

## E-powering a decarbonised future: Opportunities and challenges for Australia- China cooperation

**Speakers:** Associate Professor Emma Aisbett, Associate Director, Zero Carbon Energy for the Asia-Pacific Initiative, Australian National University  
Dr Ross Lambie, Chief Economist, Minerals Council of Australia  
Professor Qinhua Xu, Professor of International Political Economy and International Relations, Renmin University of China  
Dr Yongping Zhai, Senior Advisor on Carbon-Neutrality, Tencent Holdings Ltd

**Moderator:** Professor Tim Harcourt, UTS:ACRI Research Associate; Industry Professor and Chief Economist, UTS Institute for Public Policy and Governance

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#### Professor James Laurenceson:

Okay, good afternoon all.

Before we begin our proceedings today, on behalf of all those present, I'd like to acknowledge the Gadigal people of the Eora nation upon whose ancestral lands the beautiful UTS city campus now stands. I'd like to pay my respects to Elders, both past and present, and acknowledging them as the traditional custodians of knowledge for this land.

Welcome to all members of the audience joining us both in person and online. My name is James Laurenceson, and I'm the Director of the Australia-China Relations Institute here at UTS and we're delighted to be hosting this public forum titled 'Australia-China decarbonisation' event with the generous support of the Australian government and specifically the Australian government's National Foundation for Australia-China Relations.

UTS:ACRI is not a China studies centre - they exist as other universities. Rather, UTS:ACRI is Australia's first and only research institute that's focused on informing the bilateral relationship between these two countries. Our mission is to inform Australia's engagement with China through research analysis and dialogue that is grounded in scholarly rigour.

In this public session, we have four eminent panellists. I'm going to keep their bios brief so that we have as much time as possible to focus on the content and the topic at hand.

Let me first introduce you to Professor Qinhua Xu. Professor Xu is a professor in the School of International Relations at Renmin University, amongst several other senior roles, including being the director of the International Energy and Environmental Strategy Research Centre. Her research fields cover energy, sustainable development, regional security, and more. Professor Xu, I think there is not much you do not cover. I think your research covers pretty much everything. So welcome.

Next is Professor Emma Aisbett. As well as being based at the ANU School of Law, Professor Aisbett is also the Associate Director of Research for the ANU'S Zero-Carbon Energy for the Asia Pacific Initiative. Her trans-disciplinary research involves collaboration with government and industry as well as multilateral organisations such as, but not limited to, the World Bank.

Next we have Dr Ross Lambie. He's the Chief Economist at the Minerals Council of Australia. He's also held the Chief Economist title in the Australian government's Department of Energy and Environment, as well as several other peak industry bodies. Now, Ross, not content with just being a practitioner, you also have a strong academic background having been awarded a PhD in public policy and economics at the Australian National University. Welcome Ross.

And finally, but certainly not least, we have Dr Zhai Yongping. He's a special advisor in carbon neutrality at Tencent. Now I'm sure we're all familiar with Tencent. Tencent, of course, is China's leading technology company, and I just checked yesterday, with a market capitalisation of USD\$400 billion. To put that in context, that is double that of Australia's largest listed company, BHP. Dr Zhai's current position was preceded by decades of experience focusing on sustainable energy development and climate change at the Asia Development Bank. Welcome to all our panellists.

Look, finally, a note that audience questions are welcome at the end. We'll be taking questions from both our in-person and online attendees. For our online attendees, please submit your questions via the Q&A tab at the bottom of your screen. And for our in-person attendees, we'll be coming around with microphones. Please introduce yourself, speak directly into the microphones so that our online attendees can hear your question. And please, please, keep your questions or comments concise and relevant. Thank you.

I'll now invite my UTS colleague, Industry Professor and Chief Economist at the Institute for Public Policy and Governance, not to mention being Australia's very own airport economist, Professor Tim Harcourt to moderate today's discussion. Over to you, Tim.

