed reports that go into quite at length, and it's quite convincing.

Hon. Justice  
Rachel Pepper: Good. Look forward to those in due course. Yes. Mr. Hart.

Prof. Barry Hart: I just wanted to clarify, I thought you said early on that with a three-degree rise in temperature, there'd be mass extinctions of humans?

Grusha Leeman: Mass deaths in humans, yes. Extinctions...

Prof. Barry Hart: Deaths? [inaudible 00:24:45].

Grusha Leeman: Yup, that we [crosstalk 00:24:47] animals. We can't know what it will take for humans to become extinct. I think there was a time in the past when things were pretty bad and there might have been a plan of forty or eighty people that were all descended from that managed to survive in a cave in Africa somewhere, so it is possible that, you know, we didn't become extinct, but, you wouldn't call that to be a healthy population, and yet I've read scientific reports about that.

Prof. Barry Hart: Are you interested in saying that reference because I've never read anything in the IPC.

Grusha Leeman: No, the IPC doesn't go into about what happened in our distant past, but for the future, yes? We cannot guarantee that we will survive three degrees of warming, because the amount... I mean, if you get over two degrees of warming, there already saying that it'll cut the [inaudible 00:25:42] will be



cut in half at least, and you start getting impacts of all the different droughts and floods and storms and...

Prof. Barry Hart: You're going to need some evidence.

Grusha Leeman: Yup, but I don't think that you'd want to experience three degrees.

Mr. Hart: I'm going to be dead voluntarily before then, but no you're dead right, but, yup.

Hon. Justice  
Rachel Pepper: Yes, Ms Coram.

Ms Jane Coram: You've talked a lot around the alternative of solar energy to shale gas, are you aware of any analysis that's been done of the life cycle environmental costs versus what the economic benefits and costs of the two energy forms. You talked about the green house footprint, but I'm presuming that solar cells aren't environmentally neutral there. I probably have some costs involved.

Grusha Leeman: Where is... So, dealing with fossil fuels is polluting over time, and if you look at the cradle to grave costs for the risks for the people that are effected on the ground for all the last few years of this planet, the sun isn't at all even, I don't think you can say just because there were X people employed, and there was this much profit made from this company that that quite adds up to the losses that you then get from that.

Anna Boustead: I think that's one of our points too. Like, we aren't experts. We don't claim to be experts in renewable energies or climate change, we're just representing concerned community members, but something we'd love to see is to see a detailed look at is it feasible to have a lifestyle solar plant in the desert in the Northern Territory, and if there's a need, if the east coast has a need for a power source, you know, can we look at exporting that to the east coast rather than shale gas. Those are the sort of things that we need to really be considering in this bigger picture rather than falling back time and time again on fossil fuels, and trying to make it work in a world that's warming when we should be shifting away from fossil fuels, so we would love to see more investment in those large scale renewable energy projects.

Hon. Justice  
Rachel Pepper: Well thank you very much for, as I said last time, the distance and giving us an excellent detailed presentation. I look forward to the written submission with the additional references. Thank you, and that concludes today's hearings. Thank you.