POLICY FORUM

POD

Policy Forum Pod

Can Australia spark an energy change?

Episode 109

17 May 2019

Australian National University

POLICY FORUM.NET

Asia and the Pacific's platform for public policy debate and discussion

About us:

Policy Forum Pod is the podcast of Policy Forum.net - Asia and the Pacific's platform for public policy debate, analysis and discussion. Policy Forum is based at Crawford School of Public Policy at the Australian National University.

Our regular podcasts are written for a broad audience of public policy professionals, and those interested in public policy throughout the region.

Policy Forum connects with the Asia and the Pacific Policy Society – a network of thousands of people involved in every level of policy around the region.

Presenter: Martyn Pearce
Prof Grafton: Professor Quentin Grafton, Crawford School, ANU
Prof Catchpole: Professor Kylie Catchpole, College of Engineering and Computer Science, ANU
Prof Baldwin: Professor Ken Baldwin, Director Energy Change Institute, ANU
Mark Kenny: Mark Kenny, Senior Fellow, Australian Studies Institute, ANU

[intro music 0:00:00-0:00:13]

Presenter: Hello and welcome to Policy Forum Pod – the podcast for those who want to dig a little deeper into the policy challenges facing Australia and its region. I am Martyn Pearce. Policy Forum Pod is produced at Crawford School. We are the region's leading graduate policy school, and you can find out more about us at crawford.anu.edu.au.

I am delighted to be joined in the studio today by my regular co-host, Quentin Grafton. Hello, Quentin, how are you?

Prof Grafton: Hi, Martyn, great to be here.

Presenter: Ah, it's great to have you here. Quentin is a Professor here, at Crawford School. He is Editor-in-Chief for Policy Forum, so my boss. He is also the chair holder of the UNESCO Chair in Water Economics and Transboundary Water Governance.

Now, at the start of each week's podcast, we have a look back over the last week in the world of public policy and just have a chat about some of the things that have caught our eye. Quentin, what has caught your eye in the wide world of public policy?

Prof Grafton: Well, since we are in Canberra and, of course, Australia, and we have an election on the 18th of May, just a few days away — or tomorrow, the biggest issue for me is all those policies. We have got the Coalition, we have got Labor, we have got the Greens, and we have other parties out there, and Independents — how do we put all those policies together in terms of who we are going to vote for and how we are going to put our preferences in?

That is, I think, the most pressing policy issue going forward into the election: *[it]* is what we do and how do we translate policy into actual practice in the sense of who we vote for.

Presenter: Now, we are recording this on a Monday so by the time Saturday rolls around, who knows, maybe there will be a grand suite of policy put forward by all of the parties, but what is your take on the quality of the policies that have actually been put forward as part of the election campaign and do you think that the electorate has a clear handle on what those policies are?

Prof Grafton: I suspect that most people do not have a clear handle on those policies. I think there are some policies that have been given a lot of attention in terms of the franking credits and the tax refund associated with that from the Labor side, but I think a lot of the policies have sort of passed people by. They may have registered in their particular electorate that, "Oh, I am going to get a new road," but in terms of the details, I think, a lot of that has passed people by.

I think [they have been 0:02:39] focusing on key messages and, of course, the Coalition side is about a strong economy and the ability of the Coalition to deliver surpluses going forward, and

I think the Labor focus has been, of course, on a fair go, which is about focusing on jobs and the lower paid, et cetera, et cetera and, of course, its message from last Friday was that it could also generate — in fact, according to its projections it has claimed *[that it could]* deliver even bigger surpluses.

I think those are the sorts of messages people are getting. In terms of what that means in the voting booth on Saturday, of course that is anyone's guess.

Presenter: I was listening another podcast, *Democracy Sausage* with Mark Kenny, earlier in the week, and on there they were talking about this danger of voter fatigue. There has been this rapid turnover of prime ministers and political leaders, plus there has been recent elections in New South Wales, in Victoria, there is all sorts of challenges on the international political scene.

How are you feeling about the end of the election campaign, Quentin? Are you fatigued? Are you pleased to get it over and done with?

Prof Grafton: Look, I am looking forward to making my vote count on May 18th, so that is what I am looking forward to. I think most Australians by now have made up their minds. There will be a few who will not until they actually walk into the voting booth, but I think by this stage most Australians have made up their minds.

And so, yes, I think let's get it over, let's work out who is going to be our new government and let's get on with it — let's get on with actually governing this country for all of Australians and moving us forward. That is how it would be my view and, I suspect, that is the view of most voters.

Of course here, in Australia, it is compulsory voting so even though we might be a little disenchanted, and may not trust the politicians very much, and maybe a little disheartened by the election campaign, we still have got to roll over and make our vote, otherwise we are going to get a fine.

I think in Australia's case we are still going to get the turnout, although there is always the potential — and it seems to be increasing with each election, of these spoilt ballots where people just feel "I've got to vote. Okay, but I'm going to vote in a way that just registers my dissatisfaction." Hopefully, people will not spoil the ballots *[and]* they will make their vote count because that is what we should do in a democracy.

Presenter: Are you looking forward to your democracy sausage on Saturday?

Prof Grafton: I most certainly am, as long as it is gluten-free, Martyn.

Presenter: [laughs] The sausage has to be gluten-free, it has got to be on gluten-free bread, or everything has to be gluten-free?

Prof Grafton: Both, yes.

Presenter: And onions?

Prof Grafton: No, I never go for onions with sausages. It never works for me.

Presenter: And tomato or barbeque sauce?

Prof Grafton: Oh, always tomato sauce.

Presenter: Alright. There you go, if you are manning the poll booth where Quentin casts his vote, you now know what type of sausage he is looking forward to on Saturday.

Now, before we get on to talking about the topic for this week's podcast, a reminder to you we really would like you to join our Facebook podcast group. It is PolicyForumPod on Facebook. It is a great place to chat to us about the topics that we cover here, to let us know what you want to hear about on the Pod, to talk to some of the presenters, as well.