### **Professor Tim Harcourt:**

Thank you, James, and thanks everyone for being here. Very pleased to be here at my home University, UTS.

We had the Australia-China Alumni Association dinner at the Women's Club on Saturday night. First time I've been in the Women's Club. And UTS, I think out of the nine awards, I think UTS won about seven. And then when they raffled the wine from the Barossa Valley, the person who won the wine was from UTS too. So we're doing pretty well.

I'm really pleased to moderate this session. I'm a professor here at UTS. I'm also the host of the TV show, *After the Pandemic*, *The Big Picture* on China-Australia Relations. Some of you starred on that show, including James himself. And also, *The Great Transformation*, on Ticker, that's the topic of today's seminar.

I also want to make a declaration. I am sponsored by RM Williams and also Akubra Hats in Kempsey. Now, Dr Andrew Twiggy Forest and Nicole Forest have bought Akubra. They've also bought RM Williams. And I just want to say to Twiggy that *The Airport Economist* brand is not for sale, of course, unless I get the right offer. So we'll just put that aside.

Now, in the topic today, it's really timely because we had a lot of tension in the China-Australia relationship. As, thanks to the research from James and Elena and the team, we saw the impact of tariffs. And the impact was really not very much in terms of China-Australia trade, and if anything, probably hurt Chinese consumers more than anything. And the famous British economists said about tariffs is it's like putting rocks in your own harbour. And of course, that's now in the past, and we're now seeing the trade relationships starting to stabilise.

We've had issues in the South China Sea and the rest of journalists and academics, but now we've seen something of breakthrough – Prime Minister Albanese going to Beijing – some of you I know were there. The 50th anniversary of Gough Whitlam famously going to Peking, as it then was. We had the APEC leaders' meeting, which, despite the headlines, were some very constructive dialogue on the economy and on trade and on climate, including between President Xi and President Biden.

And the other piece of good news is why we're here today, climate innovation. I know from the series, *After the Pandemic* and *The Bigger Picture*, that people like Anthony Coles who's here today and Professor Roc and the team have done a lot of work in preparing both China and Australia for a net zero future. And despite all the headlines we see in geopolitics, we see a lot of Australians and Chinese and Chinese-Australians doing a lot of important work on the relationship.

And not the least is our illustrious panel we have today. Panel beaters, I'm going to first ask Professor Emma Aisbett from the ANU to begin the first presentation. Emma?

**Associate Professor Emma Aisbett:**

Thanks a lot, Tim.

I would also like to extend my respects to the traditional owners of the lands on which we meet today or on which people online are joining us today as well.

The topic of my presentation is, I think, a really positive development overall, although with caveats, in international climate and indeed energy and decarbonisation regimes. And that is a phenomena which I call international green economy collaborations.

And we can have the next slide.

And I'd like to focus on their potential for Australia and China today. So these are international policy collaborations aimed at achieving mutual benefits. And I think that's a really important distinction. Not only are these collaborations aimed at environmental and industry win-wins, they're also all about ways in which the collaborating countries can have mutual gains. And I think that's an important sort of contrast to, for example, a deep trade agreement which might have some gains but usually has winners and losers. And you're hoping that on net, the winners outnumber the losers. Whereas these IGECs, as I call them, are about only doing things where there's mutual gains at every step of the way. And, in particular, I think of them as international green industrial policy developing cross-border green supply chains or green value chains. There are many examples of which both China and Australia are sort of partners or collaborators. And you can see some examples on the slide here.

Next slide. Thanks.

So, what sort of things? We all maybe have a feel for what's in a trade agreement and what's in a deep trade agreement. What do these international green economy collaborations involve? The most common thing they involve is information sharing. And indeed, many people think that learning and systematic learning is the

most important element of green industrial policy. So this is one example of the way in which you can think of these as an international form of green industrial policy.

