



CCJP

CATHOLICS IN COALITION FOR JUSTICE AND PEACE

Catholics in Coalition for Justice and Peace
2017 Occasional Paper Series

Key Concerns, Signs of Hope
OUR CLIMATE FUTURE

Audience Question and Answer Session

with

Professor Tim Flannery, AO

Sunday 16 July 2017

NOTE: The edited Transcript of the Address given by Professor Tim Flannery, AO is provided in a separate document.



**Professor Tim Flannery AO (left) and Anne Lane PBVM, Convenor of CCJP
on 16 July 2017** *(Photo by Maureen Short)*

Q&A Session Moderator: Anne Lane

Q: How is The Climate Council [of which Tim is Chief Councillor] surviving at the moment, financially?

TF: I think it's fair to say that with the help of the community we are surviving. We run on the smell of an oily rag a bit. A lot of us put in and the Counsellors do quite a lot of pro-bono work, just to cover our costs. We are I think very effective with the money that we have. We have about 17 staff now including our part-timers and we are producing about 3 times the volume of work that we ever produced under government, so that's all tremendous. Any of you who are donors are really helping in making a difference and we are very respectful and aware of the sacrifice it entails for you to support us, thank you.

Could I just spend a few minutes in talking a little bit about those early days [of The Climate Council]? When I was [Government-appointed] Climate Commissioner it had a huge impact on me and I travelled around Australia talking to people face to face about climate change - from the coal communities of Gladstone through to the inner cities of Melbourne and Sydney and small country towns, pretty much everywhere. I came away from that experience with a very deep respect for people and for their common sense.

As soon as we got away from the politics and the slogans and got into a genuine dialogue, it was enormously refreshing. A lot of these groups have



stuck with me to this day. I remember being up in Central Queensland talking about climate change and the need to move to renewable [energy] sources. A man was there, who was about 6'6" I think and you could see the coal in his skin and at question time the first hand up was his. I thought, 'Oh God we are in for a pounding' and I said very trepidatiously, "yes sir?" He said, "*I was a farmer once and I can see now why I went broke, climate change affecting the farm. I have two young daughters 8 and 10, and I had to get another job so I went and worked in the coal mine. Can you tell me, am I doing the right thing?*" You realise the depth of the problem and the urgent need for us all to stand together. I don't like it when we demonise the other side of the debate on this sort of thing. We have to support each other, for what is going to be a difficult transition and being Climate Commissioner taught me that.

Anyway, I remember being quite upset when [the Climate Commissioners] were sacked by [Prime Minister] Abbott. It was the very first act of the Abbott government to sack us and to take down the website which we put a lot of resources into making and that was used by a lot of people.

I was really nervous about setting out [in a new independent organisation] because I thought, 'what happens if we say we are going to crowd-fund a new organisation and we don't get any money! What would that say about Australia's commitment to climate change? It might set us back decades.' So I was really very nervous about it. So when those very first donations that came in on the 15th August [2013] I was so grateful that I could have kissed the toes of those people who made those early donations because I was getting phone calls every 15 minutes from the Australian newspapers asking how much have you got now as they wanted headlines. So, thank you to any of you who gave us that start.

Q: Tim, can you give us a review of what you think is happening in terms of the shift to renewable energies which has been resisted politically but obviously the shift is happening. Can you tell us what you think is taking place?

TF: I think what's happened over the last 10 years, from 2007 onwards, is that awareness of product changes has grown, the costs of renewables have declined and we now have a truly competitive market place where wind and solar are more than competitors for the old fossil fuels.



What that has done has created a world that's divided into two camps and if you look at the shifting allegiances of the USA you can see how that plays out. When I was growing up, America was the leader of the free world and the Communist countries were the enemy. But by [former US President] Barack Obama's time he was forging very genuine alliances with China particularly in the climate space and working to develop clean energy sources so everyone would have equal access to the energy that's all around us rather than having to buy it from very geologically privileged parts of the world.

Enter Donald Trump as US President, and who does he decide is his great ally, but the Russians. They also depend upon fossil fuels. The reality is that the Exxon's and other global US companies cannot exist without government subsidies and unfair rules and regulations, because the fossil fuel industry is no longer really competitive. Maybe gas has got a bit of a way to go but coal is going out very quickly and the world will soon follow with factories and electrification moving to renewable energies.