We are always keen to hear your thoughts there and, if you jump on the Facebook podcast group and you make a suggestion for a podcast which we later turn into a podcast, our Policy Forum Pod, then you could be the winners of one of our exclusive, very short-run — I only got two of them left, so we might have to have some more made up, Policy Forum Pod mug, as demonstrated by Bob Cotton on the Facebook podcast group this week. It is a nice photo of him enjoying a nice cuppa.

Have you got one of these mugs, Quentin?

Prof Grafton: I have, thanks to you, Martyn, and I am really appreciating that mug.

Presenter: Is it doing a really fine job with your cup of tea?

Prof Grafton: It most certainly is. It is a wonderful mug.

Presenter: There you go. You know how to get your hands on one of those. Leave your suggestions for us. We are really looking forward to hearing them.

Today on the podcast, we want to have a closer look at energy policy in the context of Australia's federal election campaign. Australia committed to the Paris Climate Agreement in 2016 and promised to significantly lower its emissions by 2030.

This is a really important community issue. We know this. Various polls have told us how important it is, plus we have seen things like the Climate Strike, we have seen young children

and school children take to street in their thousands, protesting at the lack of action from our political leaders, we have seen the rise of the Extinction Rebellion movement, we have seen Greta Thunberg at Davos berating world leaders about their lack of activity in tackling climate change.

The Australian election [?? 0:07:53] to address these concerns. An energy policy that includes the transition towards renewable sources of energy and away from fossil fuels could play a crucial role. Australia's parties have made their own energy policy pledges. The Coalition is focusing on lowering energy prices through one-off payments and by introducing a default market price for electricity, whilst Labor is also keen to lower energy prices but wants to reduce emissions and increase renewable energy use to 50%.

Today, we want to ask have energy transition policies been sufficiently addressed in the election campaign. We have got a really good line-up of guests to have a chat about these issues, have we not Quentin?

Prof Grafton: We sure have. We have got the energy dream team. We have got Professor Ken Baldwin. He is Director of the ANU Energy Change Institute and, from 2011 to 2013, he was a member of the Project Steering Committee for the Australian Energy Technology Assessment.

The second person on our team is Professor Kylie Catchpole. She is a Professor at the ANU College of Engineering and Computer Science. She is a real whizz when it comes to plasmonic solar cells and has been featured in news sections of Science Magazine and the Economist, and her work on nanophotonic light trapping—

Presenter: Easy for you to say, Quentin.

Prof Grafton: -was listed in one of MIT's Technology Reviews, 10 most important emerging technologies, so Kylie certainly knows her technology and PV, or photovoltaics, but the third panellist is also part of the dream team, and that is Mark Kenny.

Mark is a Senior Fellow at the ANU Australian Studies Institute. He has a very high profile, the journalistic career stretching over many years but culminating at six years as the chief political correspondent and national affairs editor of *The Sydney Morning Herald*, *The Age* and *The Canberra Times*. Mark is also — because, of course, the election is on the 18th of May, the presenter for *Democracy Sausage* podcast.

Presenter: It is a brilliant podcast, where Mark gathers a panel of experts every week to chew the fat over a week in politics and sizzle up a fresh serve of a delicious, healthy and nutritious analysis.

Prof Grafton: I look forward to listening to it.

Presenter: We will get to the discussion in a sec. Before we do, a reminder: listeners, please do get in contact with us. We love hearing your thoughts, your comments, your questions — whatever it is you want to say to us. The way to reach us is on Twitter, where we are @APPSPolicyForum, on email, where we are podcast@policyforum.net or, like I said, join that Facebook podcast group — we are PolicyForumPod on there. We will be delighted to see you.

Now, I am going to hand over to Quentin for the panel interview. I will be back in part three, where we will go over some of your questions and comments, but for now let's meet our panel.

[interlude music 0:10:50-0:10:58]

Prof Grafton: Welcome everybody. Today, we are talking about energy, we are talking about climate change, and with just a few days away from the Australian general election on May 18th so lots to talk about. We have got three great experts to tell us what they need to tell us in terms of energy policy, climate change and everything else in between.

May I, please, welcome everybody. First, over to you, Kylie. Can you say hello to us?

Prof Catchpole: Hello, Quentin. It is great to be here.

Prof Grafton: Thank you, good to have you here. Mark?

Mark Kenny: Yes, it is great to be here, Quentin. Of course, we are all looking for that federal election result, see how things play out.

Prof Grafton: Yes, that is right mate, do not forget to place your bets. Ken?

Prof Baldwin: Wow, welcome everybody. I hope you have not voted already, so you can make a good decision based on this podcast.

Mark Kenny: Ah, good point.

Prof Grafton: Absolutely. That makes a lot of sense.

Talking about elections, lots and lots of polls happen at election time. There is a poll that just came out from the Lowy Institute. It says that 64% of Australians view climate change as a critical threat. That puts it at the top of the list of 12 threats to Australia's interest. Okay. A crucial part of reducing emissions, of course, is moving away from fossil fuel-based energy towards renewables, so how do we reconcile this poll with what is going on at the moment in terms of Australia?

We can pass that question to anyone, but perhaps to you, Kylie. First of all, it is about--; Do you think that energy policies have been sufficiently addressed in Australia's election campaign?

Prof Catchpole: I think energy policy has been kind of on a backburner since the discussion of the NEG. There is obviously a lot more that needs to be done. We are starting to move rapidly towards renewables. The cost of renewables is decreasing all the time. It is now cheaper to install renewables than coal. What we are seeing is an inevitable transition of the economy, and we have to recognise that, and we have to put in the policies in place to support that.

Prof Grafton: So, you are talking about government getting involved and we have not heard a lot from either the Coalition or Labor. Is that your view?