The second most common thing, technology collaboration. So how do we figure out what technologies, how do we work together and share both our R&D and our learnings about implementation of new technologies? A new emerging phenomena that's only popped up in the last couple of years as some countries look to scale their decarbonisation efforts is regulatory collaboration. We know that if we're going to rearrange the global system of trade and investment, we're going to need new forms of regulation, new ways of understanding what the embedded carbon flows are, for example. And to do that without producing ourselves an enormous number of barriers to trade and investment, we need to collaborate on aligning those new forms of regulation. We also see, particularly in IGECs between richer and poorer, education and financing involved in these as well, and this is where some of the pointy end of perhaps potentially problematic aspects of IGECs arise. You see some market coordination and supply chain development and that can sometimes involve an explicit element of trying to carve out certain partners, often unfortunately China.

So there you go. I think I've stayed to my five minutes almost.

I think these IGECs can have potential for enormous benefit. They will have potential for benefit if we focus on using them for that international green industrial policy and developing those mutual supply chains. They are an option because of their focus on mutual gains and the avoidance of losers being involved even when there are geopolitical tensions in the air. And you saw that for example, from the fact that China and California have recently formed one of these collaborations via an MOU.

What we do need to look out for is trying to avoid their use as a strategic trade policy element. And one of the best ways I think to make sure these are focused on real collaboration and less politics is to build into them, which many do, the opportunity for track 2.0 diplomacy for researchers and industry to work together on some very, very technical and challenging issues in developing new green supply chains.

So thank you very much.

**Professor Tim Harcourt:**

Thank you, Emma. You kept the time on a seasonally adjusted basis, so that's a really good performance.

So Professor Qinhua Xu, would you like to take the floor?

**Professor Qinhua Xu:**

Yeah.

**Professor Tim Harcourt:**

You're on.

**Professor Qinhua Xu:**

It's my turn. Thank you.

**Professor Tim Harcourt:**

You're on. All yours.

**Professor Qinhua Xu:**

Thank you, everybody. I'm honoured that I'm here. I give my thanks to Roc and all of you.

So I'm here, so I have a very treasured opportunity to learn from all of you because I bring several questions I don't think I can settle by myself. As I was just back from Washington in the United States – and the Chinese government just signed agreement about the climate change and also energy transformation – and on the discussing with the Department of State, so we are talking about China, so I said that like China is the largest developing economy of the world and it was refused by the senior official of the State Department. And she said that none of the world now admit that China is a developing economy. So we all know that if we categorise one country into developed or developing, it means a lot. It means your responsibility and your money invest into the emission cutting.

So China is a developing economy or developed economy? I think this is one question. Of course, at that time, I bounced back to her that – I invited her and her team, mainly climate, energy, et cetera environment, to pay a visit even in the very inner circle, Beijing, the city, downtown, maybe can find that the developing differences. This is one question.

Secondly is when I was meeting with Daniel Yergin, I think most of you know him because he wrote so many books and he established IHS [IHS CERA, now part of IHS Markit]. And also, he has a very popular energy week, is Cambridge Energy [Research Associates] week, so many NEO, they all joined these companies. So he referred to he is writing another book. The book is mainly focused on the renewable energy transition. And one thing, one concept, I am very interested in, that is just you referred it to the collaboration corporation and we're often talking about energy. For example, Sino-Australia energy cooperation and conflict. Are there any conflict existent? I think there are. And then we remove from the energy to climate change. So he raised one concept is 'climate change geopolitics'. So that really make me a little bit nervous because if there is the climate change geopolitics means that never quite in our – no matter economics and politics and also society, I also told him. So he told me that echoed me that he will quote my words into his new book. That is the second question.

The third question is, what's the impact of climate change cooperation? Positive or negative? When we were in the Paris Climate Dialogue conference, I were there. So I hand my hand, I asked the question, 'I have a question.' At that time, it is 2015. So I asked, why when we were discussing about battle the climate change, always, it seems that we were suffering the economic going down and lose lots of things? We cannot, while we battle the climate change, and then we enjoy our economic growth. And no one answered me. So I feel that might be the limited language, my English is limited. So I think how can we work together and use the tool of energy and climate change cooperation to push our GDP growth and to push our economic growth and make our livelihood much better for our people. That is the cab driver. Yesterday evening, he drove me from the airport here. He asked me, 'How is the economics in the United States? How is the economics in China?' And I asked him, 'How is the economics in Australia?' So how? Thank you.