What we are seeing is a global shift away from a world where we all had to buy our energy from a few geologically privileged sources and therefore the whole of the geopolitics around that sort of structure, to a world now where everyone will be able to generate their own energy and pretty cost effectively. It's a different world view and politics have changed that longevity of power, its changing everything.

Now when we come to Australia, coal in Australia has been part of the consciousness of the country since Governor Phillip's day. Now Phillip was told in his instructions to 'look out for sources of coal' because even in the late 18th century Britain was short of supply. The coal industry has been enormously influential here and to our political parties. The LNP in Queensland, just a day ago, has announced that they are unilaterally pulling out of the Paris Agreement. I don't know how that was going to work, but you can see that push there as a whole world view, it's a whole economic system and a whole political system being threatened by shifting energy.

If you think about the presentation I just made, those new technologies take it all down to another level. I will just give you one example of that, food



production. At the moment there are some privileged areas of the world that are just right for agriculture to produce a surplus. There are new forms of food production that are independent of fossil fuels that are going to change all of that. One of those is happening here in Australia. In South Australia, near Port Augusta where the northern power plant was closed down, there is a tomato farm called Sunbrook Farms that have got 10% of Australia's market without using a drop of fossil fuel or a drop of fresh water. They are using just the desert and the sea to make this food. When you think of what that means in terms of potential and social equality of the poorest areas of the planet like North Africa and so forth, are that deserts can actually be producing their own food cost effectively. There is amazing potential.

I think that we are seeing technology changing ways of bringing about a potential for a real liberation from the old hierarchical structures of the past. The technologies themselves will never achieve that liberation but they open the door to the possibility that society has to change. That is probably a long but not very specific answer but sort of how I see the bigger picture.

Q: Tim, you talked on improving the development of plastic using carbon negative technology. Now we all should know about plastic in the oceans and what it is doing in the waterways. I was wondering about one of the things you said was 'improvement in plastics and bits and pieces' but is it going to be dissipating plastics or is it improvement on plastic production that is better for the environment?

TF: I think it is fair to say that those [carbon negative] plastics are at the very early stages of development. I have held a mobile phone cover made of plastic that was sourced from atmospheric CO². Now it looks and acts like normal plastic but it's about a million times more expensive. It's probably the most expensive mobile phone cover in the known universe at the moment. So I think that we don't know what the potential of using CO² to create plastics means yet. Apart from the fact that we won't be using fossil fuels to make plastics, we will be turning a problem into a solution by taking some CO² out of the air. Now whether we use those plastics wisely or whether we throw them away into the oceans is a matter for us and our society's response. The technology itself won't solve that problem simply by sourcing the raw materials in a better way. Of course making plastic out of atmospheric CO² means that you can make many other things.



Q: Could you comment on Michael Michaelson's sustainable house at Chippendale and the quality of the carbon neutral bricks compared to the concrete *containing* carbon?

TF: I remember years ago just what an absolute leader that Michaelson was in terms of what he had done. That sort of approach of trying to recycle as much as you can, use as little as you can in your own home, is hugely important.

To the second part of the question, the carbon negative concretes that have been developed have much more in common with ancient Roman concrete than what we consider contemporary concrete. Some of them are made from fly-ash which is the remains of the coal fired power station material which is a polluting substance otherwise. It's quite a complicated story, but to use the fly-ash you have to use efficient technologies to wet the fly-ash down to keep it from drying out. It is very good for using in high density city environments where carbon negative concretes are used for things like sewer pipes and so forth where you have a wet environment. They could be used more widely. They are about 3% more expensive in Australia than conventional concretes but that's where your carbon price could make a big difference if you had a carbon price in your concrete sector you will have to pay more for your polluting profit.

Q: In relation to battery storage there was very good news about the huge project which Elon Musk is involved with in South Australia but the only downside is the use of lithium and of course it is one of the rare minerals, and its impacted on war in the Congo, and the habitats of gorillas and many things like that. My question is what is the potential of the current state of play of other alternative methods of storage such as molten salts that has not been adopted yet in Australian as it has in Spain.

TF: That's a really good question. I suppose we go back to basics and how do we store energy. There are a whole lot of ways to store energy for different purposes and for different amounts of time. You can use fly-wheels for example to store it which is a lot of energy for use over a very short periods of time where you have very minor interruptions in the flow and that's a conventional part of how we do things. If you want to store energy longer than that, hydro-pump up storage is a very valuable way of doing it. That works say at times when you have excess overnight electricity from wind power and you might use some of that to pump water back into the dams so it can be released as hydro-electric power at peak usage times You can use the same source which is



overnight wind power when no-one wants it, to make hydrogen. Hydrogen is then a storable energy source. You can use that hydrogen to make gas, so it becomes a substitute for natural gas, to make fertilisers to substitute fossil fuel usage in agriculture; as an energy store for direct transport or to generate electricity.