Prof Catchpole: Yes. What we need, above all, is stable policy settings to enable the emissions from energy to decrease over time. We are seeing that there will be a transition to renewables — that is clear and that is broadly supported by Australians, but we need the government to make sure that the policy settings are in place so that that transition will be smooth and, well, allowed to happen with maximum benefit.

Prof Grafton: Thanks, Kylie. Kylie mentioned the NEG. What does the NEG stand for, Ken?

Prof Baldwin: Oh, NEG is dead, isn't it? It is the National Energy Guarantee that was proposed by the Turnbull Government as the fourth best policy in the space. Remember, we had the carbon tax, and that was removed by the Abbott Government. We then, for a very brief instant, had the emissions intensity scheme that was removed again by the Coalition party room.

Then, we had the clean energy target which did not last very long either — that was immediately ruled out by the Coalition party room, and then we had the NEG, which [brought? 0:14:13] about the downfall of the Turnbull administration.

We now no longer have a policy in place that aligns climate and energy. We have the Renewable Energy Target that runs out next year, but that has already driven a lot of the changes happening that Kylie has already mentioned. Effectively, we have got policy vacuum at the moment and, I think, this is a clear, distinguishing factor between the major parties.

The Coalition does not have a policy that aligns climate with energy policy, whereas the Labor Party and the Greens certainly do have policies — they have targets, they have mechanisms to reach those targets and they are talking about revisiting the NEG, the National Energy Guarantee, if they would take office. That would mean discussions with the Coalition and, by that time, maybe the Coalition will be ready to discuss again in opposition but let's see what happens with the election. The NEG is not completely dead yet.

Prof Grafton: Thank you, the NEG is not completely dead. That is a nice little slogan we can go with.

[laughter]

Mark, it sounds so complicated. There is this NEG thing, then there is a NEM, and then there is this, and then there is that, so it seems a bit complicated for all of us, including myself, about what all this means in terms of energy policy. Can you put it in your perspective in terms of the politics of this, and in terms of what this means, and in the context of that question about energy policies?

Mark Kenny: Yes, Quentin. I mean, it is such a fascinating area because, as Ken said, it has been a succession of policy failures or political failures for a long time now. In fact, you could even add one on the front of that list, which was the CPRS which, of course, was the emissions trading scheme that Kevin Rudd was pushing and which, eventually, they could not get through the Parliament — the Greens would not support it.

That itself was really the manifestation of some previous work and elaboration on some previous work done in the dying days of the Howard Government in favour of an emissions trading scheme.

There have just been so many false starts here, and the politics have been incendiary all the way through. Within the Coalition, as Malcolm Turnbull said — lamented, really, after he was removed last year, he admitted that this is a policy space that the Coalition just feels like it is kind of incapable of ever coming to any proper resolution on.

Now, maybe the Australian voters are going to, just like they are with renewable energy and lots of their other preferences, maybe they are going to take this into their own hands, and just get rid of the government that cannot sort it out and go to the other side where there is more hope of getting something done, as we have just noted.

There is more policy on the left of politics than there is on the right of this for now, so we will see what the Australian voters do, but it has been just an extraordinary capitulation to base politics all the time. I think people look at it from outside Australia and they go, "What is going on there? Why is the environment so politically charged? Why is doing anything in this space so difficult and why has it resulted in the loss?" really, I suppose, you could say of probably five or six political leaders going right back to Malcolm Turnbull in 2009 as opposition leader?

Prof Baldwin: I think that is right, Mark. I think it is a really interesting point you make about the CPRS, because really that was the start of all of the discussions around [?? 0:17:39] climate and energy policy. As you say, it was the Greens that really put the kybosh on that and caused the rift in the Coalition that meant that we have had a decade, essentially, of unresolved climate and energy alignment.

Mark Kenny: The Greens never admit to this. Even now [crosstalk 0:17:54] If you put it to them, they say the CPRS would have locked in failure. Well, what have we had for a decade? 10 years since then we have had really horrendous failure.

Prof Baldwin: Very interesting to see that, in the leadup to the election, Labor refuse to actually participate in discussions with the Greens about aligning their policies, and I think that has got something to do with this legacy going back to the CPRS--

Mark Kenny: It does--

Prof Baldwin: -when Greens—

Mark Kenny: -and the carbon tax.

Prof Baldwin: -and the carbon tax.

Prof Grafton: We are talking about the Julia Gillard election.

Prof Baldwin: Indeed.

Mark Kenny: Yes. When she signed that pact with the Greens and had Bob Brown standing behind her and a few others, there is a general view in politics that this may have made since policy way, there was a pragmatism about it, but the optics of it were quite dangerous for the Labor Party. I think that is what Labor is saying now to Richard Di Natale and the Greens, generally. It is there will be no Coalition, there will be nothing that the other side can point to that says we are the dog being wagged by the Green tail.

Prof Grafton: Okay, so that is a good little history lesson for us, but let's go forward. We got the Renewable Energy Target — it is another acronym out there, the RET, but don't we have bipartisan support on the RET, or don't we, and where does that take us beyond 2020? Anyone on that one?

Prof Baldwin: Yes. I think the RET is in place. It will finish in 2020, although large-scale certificates will still be issued up until 2030, so that policy, in some sense, will continue but the target stops in 2020. The really interesting thing about this is that we are going to meet that target early.

The investment in renewables in Australia is so rapid. It is the fastest in the world per capita at the moment at around 250W per person per year, and this is just going gangbusters at both utility scale and on people's roofs. What we are seeing is a very rapid deployment of renewables that will meet the original — oh, sorry, it will make the revised renewable energy target under the Abbott Government, it will probably meet the original renewable energy target that was set before that, and then who knows what will happen.

As Kylie said, this can easily fall over without a consistent government policy to continue to drive this industrial revolution, you could call it, because it has been driven by industries in a policy vacuum at the moment. Government is not driving this anymore.