**Professor Tim Harcourt:**

Thank you very much, Professor.

And our next speaker is Dr Ross Lambie, the Chief Economist from the Minerals Council of Australia. Ross.

**Dr Ross Lambie:**

Thanks, Tim. Thank you everybody.

I just want to set a bit of context here, just to start off with. There's some pretty big mega-trends affecting the world at the moment. We know there's shifting demographics, we've got growing resources coming under pressure. We've got shifting geopolitical arenas, we've got rapid technological growth and we've got this increasing environmental deterioration. And these are all things that have been with us for a while and they're going to be with us for a while.

And amongst that, we have the topic for today, the decarbonisation. That decarbonisation has touch-points on all of those particular trends that I just mentioned to you. And it does present us with a really big opportunity in terms of the changes in infrastructures of economies, the transformation of energy systems, to actually deliver us a far better future. There's no doubt about that at all. The question is how do we get from here to there? Now, we've seen a lot of numbers bandied around in terms of the economic opportunity that stems from this. USD\$4 trillion by 2030 in mining, smelting and refining. That's US dollars. A lot of money. Numbers like between USD\$160 to 300 million in mining investment each year alone through to 2050.

The materials requirement is huge, it's astronomical. I'd even go as far as say it's unbelievable. So it means we're going to see some changes. And what we're confronted with at the moment, in terms of the possibilities of getting from here to there, we've got to expect will change over time. They'll change over time as technologies change. We'll get breakthroughs, we'll get adaptations. Anyone here that thinks a current EV battery is going to be the same in five years' time as to what it is now, is probably taking a very conservative position. We're going to need those breakthroughs because there's a lot of materials that have to be supplied.

And the one thing I just want to let people know here is it takes a long time to bring on new supply. Lithium mine, about four years. On average, over the last 20 years across all mines globally, the average time from discovery through the first production was 15.7 years. Now we haven't got a lot of time. So that's new supply. We've got to try to get more out of what we're currently doing, that's going to require new technology. And we're going to have to find ways of reducing demand for these materials, which once again is going to come down to our ingenuity, innovation and the technology breakthroughs that come from that. There's a lot of opportunity for collaboration amongst all that. But I think one that I'd really like to focus on is supply chains. At the moment we are seeing a world where policies are being adopted in response to concerns over supply chains, from the extraction of materials right through to these green manufacturers that we are going to need for this transformation.

Diversity of supply chains is probably a very good thing. I personally think it is a good thing. But we need to be able to do this in a way whereby we truly are delivering supply chains that are cleaner and greener. We've got to have supply chains that are going to take the risk out of prices so that we don't get excessive volatility of prices over time that upset investment in operations. We need supply chains that are also going to deliver the environmental and social outcomes that we all want and not have adverse consequences for that.

And finally we're going to need supply chains that really do provide the security and resilience against geopolitical disruption and logistical events that could cause us problems. I think if we can sort of get to the point where there is a good willingness to collaborate on how we achieve those outcomes, we're going to be in a good place to be able to deliver the transformation that we all want.

**Professor Tim Harcourt:**

Thanks very much Ross.

Because rocks and crops are the lifeblood of Australia and by rocks and crops, I mean mining and agriculture, not Professor Roc up the back there.

So our next speaker, if I could invite Professor Yongping Zhai from Tencent Holdings to take the floor. Professor.

**Dr Yongping Zhai:**

Thank you. Thank you, Tim.

To clarify, I do have academic background but I'm not a –

**Professor Tim Harcourt:**

You're not a professor anymore?