In terms of molten salts, yes there has been a number of plants in the USA and Spain in particular using molten salt as a storage medium. There is now one in Australia. It has its own problems for various reasons.

There are some really interesting new technologies. One of which I have become a little bit involved with is an Italian technology using sand as a storage medium. Sand has this incredible property that, if it's still, it's highly insulating. If you fluidise it by blowing air up through it, it becomes highly conductive and of course you can store temperatures up to 1000 degrees Celsius or more before that starts melting. So sand is another way you can store heat for mass industrial purposes. All of those things are out there and they are all competing with batteries.

Batteries are very useful because you can make them from tiny to big and the bigger they get the more they come into competition with these other storage sources and they are relatively quite expensive compared to other things. I think that in future we are going to see a real mix of energy solutions. It's going to be demand management - large scale storage using hydro, hydrogen, maybe sand, maybe a bit of liquid salt as well and batteries as well. There will be a whole mixture of things. I think we are going to have the many, many sources of supply with optimization through a network with some storage that gives us a stable base. It can all be seen shaping up but it's a big transition to go from where we are today with a few large generators and then maybe opening out to the system of the future.

Q: I appreciate seeing so many different technologies that can make a difference especially when we sit and work together. One thing that concerned me was some of the propaganda coming out through the mining industry and the right wing of the Liberal Party about focussing on those things and forget about renewables and all that, and carbon limits which



they avoided just recently. What could help avoid that kind of misuse of what can be a very valuable thing?

TF: I came to it that there is a moral hazard. There is a moral hazard of making people aware of the possibilities for exactly the reason you suggest: “Oh, we don’t need to do anything, we can just do all that by planting seaweed so why bother doing anything else”. There is also a moral hazard involved in not telling people about this because we need the investment now if we are to have these technologies at the scale that is required 30 years from now.

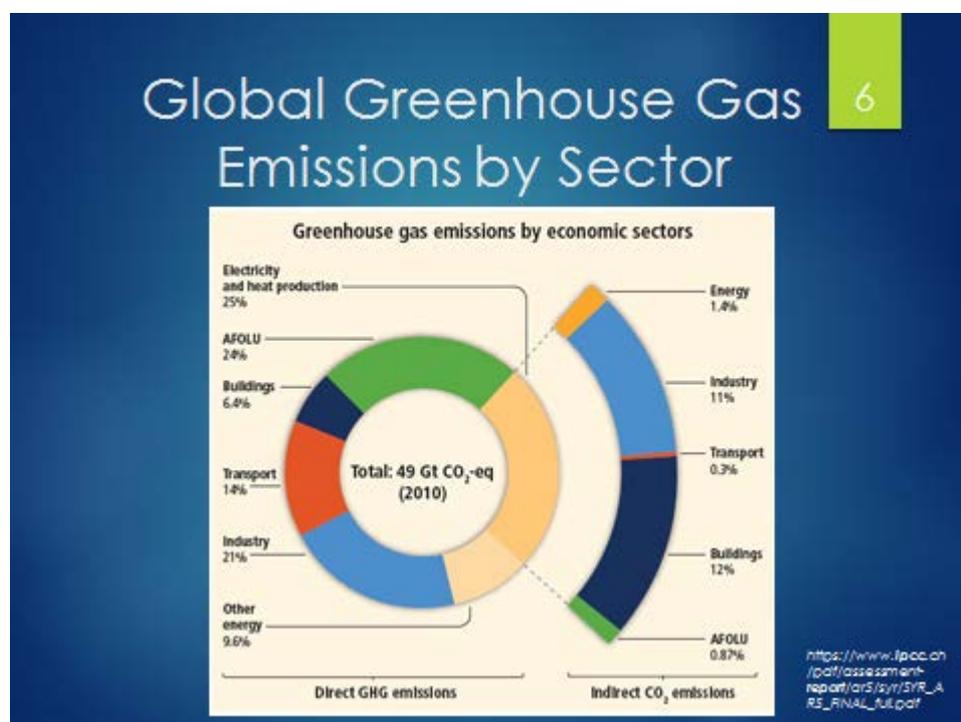
What I wrote in my book and what I tell people is that we have to do two things at once. We are already so close to the limit of 2 degrees so we have to cut [greenhouse gas] emissions hard and fast now and even that’s not going to be enough. We also have to make the investment now so that we will be able to draw down the CO² that is still going to be there in 30 - 40 years’ time, which will still be a problem. That stuff is not going to go away unless we do something about it. It is going to keep driving more and more dangerous and adverse climate changes unless we can deal with it. We need to decide so it is not one or the other. Sadly, the way we account for emissions now does try and let you have one or the other. There is the carbon capture issue which is good for drawing CO² out of the air but people use it as a substitute for cutting greenhouse gas emissions and it is all accounted for in the one global carbon budget. We have to try and look through that and do two separate things. Let’s account for the draw down for one set of accounts and the reductions in fossil fuels in another set of accounts and we need to be both.