Prof Grafton: Well, let's grab [crosstalk 0:20:24]. That's a good one. Kylie started off talking--; You talked about the technology that is happening anywhere, lower cost now with photovoltaics on roofs and, of course, a large scale. Is not that technological transformation happening anyway? Do we need the RET anymore? I mean, that is the--; Is the technology in place already, the costs are already down that we can just move forward anyway, even despite what governments do?

Prof Catchpole: I would say that the costs are down but there is still a large role for government, particularly in the coordination and the transmission side now. What we have seen over the last few years is that the industry is capable of installing at a high rate — a rate that, if it continues, it will make a significant impact on our Paris target. This is making the largest impact of anything in the economy — this installation of solar and wind.

We can do that, but we are getting to the point where transmission is starting to be an issue, and there is a lack of coordination between projects and agencies so that their projects are being installed in not very ideal locations, and that means they are not generating as much electricity as they could if there was better coordination. We do need to look at the whole of system approach to the transmission, to make sure that we are getting the most out of what we install and to make sure that we continue to install at a high rate.

Prof Grafton: Can someone help here in terms of this national energy market or electricity market that we have, at least in the South-Eastern Australia? How does that work? When we talk about renewables coming in, and baseload, and dispatchable — all this kind of mumbo-jumbo, how does that all work for us? What does this mean in terms of coordination investment? Does anyone want to--? Okay, over to you, Ken.

Prof Baldwin: Kylie has made the point that we are reaching the point where there is so much renewables entering the system that we have to change the system as a whole.

Prof Grafton: But is that not a good thing?

Prof Baldwin: It absolutely is a good thing.

Prof Grafton: But it has got to add something else on top?

Prof Baldwin: We have got to do even more. When you are at the level that we are at the moment, which is about 20% renewables in the electricity system, the system as we have it can cope with that, but once you get towards 50% and beyond, then you need a new system. You need one that has, as Kylie says, sufficient transmission to get the electrons from A to B.

You need storage in order to deal with the intermittency of the renewables at that high level and, as with all investment processes, you need consistent government policy, otherwise there is high

risk, and where there is high risk there is high cost of finance, and this drives down the investment that is needed in transmission, storage and even more renewables beyond 50%.

We are reaching--; We are in a sweet spot at the moment, where industry is gangbusters with the zero policy environment, but they will soon hit a wall at around 50% where they need a lot of government intervention in order to put the right settings into place for investment in transmission infrastructure and storage.

Mark Kenny: And I think [?? 0:23:22] — if I can just add something there, it is really interesting. You describe it as a zero-policy environment, which is, I think, a fair description of it, but it is zero-policy, ultra-high-level politics all the time. The politics around this issue have been absolutely, as I said before, incendiary and quite destructive.

I think what we are looking for as a nation is not just for some new policy settings which are conducive to this transformation, but some level of political consensus which suggests that this is not heavily contested [trying? 0:23:54] and it is not going to be changing. That is what industry needs to make the big sorts of investments and changes to the way they operate. That has been, sadly, missing for a long time now, thanks to the fact that there has been a lot of advantage-taking, really cynical advantage-taking in our politics.

Prof Grafton: What about power prices? 2018, there was a lot of talk about power prices and a big stick policy, I think, from the Coalition which I think was implemented, but how do we get power prices down or at least they do not go up very much?

Prof Catchpole: If you install the right mix and if you install that in a coordinated way then, certainly, it should not cost more. If you look at how you install solar and wind, you want a mix of solar and wind, you want a range of different geographical locations, and if you do that you do not need to add too much storage into the mix.

You can add some storage or a number of different possible options using — pumped hydro can be quite cheap, although you do have to install quite a lot at a time. Batteries are rapidly decreasing in price all the time, and you can install those a bit of it at a time. It has been showing that if you calculate a full system, you do not need to add to the cost on the system to move to a 100% renewable electricity system, but you do need to think about how you install it and where you install it.

Mark Kenny: Also, how it is coordinated, I guess, or how it is connected--

Prof Catchpole: Absolutely. Yes.

Mark Kenny: -because if we go back to that famous blackout in South Australia, perhaps arguably that was the blackout we had to have, if I can borrow a line about [recession's path 0:25:33].

Prof Grafton: What about the drover's dog — can we put that [crosstalk 0:25:35]?

Mark Kenny: [crosstalk 0:25:35] We can probably put that in, as long as it is an electric dog.

Prof Catchpole: [laughs]

Mark Kenny: I said the blackout we had to have in a sense because it actually did teach us in a very graphic way about the instability of the system. There was a whole lot of political misrepresentation about it, I think. Nonetheless, it did very much draw attention, I think, to the ordinary person. It sort of taught the ordinary person that, yes, you can go to these renewables but there is an intermittency cost to it — or aspect to it — and, therefore, you need a system redesign, as well, which is the point Ken was making.

I think it is all about understanding where we need to go and how we need to get there.

Prof Grafton: Yes, so it is about targets, it is about policy, it is about technology, it is about a combination of all these things to get that right, but it is not about an invisible hand is going to fix this for us. We are going to need to have some guidance. Is that what I am hearing from all of you?

Prof Baldwin: Absolutely, and I think Mark's point about the fact that the politics need to be sorted so that we do not run the risk of another government reversing absolutely everything, undoing everything in about three years' time, that needs to be fixed first. That is the absolute minimum needed in order to give industry the certainty that they need going forward.

Then, what they need is a plan. As Kylie says, you have got to plan the transmission systems, you have got to plan the storage systems, you have to plan the way that you build the renewable energy generation and, let's face it, only a quarter to a third of the cost of electricity comes from the generating source itself. Then, you have got the transmission cost, so unless you plan them the costs are going to go up, and you have got the retail end of things — selling electricity to the customer.