**Dr Yongping Zhai:**

Currently I'm not a professor. I used to be. But anyway, that's a detail –

**Professor Tim Harcourt:**

We can arrange something here if you want.

**Dr Yongping Zhai:**

Sure. I assure you that I'm so honoured, happy to be here in this panel. To tell you something about the background of this guest coming, joining this meeting: if in China in the panel like this, if there is one of these gentlemen here in the panel and Qinghua here, it is deemed to be a high level. Now we have five of them in the...

**Professor Tim Harcourt:**

Is that right? So we're high level.

**Dr Yongping Zhai:**

We have Dr Sun Xiansheng, who used to be the head of International Energy Forum. It's a global energy organisation. We have Professor Qi Shaozhou. He is the pioneer of carbon trading in China. And Professor Qian, he just stepped out, he's professor of Tsinghua University where I studied as student, but he's a professor, he's a real professor.

So five of us here, but I've been different from them. I've been mostly working outside China for so long. So in that capacity I've been an observer of Chinese policy, Chinese industry development. And I am convinced of one thing. If China commits something, China will do it. And for one reason, for example, we talk about peaking of carbon emissions in China by 2030. But actually so happened, I read a story this morning, a new story this morning, Carbon Brief, an NGO organization, has issued a paper saying that China may have already peaked in terms of the emission this year. This year. The solar PV – you talked about supply chain – the solar PV production capacity is about a thousand gigawatts in China. It's basically doubled the total demand of the whole world. There are many things like that.

And for myself, I said that I spent 30 years as a development banker, a financier in development bank based in Philippines for 20 years. The time I was retiring, Chinese government said that China set the goal of achieving carbon peaking by 2030 and carbon neutral by 2060. So the government set the goal, everybody want to follow, including Tencent. So one of the first thing they did is trying to find the people to help them. So I was approached by Tencent. Very simply they dropped a message in LinkedIn and saying that, 'Would you be interested to join us?' I wrote back saying that I have already passed age of looking for a new job, but if you want a recommendation I'll do. But they said, 'No, no, no, we want to talk to you.' So I had this – they

don't call it interview, they said that 'Let's talk'. So I talked to one level, one level, one level, until the head of the company. So I was offered a job as an advisor. So in this position and together with the whole team Tencent hired for this carbon neutrality, we issued and we developed, prepared a roadmap for Tencent. China government set the goal of 2060 for carbon neutral. Tencent say, 'We do it by 2030.' So that's a company level. And all companies will do similar things in China.

So that's why when I say that when Chinese government says they want to achieve something, that they are followed. That's how the things happen. I observe as an advisor, now I'm part of it. So in Tencent, when we say we want to pursue, support carbon neutrality in the country, we mean three things. I use three letters just to remember this easily. One, CBS. C is consumers: how Tencent as a leading internet company can support consumers to change their way of living, going more for green style living style, like going out with public transportation, like buying secondhand, avoiding any waste.

So Tencent with this, our WeChat program, we can actually capture quite precisely the so-called green living style would mean in terms of carbon emission reduction. So we can group that and even trade that amount of carbon reduction by individuals through the carbon market. So that's C side, consumers.

Of course we support B, business. Tencent again use our ability of developing software and all these digital tools, we support industries, all industries, steel industry, cement, power, transportation and so on. So support companies to go for digitalization. And through that digital process, we achieve low carbon emissions because digital would mean better emission or better ability to integrate intermittent renewable energy. So that's our support to business.

And the third one is S. S could be sustainable development, but we call it also sustainable social value, meaning how we support emerging technologies that would be needed by 2060 when China or the whole world would have achieved net zero economy, but new technologies would be deployed.