Q: Is there a role for dietitians in climate change? I ask that because consumption of meat is rapidly growing across the globe in developing countries; and obviously grazing demands favours land clearing which in turn divides deforestation; and the amount of water that goes into growing our meat - how long is all that sustainable for, giving the growing consumption of meat across the globe?

TF: Great questions. You are absolutely right that in [presentation slide, copied over], you can see the activity called AFLOU where there occurs 24% of emissions, that’s agriculture, forestry and other land use so the meat bit is within that. Even if you assume it’s half it’s a very big hunk at 12%, and we could certainly cut that down quite easily. Beef cattle production in places like the USA and South America are really the leading cause of the problems so if



we halve our beef consumption we could probably get back into a much more sustainable range. By the way, you can feed cattle a bit of seaweed and it reduces their methane emissions enormously. Yes, I think we eat too much meat and I think we need to eat less.



One of the big problems we have is that in developing countries like China in particular, eating meat is becoming even more popular because there is an emerging middle class who see it as a sign of having 'arrived'.

I think Europe leads the way with this. Go to a place like Switzerland and look at the cost of meat. It's expensive enough that you would use it more for special occasions rather than for every day consumption. I think that is kind of where we have got to be. Some forms of meat are sustainably produced, seafood probably if we ever get seaweed farming to scale. There needs to be more of these solutions.

Q: A comment to start with before my question. It is interesting that you are talking about these technologies and so many of them seem to be developed somewhere other than in Australia, this so-called clever country that has been so innovative over so many decades. Now my real question is what impact and how do small groups, community groups, influence political decisions on these matters. For example, you would

know more than I would, what very small community groups are doing. Just recently I was at Mallacoota and like many other communities in Tasmania, they have decided to go plastic bag free and the locals are making bags which increases awareness of what they are doing. What and how do we, as communities, go about really making practical everyday decisions which will influence political decisions?

TF: When I come to a group like this I really do think about Margaret Meade, the anthropologist. Her great saying is 'never doubt that a few good people can change the world, it's the only thing that ever has'. Its people like this, real community leaders who have the respect of a wide range of people in the community, who make a difference. We make a difference with everything, like giving up some time to come to this, to being informed and to engage with people to do practical things like supporting the Climate Council, put solar panels on your roof or arrange for schools to have presentations, through to engaging with local councils.

The local level of government is a really good one to get involved with. As you get higher up - like federal politics - I have come to the view, which sounds very cynical, that I don't get paid enough to be heard at the federal level! The lobbyists are through the minister's door every day, they are the ones that get heard. The idea that the federal government represents views that mean anything to me and most Australians, is wrong. I think in the longer term, what we really have to do is replace that system of government in some ways with a different one. We are the wisdom of people, that thing I talked about during my time with the Climate Commission. When I talk to people about climate change, which is a very contentious and difficult issue, people will develop their own views. They won't always agree with me but I can see the common sense.

I really look forward to a world where we are all politicians in a way. Where we have citizen juries of maybe 100 or 150 people making the big decisions of government and they can be brought together and be paid for their time. They would have the power to call any witness they want, any person they want to give any particular view, but then have to make a decision on something. I think that way we could tap into the public and create an income stream that is so important in terms of creating a more equal society and delegate the power to where it is needed. So you don't need politicians to set the agenda as we ordinary citizens have a huge wisdom I believe, and if there is some way we



could tap into us, particularly the financial decision-making, that would be great.