The combination of all those three price factors is something that needs to be looked at holistically. You cannot just address cheap generation without putting in all the other planning processes, as well.

Mark Kenny: Although there is some increased role for distributed generation--

Prof Baldwin: Absolutely.

Mark Kenny: -so that does sort out some of your distribution [costs? 0:27:31].

Prof Baldwin: There will be, and the higher the price of electricity from the grid the more that there will be the take-up of producer consumers — prosumers — in households and businesses. We see this increasingly in businesses. You have got companies like Sun Metals in Townsville, putting on 150MW of solar to just simply pay for their own electricity bills. You have got Sanjeev Gupta talking about a 1GW system for Whyalla in South Australia.

Prof Grafton: This is the Indian UK billionaire?

Prof Baldwin: Indeed, yes. This is for their Whyalla Steelworks.

This is an increasing phenomenon that we see in the industry and, of course, the Australian population has the highest penetration of rooftop solar in the world: 20% of households have solar on their roofs. This is a really important factor, but it is only one part of the picture. You have got to look at the whole system.

Prof Grafton: Let's put in climate change into this big mix that we have got here in terms of energy. The presumption is more renewables, less carbon emissions, we are better off in terms of meeting our targets — and I will get to those targets shortly and how they differ across the different parties. Is that presumption sufficient? Is that like, "We fix the electricity market and we are going to meet our targets," or do we need to do more than that?

Prof Baldwin: Our electricity is the easiest sector to do something about and that is where all the low hanging fruit is and that is why the focus has been on electricity, but electricity is only 35% of Australia's emissions. The rest comes in industrial processes, in transport, in fugitive emissions in agriculture and those areas, and of those you could easily deal with probably three quarters of Australia's total emissions by electrifying a lot of the other sectors: your electrified space setting, your electrified transport, and then the burden falls back again on the electricity sector to make sure that is 100% renewable.

That will take a long time. Dealing with the electricity sector itself first is the right thing to do, but by and large the big game in the future is to electrify the rest of the economy and the other sectors.

Mark Kenny: [crosstalk 0:29:38]

Prof Grafton: Okay, so Labor has talked about electric vehicles and it has various [?? 0:29:43] target in play, I believe, for electric vehicles. How does that work? Millions of vehicles plugged into the national electricity market – how does that work? Is that at all possible but, again, is that a planning issue? Is that technologically possible, Kylie? Would that work?

Prof Catchpole: Yes, there are a lot of opportunities if you are doing that to control how you are charging, and discharging, and that. If you do it smart, then you can add a lot more control to the grid and to the system by including electric vehicles in the system. You would need to think about the cost of doing so and you would need to put in the right incentive so that it is actually worthwhile for vehicle owners, for example, to be using their batteries in that way.

It would, overall, require expansion of the system, so this is what we are seeing already at the moment. The grid is designed for a limited number of services and it is designed for centralised generation, so what we need to move towards is providing a lot more services and a lot more back-and-forth, so not only going from [central generations? 0:30:53] out to distribution but moving in all sorts of directions along the grid.

Mark Kenny: Yes, so it is [putting? 0:30:58] all the pieces together so, I suppose, if you have a lot of electric vehicles and you have a lot of coal-fired electricity plants, it probably does make a lot of help in terms of carbon emissions.

Prof Baldwin: No, and that goes to Ken's point to getting the electricity sector underway, the changing that underway first.

But just going to the politics of this, the government made this huge song and dance at the start of this election campaign about Labor's objective of getting 50% of new car vehicles being electric vehicles by 2030. I would be surprised if it is as low as 50% by 2030, frankly. I think that Australians' take up of technology is usually very fast, faster than the rest of the world, but even allowing for that not being the case, I just think there is a process going on now. These cars are becoming very attractive.

The barrier at the moment — there are probably two: the unit price and the infrastructure. As Kylie was saying, if you have an electric vehicle at the moment, then you do have concerns about range, you do have concerns about where you are going to charge, and so forth, but all of these things can happen, just like when we shifted from horse and buggies to petrol driven cars. I mean, the infrastructure had to be built, service stations needed to be in places where people could use them and fill up their cars, and it happened.

It is not beyond the wit of this nation to do that nor is it, indeed, beyond the profit motif of individual investors to want to get in on this. I mean, there are going to be ways so this happens, and I think this will be exponential, that over a period of time we will see just the rate of take-up of electric vehicles.

A number of them now are very good, and they are hybrids — a lot of people forget this, and if you watched the F1 last night — the Formula 1 races, these cars all have kinetic energy reduction systems in them, and so forth, the recovery systems in them using hybrid technology now,

providing a vast amount of horsepower in these ultra-high-performance vehicles. All of this stuff is happening and for a bunch of [?? 0:32:57] it is not, then I think Australian voters will have their say about that.

And we are doing things in the right order. I mean, it will be the case that if, let's say, 50% of vehicles are electric by 2030, then the electricity system will be the vast majority of it from renewables by then, because the current installation rate shows we are on track for approximately 50% of our electricity to come from renewables by the mid-2020, so that is the right order to things in.

Then, there is going to be an interesting question as to whether actually electric batteries are the way to go or whether to have hydrogen fuel cells in vehicles, and just have the same electric vehicle infrastructure around that, so you either run off a battery or you run off a hydrogen fuel cell.

That is an interesting interplay because the jury, I think, is still out on which direction the car industry will go. In fact, the number of car companies are hedging their bets. They will just put in a battery or they will put in a hydrogen fuel cell, depending on which technology turns out to be the cheapest and most effective.

Again, coming back to distribution, whether we can get the hydrogen distribution network in place in our service stations or whether we have a plug-in battery system so that you go off and you have a cup of coffee for half and hour and you come back and your car is charged.

Prof Grafton: Okay, but this depends on policy goods as you were saying earlier, Ken and all of you, so let's get back to this policy issue. Mark, you raised this issue about the election and voters, and so let's focus in on that critical date, on May 18th. People going into the voting booth, they have got all their numbers, they have got a list — which I find complicated enough.