So Tencent has a huge amount of budget to support emerging technologies and we are particularly developing one of these technologies called Carbon Capture, Utilisation and Storage, CCUS. And in this regard I think there is a potential – I come back to the theme of this panel discussion – there is a great potential for China and Australia to cooperate in this technology because both China and Australia, we have abundant fossil fuels. And if we want to continue to support the economy and still achieving net zero, we cannot avoid using CCUS technology. And that's why Tencent also believe this is the technology we should put more effort, put more money to support it. And then before coming to here, I had a tour in different universities in China and talking to researchers, see their laboratories, research work in CCUS and see which of these could benefit or which one we could support from Tencent. So that's what I want to share with you at this stage. But open for all questions. Perhaps also questions for – as I was former chief of ADB [Asian Development Bank] for energy, I can also talk about the region. Thank you.

**Professor Tim Harcourt:**

Thank you.

I think after that performance we'll have to upgrade you to professor again. Don't you reckon? It might be a fair chance. I wanted to ask you, Yongping, because you're a very cosmopolitan, well-travelled, international person in the region and globally, how does it compare operating within China and outside China? What have you had to change, or is it much the same principles? How would you describe it based on your experience?

**Dr Yongping Zhai:**

Interesting question.

Actually when I joined Tencent, everything was new to me and when people look at me they find also quite strange since I've been outside for 35 years. I actually studied in France, I worked in Africa, in Asia, and never worked in China. Never, never. This is my first, truly my first job in China. So it made the internal news that Tencent, they even wrote a story about me, how an energy guy of 62 years old just joined Tencent and for what. So it's interesting that they find me also quite different. I think overall there are two things that would count. One is similarity in terms of pursuing a company goal and everybody should follow and do that. Same at ADB or any organisations. But I think in China I would see perhaps more structured, more of command that people will follow.

This may sometimes be counterproductive, but mostly I will see that this system works in China, in Chinese context. If company have set a goal and usually this goal is disaggregated and broken down to different level, and people just deliver according to what is expected, eventually a company will achieve goal. And this system is similar, actually, in whole China. When China said they'll set the goal for 2060 for carbon neutrality, actually the first thing they go to each province, you would take your share, every province would have the share of responsibility, how to help the whole country to achieve it. And then the provincial level would go down next level. I think this system is working. I'm now part of this system within the company and whether within the company or within the country, this system of central command can be counterproductive sometimes. But if the goal is correct, it's effective, that's what I see.

**Professor Tim Harcourt:**

It's interesting, isn't it, because China uses the command economy within a national economy. But corporations all around the world use this – whether it be university or Microsoft or probably Elon Musk, they all set goals and they provide command structures. So if it works in companies, should it work in a country or vice versa?

**Dr Yongping Zhai:**

I see it working in China as a country.

**Professor Tim Harcourt:**

The rest of the panel on this, I mean it's interesting because China does have a five-year plans, has command and control. Prime Minister Albanese has net zero. It's a target. Does the rest of the panel think that targets, aspirational, are the way to go, or do you build up from the ground up? Because for all the targets in Paris and so on, we do see a lot of companies doing quite a lot on the environment space. Emma, do you want to have a go at that?

**Associate Professor Emma Aisbett:**

Sure, thanks and thank you to my fellow panelists for a fascinating start to the conversation.

You hear a lot about the signalling importance of aspirational targets or of targets in general. I think that the key distinction about how useful they are – because we know there's a lot of co-ordination issues that hold back these transitions like green transitions – and I think it's absolutely true: if everyone believes the government is actually serious about that target, then they can be enormously helpful, because then everyone can arrange themselves and start overcoming those coordination problems. But aspirational goals that industry doesn't believe are a lot less useful I would argue.

**Professor Tim Harcourt:**

So the credibility of the target makes a difference.

Qinhua, you want to comment on that? The use of targets? You've worked in Washington and China and elsewhere. Do you think the command control works necessarily outside China?

**Professor Qinhua Xu:**

I do not object. I agree. Yeah, I just agree with that –

**Dr Yongping Zhai:**

Maybe I can, before she's – I can help her a little bit.