We pay the taxes. Wouldn't you love to see 100 citizens sitting on the federal government's budget committee saying, can we change defence spending by a few percent. What answers do you think you would get from society? Very different from the ones we get now. Is the taxation system right? If you asked 100 Australians in power to investigate it, do think we would stay with what we have got? No!

Q: I just want to bring up Richard Branson's competition. I think you said there were 15 entries so far? (TF) 11,000 entries. Q: Oh! Has anyone come close?

TF: Well we are down to a list of 11 finalists now so I am hopeful that within the next 12 months we will give the prize to one of them. Very exciting.

Q: I was wondering what is your opinion of the possibility of generation of energy from tidal movements. As it seems to me that it will do away with, to a large extent, having to worry about storage?

TF: There are a few big tidal projects being developed in South Korea and in Britain and Europe. There is quite a lot of interest in wave energy as well. I think the problem with both those approaches is that wind and solar have become so very cheap that the investments required to bring those technologies from where they are now to a cheaper level has not been prioritized. My guess is that geothermal has huge potential but no one is going to invest the billions that are now required to get the cost down. Wind and solar are cheap and they are the energy source of choice and for all of their faults they are the ones that are getting to market first.

Q: Thank you. We can look forward to seeing a documentary from you [on seaweed farming] as I think the 'war on waste' documentary has made an incredible impact on the local butcher, the local coffee shop. My question is how do you see we can follow through on your documentary that is coming?

TF: I hope that people will see that there is a real future in a much more sustainable form of agriculture and the production of so many things we need from a well-managed seaweed farm. Australia has real advantages there. I



suppose that really we want to raise general public awareness in government and also in young people who are going out to start businesses or to study, to see that these opportunities exist. We are just at the beginning of seaweed farming and production is shooting up around the world and is having an amazing impact. I will just talk briefly about them.

Off the coast of China where there is 500 square kilometres of seaweed farms, people are finding new growth of fish and shellfish in the seaweed farms because the ocean water is buffered there. The seaweed takes the acidity (CO²) out of the water and creates a clean environment for growing high quality protein. So you are getting a double benefit. The seaweed is being used for a whole lot of things like pharmaceutical products, very effectively. There has been a great study down on the South Coast of NSW among prisoners in jail to show that seaweed in the diet improves mental processes and also reduces aggression. I think it has a whole lot of benefits so the documentary is talking about those possibilities.

Q: What about the dialogue between the climate change lobby and rural industries generally? What about the uptake of technologies?

TF: I think the rural industry is so important. The best farmers are the most enlightened group I have dealt with. They are at the interface of that land and carbon system and the greenhouse gases. You see the efforts that many of them are going to because they can see that in future they will be advantaged if they address these issues. So we do work with farmers at The Climate Council.

A lot of our work is hidden. What we do is help young farmers to gain a knowledge they need to appear on TV or to write to their local paper. The advocacy that they do in their communities is very important. We follow a lot of those groups as farmers listen to other farmers and they won't necessarily listen to me.

Q: Where would Australia be today if we hadn't repealed the Carbon Tax?

TF: I think we would be far better off. We were reducing emissions very steeply. I think we would be a decade ahead, it is really tragic.



Q: I read in today's paper that the Prime Minister spoke yesterday at a gathering and said that anyone thinks that coal might not continue to be an energy source is delusional. Could you comment on 'clean coal'?

TF: I think we are seeing the last desperate gasps of the industry for relevance. Coal is more expensive than wind and solar in many parts of the world. No one is building any new coal powered power stations. People are retiring old coal as quickly as they can. In places like China the air pollution has created a national epidemic. So people are retiring coal as fast as they can. I think that [Prime Minister] Malcolm Turnbull, as politicians often do, is willing to lie to get his way yet [Deputy Prime Minister] Barnaby Joyce has shown some flexibility. But they are just words and they are not the economic reality.

Q: Can coal be cleaned?

TF: You can, you can do anything if you put enough money into it. But what you have to do to clean up coal is to build a whole new factory first, which no one is going to do and then stick a gigantic factory on the end of it to deal with exhaust gas and which takes the CO² out of and then injects it into the ground. Now the exhaust gas because it is combined with carbon is 3.5 times more volume than the coal you put in. Then you have got to get it to stay in the ground and gravity doesn't work that way, the gas wants to come up. You are adding 30-40% at least to the cost of electricity generation.

FINISH

Next CCJP Sunday Seminar meeting will be at Convent of Mercy, Victoria Road, Parramatta on 15 October 2017.

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