Mark Kenny: Well, you are an economist [?? 0:34:35].

Prof Grafton: How does this figure--; So, we have got the energy that we talked about here, but what about the climate change? I mean, the Lowy poll says Australians consider that as the number one threat in the context of the threats that were identified, so how does this figure--;

I mean, we have got all this other stuff to think about. It is the economy stupid, we have got climate change, energy — it is all kind of complicated. How will that figure--; Because last year it seemed to me there was a lot of talk about power prices and doing something, but there seems to be much less talk — at least in this election campaign — about that.

Over to you first, Mark, but I want everyone to join in on that. Does the vote vis-à-vis, the talk--

Mark Kenny: Look, it is a really difficult one to unpick because Australians are very concerned about climate change. In fact, I have seen a poll that says that 90% of Australians want to see fast direction on climate change — it was a credible poll, and I do not think it is all that hard to believe that they want to see fast direction on it. It depends how that comes about, and if you start then, I guess, qualifying that with are you prepared to pay more for your energy as a result of it, some people will fall away, some people will say, "Yes, I am," because they are very concerned about it.

In a way, I think what is interesting about that Lowy poll is it says 64% of people think it is the greatest threat. I sort of think that number is low, actually. What is a bigger threat, really? It is--; I mean, obviously you can pick out defence threats. If China goes to war with Taiwan, for example, that could be a very difficult moment and what would the US do, what would we do? I mean, that is something to contemplate, and we know there are tensions in the South China Sea and all kinds of things like that, there is terrorism.

Yes, but the climate change issue is not going away. Everyone accepts that except for a small rump of deniers who have been controlling policy in the Liberal Party, and so I think there is a strong concern about it. It does, then though, you have to jostle with some of the other front of mind issues in election campaigns, and some of those are really facile and basic, like "Do I like the leader?", "Do I like Bill Shorten?", or "Do I like Scott Morrison?" or someone else, and some of them are a bit deeper: they are about concerns about the tax mix and these sorts of things — perfectly legitimate concerns that people have.

I guess that is what we will find out. At the end of the day, will a party that is proposing steeper emissions cuts among its suite of policies will it be successful and, if so, I guess there will be some policy certainty and we will then just see what the conservative side of politics does in opposition as a response.

Prof Grafton: We will see, I suppose, on May 18th. Can we go to those targets on the carbon emissions reductions, because I think that is probably worthwhile looking at? Ken, first on the target from Labor and then I will go to you, Kylie, in terms of the target from the Coalition. Then, we can see can they be reconciled — though it does not look like it but--;

Prof Baldwin: I think both major parties have their own climate policies, and I keep coming back to the point, however, that the easiest way to deal with climate issues is to deal with the energy side of things, and the electricity side of things in particular.

Only one of the two major parties have a policy on the energy side of things, and that is Labor. They have a target for 50% renewables by 2030. They have 45% overall reductions, but it is based on an energy policy. They have policies around electric vehicles.

Whereas the Coalition has ended the NEG and they have not put in anything else in its place. The Renewable Energy Target, as we know, finishes next year, and there is nothing in the Coalition policies on the energy alignment with climate policy. If I were a voter, I would vote for the party with a policy.

Prof Grafton: So, where does the Coalition stand on this in the context of climate change and connecting it to energy? You have talked about the renewables and take-up of renewables but is there anything that is going to work in the 2020s [?? 0:38:49] Suppose it is a Coalition victory on May 18th. Where does that take us in the context of energy and climate change together?

Prof Catchpole: One of the things, I think, we need to think about in the long term is the different types of threats to Australia, of not only climate change but international reactions to climate change. Australia is getting fairly far behind in terms of its action. A lot of other countries are taking a lot more action, and if you look at the renewables being installed globally now more than half of new electricity capacity is renewables, so what we are seeing is more and more renewables being installed.

That will mean less-and-less coal being installed, and that is actually a direct threat to Australian export, so we need to see what the threats are to Australia — not only the climate change threats in terms of drought, for example, but also the economic threats. What we need to move towards in the long term, whether you think action on a climate change in terms of the effects of climate change is important or not, just in terms of our international position we are actually going to need to move forward on diversifying the Australian economy.

Prof Grafton: Let's take the scenario that Coalition wins on May 18th. We have got Ken's view that Labor has a policy that connects energy to climate change and the Coalition does not have that connectivity in the context of its two sets of policies, if it has a policy on energy, so what would you advise, each of you, to Scott Morrison as prime minister as of May 18th, if he gets elected? What advice would you be giving the Coalition?

Prof Baldwin: Revive the NEG, I guess. I mean, that would be really the easiest step for them to take [crosstalk 0:40:42]. This was the policy that went to the party room twice.

Mark Kenny: And was accepted by the Liberal caucus.

Prof Baldwin: It was accepted. Malcolm Turnbull should not have backed out of this and, as I often say to people in these discussions, he did not because he was worried about a backlash from the small rump of reactionaries in the Liberal Party, led by Tony Abbott and a few others.

I mean, surely Turnbull must come to the view at some point that he should have done that because, after all, what is the worst that could happen? He could have lost his job — and he did.

[laughter]

He did, and he did not--; He lost it on his knees rather than on his feet, on this question. I think it must be the most rational policy. It was, of course, as you described it, Ken, before, I think fourth or fifth best option, but it was the best option within the confines of all the policy and politics' parameters within the Coalition. It was the best they could do, and I think it remains probably in that space.

If they survive, they will probably obviously have to change the name somehow and all of that, but essentially that is, I think, the way forward. Labor has already indicated that it is prepared to revive the NEG and would be considering doing so if it could get support from the Liberal Party — that is Labor in government, so I would image that Labor in opposition would probably come to that same view.