This morning Professor Qi Shaozhou presented – made a presentation about the whole picture of climate change, and he made a statement I fully subscribe to: he said that climate change is a typical example, or the greatest example, of market failure. Market failure. I turn around his observation to another way. I would say that resolving this climate crisis, you cannot rely on market, because it's cause of the problem. So the climate change is market failure, so I'll fix it. We need command, we need ambitious target, we need strong governance structure to solve this problem.

**Professor Qinhua Xu:**

So that is, just as another professor – just before finishing the morning session – he referred to the market and the non-market policy. I think climate change is a market-thing-based one, but with non-market policy, behaviour and administration to push forward, that is.

So just a story I referred when I attended to the Sustainable 2030 in the headquarters of United Nations, and we discussed in 2019 why the energy transition cannot be so successful. So we choose the reasons one, two, three, four, five, six, among the 24 reasons. And finally we got one of priority. This one is policy. That mean we found that the policy barriered the energy transition from moving forward – because of the politics and policies. So that is – I answer your questions, I not object. I really agree with Professor Zhai and also you and with the target oriented.

Thank you.

**Dr Yongping Zhai:**

Let me add one thing – that when I say that command structure works for addressing climate change, but I will also believe that to produce, to produce Coca-Cola or something else, markets is the best option.

**Professor Tim Harcourt:**

It's an interesting question, isn't it? Because the climate advisor to the Blair-Brown government in Britain, Sir Nicholas Stern, he described climate change as the world's biggest externality, the biggest market failure of all time. And so that whatever you believe on how climate change is caused, you still have to take out some insurance. So it's sort of an externality-type issue. But there is also the question of government failure as well as market failure. So how can we be so sure that the government, whether it be Australian or Chinese, will get it right in terms of setting targets?

**Associate Professor Emma Aisbett:**

Can I jump in?

**Professor Tim Harcourt:**

Yeah.

**Associate Professor Emma Aisbett:**

Well, probably other fellow economists I think – but I can't let the panel conclude that carbon pricing is a waste of time, which is, dangerously, what we sound like we're saying. We know optimal policy for an externality is to price that externality. I think the point is that the green transition that we need is riddled with a whole litany of other market failures and particularly because of how slow action has been, pricing carbon, pricing that externality on its own, is no longer anywhere near sufficient. So you need a coordinated set of policies to address those other market failures at the same time. And that's where you have domestic green industrial policy and you have international forms of green industrial policy like those collaborations that I was talking about.

**Professor Tim Harcourt:**

Well, go on Ross.

**Dr Ross Lambie:**

I'd just like to endorse what Emma said. I think this is really important. Where we've come to, we haven't left ourselves much time in terms of the aspirations. Therefore, there's got to be a good mix of policy, there's got to be credible policy, there's got to be policy certainty there. But there's got to be coordinated policy. We're talking about a global problem that requires a global solution. Now if you look at the latest energy statistics that have come out with emissions, the top five emitters globally in 2022 accounted for almost two thirds of CO2 emissions from energy. So we get nowhere unless we are well coordinated and aligned on this. So we need the policies to support that.

**Professor Tim Harcourt:**

Well pricing carbon – look, my grandfather and his brother were professional punters, which meant they went to the horse races and would beat the bookies. And my uncle Sam used to always say, 'You always back a horse called self-interest, because it might not win. But it's always trying.' And the principle of incentives is that you do have a price on carbon so that you can have people drive investment in that way because you can't just say, 'All right, we'll hug more trees and plant more trees and do this and that.' You've actually got to have some sort of market mechanism for investors to respond. But I have a question for you, Ross, because it's interesting with coordination and going to the UN, and if Ireland goes to the UN and says, 'We will get out of coal mining by 2030,' everyone will go, 'Well thanks a lot. You're not in coal mining, so big deal.'

But if a country like Australia where coal, iron ore, LNG, a lot of rocks and crops that have driven our great relationship with China since Gough Whitlam went there, for us it's quite a considerable deal because it's our comparative advantage. So do you think to some extent you have to have a transition where the same companies that are doing great things traditionally in mining are now looking at lithium and critical minerals and also looking at green hydrogen and so on? If the same companies are sort of driving that transition, is that in a way an insurance policy from moving too fast out of fossil fuels?