At some point, we need the two parties to actually arrive at a consensus position, even if it is not on the best possible policy — on something that can give the country a way of moving forward, of resolving some of these questions and of unlocking a lot of investment that, at the moment, is flowing to other countries, which have actually just looked at the undeniable signs and said, "We need to make some changes."

Prof Grafton: Yes, the policy is certainly the issue. Kylie, what about the technology side? There are implications that come from the NEG, as well, but what about the technology advice that you would be giving to, let's say, Scott Morrison on May 18th or maybe it is Bill Shorten who is about to become the prime minister?

Prof Catchpole: I think they need to move forward with pumped-hydrogen and battery storage. Those are our obvious key contenders for storage. As Ken mentioned, we are going to be needing storage within a decade or so on a large scale. We have just started installing batteries in South Australia very successfully. There are already--

Prof Grafton: These are the Tesla batteries?

Prof Catchpole: That is right, and they have already showed that they can respond very quickly. Because of that, they can help reduce price spikes in the market, for example, so those kinds of things can have advantages as they are installed, which is separate from the storage but just from their quick response.

Pumped-hydro is also reasonably quick, and so that we need to look at that for larger scales. We do need to move forward on that because it will take some time to install everything that we need to install.

Prof Grafton: What about RND — research and development? Is the RND required? Are these technologies already ready to go in this space?

Prof Catchpole: Yes, absolutely, and especially on topics related to improving integration of all these technologies within the grid. Getting the required control in terms of looking to the longer term, I was mentioning diversifying the Australian economy. We have a huge opportunity there actually with renewably generated hydrogen. Japan would like to buy renewable hydrogen from Australia in coming decades, so we can look about how we could do that.

At the moment, it is too expensive. It is several times more expensive than fossil fuel generated hydrogen, for example, but there are countries like Japan and South Korea which cannot generate their own energy. They just do not have enough resources of any type, fossil fuel based or renewable types so they are always going to need to import energy, so it is a long-term opportunity for us to move away from coal and to move into something like hydrogen, but we will need the research and development in order to do this.

We certainly can do it because if you look at what happened with solar electricity, 15 or so years ago it was five times as much as the price of conventional electricity and now it is cheaper. If you put in the right research and development, the right industry development, you can dramatically reduce these costs, and I think we can do this with hydrogen, as well.

Mark Kenny: Yes, they are very good points, and you just need a bit of vision and a bit of longer-term thinking. The trouble with the political cycle is that it mitigates [?? 0:45:16]. People in politics just cannot bring themselves to think long-term. They are only thinking in electoral cycles. Because business needs to think longer term, especially when talking about significant investments.

I mean, you look at the debate about Adani, for example, one of the—

Prof Grafton: Is that the coal mine [?? 0:45:32].

Mark Kenny: Yes.

Prof Grafton: [?? 0:45:33]

Mark Kenny: One of the justifications for it that was used very early on and it was a very well targeted argument against people who you might put on the broad left of the spectrum. The argument was that there is 100,000,000 people in India who are living without electricity at all, that are cooking their food by boiling up cow shit or whatever it was, and that this was some kind of equity question.

Now, that is fine except that this money was not going to go to--; all this coal was not going to go to building a distribution infrastructure to all of those people in those remote parts of India. The answer for those people is, in fact, these new technologies — these prosumers as you call them, Ken — the distributed new technology energy in those villages, in those places. That is the answer for bringing electricity to those communities, not poles and wires, it is the effect of the technology of the 20th century.

Prof Grafton: Hmm. Well, last with you, Ken, so looking forward. Is the glass half-full or glass half-empty, and where do you think we are going to be in three years' time?

Prof Baldwin: I am an optimist, so I think the glass is much more than half-full. What we are seeing is the technological revolution that has been driven by pure economics at the moment in the absence of government policy. Australia is in a great position. We have this wonderful renewable energy resource which we are now capitalising on. We are starting from a very high-level of fossil fuels in our electricity sector. We have an [?? 0:47:07] with a very long and skinny national electricity grid. If we can transform our electricity system and do so efficiently and successfully, any country can do it.

And so, we are the focus of the world at the moment. If we can make the energy transformation that is inevitably going to happen around the world work then everyone else is going to look at Australia and say, "They can do it, we can do it," so I think it is a really important role for us. The government needs to get on board, whichever flavour.

If I were to give advice to Scott Morrison on May the 18th, as you suggested a few minutes ago, I would say to him, "Look at the big picture. Look at what the electorate are telling you. Look at what industry are telling you. You need to have an electricity policy on board, that allows us to address our climate needs, and stare down the right-wing rump of the Liberal Party — they might not be re-elected some of them." There is quite a chance that some of them will not be there.

Stare the remainder of them down and then go to the Opposition and say, "How about we start talking about this in a bipartisan way. We could start with a NEG and then ramp things up." That is what I would advise Scott Morrison to do.

Prof Grafton: Okay, so we need smart politicians, we need smart policy and we needs a smart grid.

[laughter]

Prof Baldwin: Indeed, and it [crosstalk/laughter 0:48:22] if it turns out to be Bill Shorten next week who is our prime minister, then he has already got a plan. It is very unusual for an academic to say this, to recommend one party over another. Most of the time, we are very even-handed,

which we should be and absolutely above board, but this time the choice is between a party with no policy and a party with a policy. I would go with the policy every time.

Prof Grafton: Well, this is about public policy. That is what this Pod is about. Thank you so much, Kylie. Thank you so much, Mark, and thank you so much for sharing your time, your thoughts, your experiences and intelligence with us. It was a great opportunity for us to hear from you, so thanks Ken.

Prof Catchpole: Thanks Quentin.

Prof Baldwin: Thank you.

Mark Kenny: Thank you.

Prof Grafton: Stay with us. Do not go away. We are looking forward to talking about the comments on past Pods and suggestions for future Pods, so stay tuned.

[interlude music 0:49:10-0:49:11]

Mark Kenny: Can you hear it? That is the sizzle of an Australian election heating up. It is both major parties cook up a recipe to win the vote. Make sure you cross all the best analysis and insight with Mark Kenny's *Democracy Sausage*. Each week, I will be chatting with experts about the election week that was and what might be on the menu next. We will chew the fat over the biggest announcements and developments and dive deeper than the headlines, so join me, Mark Kenny, each Monday at Mark Kenny's *Democracy Sausage*.

You can find it on iTunes, Spotify or at policyforum.net/podcasts.

Presenter: Welcome back and thanks once again to our guests today, Kylie Catchpole, Ken Baldwin and, of course, Mark Kenny. I have still got Quentin here, with me.

Quentin, what did you make of that discussion?

Prof Grafton: Oh, look, I thought it was a great discussion. It is a lot of detail in it, a lot of acronyms, I think as well, but Ken, Kylie and Mark explained that to us and they put it in the context of policy — lot of the policies from the Coalition, Labor and the issues going forward, so no just about this election but where we are going to be in the 2020s and what is Australia's future in terms of energy transition. I thought it was great — great to get those technology details, the policy details and where we might be going, and so super-duper.

Presenter: I, like I suspect a lot of listeners, find the whole issue of climate change quite depressing at time — the global inactivity or the very slow activity to address it, but there was a fair amount of positivity in that discussion there, wasn't there, in terms of Ken was talking about

the take-up of renewable energies and Kylie talking about the dramatic increases of the technology there.

Did you feel fairly positive [crosstalk 0:51:00]?

Prof Grafton: Look, I think it was a very positive perspective, but there was a caveat attached to those discussions and that, namely, was that government policy is very important because we are talking about very long-term investments and distribution, transmission and, of course, generation, and that is not just the market forces that work here, governments have to make the right regulations and rule and, indeed, set the policy settings. I think that was a critical point.

Yes, it is a bright future for us all in Australia but, at the same time, we have got to get our policies right, and bipartisan support, I think, was a key point that they raised, as well. Yes, things are looking good if we can get our policies right and we can get some agreement on them, and so let's hope that is what happens in the next three years.

Presenter: That is a pretty big 'if', though, isn't it?

Prof Grafton: Certainly, looking back it has not been good, but that is what elections are for. Hopefully, there are some resolution about the policy, and resolution about who is in charge, and resolution about what we do next, so that is why people should vote in the democracy and hopefully we will get some outcomes, not just on energy, that Australians want, whoever they vote for.

Presenter: There you go, listeners, you have heard what Quentin and I thought of the discussion, but what did you think? Please, do let us know. We would love to hear your thoughts. You can contact us on Twitter, where we are @APPSPolicyForum, you can email at podcast@policyforum.net or, best yet, jump on to the Facebook podcast group — we are PolicyForumPod on Facebook. We would love to see you there.

When you join the group, you will have the opportunity to make suggestions for future issues that you would to see covered on Policy Forum Pod. You can do it at any point, really, but it will certainly ask you the question when you join the group.

I would like to go over one of the suggestions that we have had over the last week, which I will do in a second, but firstly actually let me welcome a couple of new members to the Facebook podcast group. Hello, Gyán Prasad and Siti Nur Rosifah. It is great to have you on board. Do not forget: if you want to be in the running to win one of our exclusive mugs — and/or why would you not, just leave us a comment under the post, showing our presenter Bob Cotton having a sip from our favourite mug in the podcast group.

That is what Avery Poole has done with a suggestion for a future Pod. Avery wrote how about "International students in Australia — government policy and university approaches? Topical given recent news on admissions (…) but also more broadly — how could/should international engagement in higher ed (including the building of overseas campuses) evolve going forward, especially in the Indo-Pacific?"

What do you think about that idea, Quentin?

Prof Grafton: Look, I think it is a really great thing to do. Policy Forum, of course, is here, at Crawford School, ANU, so we are at a university. There was a program from Four Corners, ABC, this past week and it was on with a controversial title "Cash Cows", referring to international students, and highlighted three universities — not the ANU, let me add, but three universities in their admission policies, but that is a big issue. It is a contested space about what funding is provided to universities, how universities can increase their revenue — of course, through international students, how diversity in the student profile is good but to what extent that diversity can offset other issues in the context of standards of its admission policy are not set properly.

Those are big-ticket issues. They are not just for universities and university students. There are a lot of university students from overseas — hundreds of thousands of them in Australia, and it is connected to immigration policy so this is a big, big, big-ticket issue, I think, and I believe it does require a Policy Forum Pod discussion at some point, with the necessary experts in the room.

Presenter: So, a thumbs-up from you on that one?

Prof Grafton: Absolutely. Two thumbs up, Martyn.

Presenter: Two thumbs up?

Prof Grafton: Yes, two thumbs up.

Presenter: Wow, okay. Well, if you want to be in the running to have two thumbs up for your podcast suggestion and in the running to win one of those Policy Forum Pod mugs, just jump on to the Facebook group and let us know what your thoughts. Many thanks for that suggestion, Avery. That certainly sounds like one that we might want to consider.

Well, that brings us to the end of the podcast. If you have enjoyed today's episode — I hope you have, then perhaps you might want to leave us a quick review on iTunes. It will only take you 30 seconds or so. All you need to do is find that fifth star — that is what we are looking for. If you can do that, it will be a huge help to us in getting word out about the podcast and you will have our undying gratitude.

That brings us to the end this week, but of course we will be back on Monday with another *Democracy Sausage* podcast with Mark Kenny, and then the regular Policy Forum Pod will be back on Friday. Until then, from me, Martyn Pearce, cheerio.

Prof Grafton: And over and out from me, Quentin Grafton.

[closing music 0:56:02-0:56:23]

[audio ends 0:56:23]