**Dr Ross Lambie:**

Yeah. This transition away from fossil fuels to critical minerals or green minerals. I think it doesn't really portray the reality that's going on. Look, the world's going to need our traditional metals and minerals, and the reason I can safely say that is material demand growth is just going in one direction, so it's not going away, and we're

going to need a lot of this stuff. To build what we need to build for the clean energy transition, we need steel, we need aluminum. We need, to a large extent, metallurgical coal for that steel. Yes, green steel is coming, but it'll take time and it'll take a lot of time.

When it comes to things like thermal coal, we're still seeing a lot of coal fire power stations being constructed in China. But it's not just China, through Asia, throughout Asia. When you look at Australia's share of exports of thermal coal compared to global thermal coal consumption, it's tiny and we're pretty good at it. And even the IEA, when you look at their energy projections, coal doesn't disappear. But that just highlights the importance of what do we need to do to ensure that if we're going to use this, we do it in a way that addresses the emissions.

**Professor Qinhua Xu:**

I have a question.

**Professor Tim Harcourt:**

Did you want to add to that, for Ross, or you want to add to that?

**Professor Qinhua Xu:**

For Professor Zhai.

**Professor Tim Harcourt:**

Okay.

**Dr Yongping Zhai:**

You have a question to me?

**Professor Qinhua Xu:**

Yeah, yeah.

**Professor Tim Harcourt:**

You can ask him a question.

**Dr Yongping Zhai:**

I'll ask you a question next.

**Professor Qinhua Xu:**

Because I very enjoy such kind of dialogue pattern to discussing the things, so maybe we can produce some good idea and new concept.

I'm not very sure that because how we can feel that, for example, China has reached the carbon peak and carbon neutrality, but there are so many indicators, blah, blah, blah blah, from different ministries. For an enterprise and a company like Tencent, so you just say you claim that before 2030, you have carbon neutrality.

What sort of indicators you can show to the society or to the world that we reached, we already have the carbon neutrality? It's interesting.

**Dr Yongping Zhai:**

Thank you. Thank you for the question. It's maybe a chance to present a bit of Tencent business.

Tencent is known for WeChat and WeChat Pay and so on. Our only energy consumption, very significant part of that is internet data centers, IDCs. And IDCs are very known to be a stable load. Every 24 hours, more or less the same load, unlike you have a peak and load. IDC has to be there for all the time. So it's quite easy compared to other business to see how much Tencent would buy green power or how much rooftop solar we have installed.

And today, we have seven percent of our power coming from green sources. And we know next year will be 10 percent and we have a plan for reaching carbon neutrality by 2030. We know that by 2029 we will still have a gap, for sure. We will not have 100 percent of everything by 2029, 2030. We need to buy from market carbon credit, credible carbon credit.

So today if some people, business people, develop like carbon sinks in new forests or some form of carbon things in ocean and CCOS, the negative emissions, Tencent will be ready to buy so that we achieve 100 percent or carbon net-zero by 2030. So by all this means we are assured this can be measured and the transparency will be much higher than any other business, because we have the only consumption areas, ADCs. That's for Tencent. But I know for other business it will be quite complicated to even to tell the world. Even, actually, for most of companies today in China, many having a clear picture of their own footprint is a problem. They don't even know how much is their footprint. Tencent have made that area of business for us because we have this ability of using digital tools to capture different part of the business and see how these emissions at each stage of the production. So we are helping the companies do their own MRV – measurement, reporting and verification – through using our platforms, digital platforms.

**Professor Qinhu Xu:**

Thank you. Thank you.

You just set a very example to introduce our Chinese, what we are doing, because Tencent is one part of our Chinese, the whole community. So it's just like good story.

Thank you.

**Professor Tim Harcourt:**

Is there an issue, though, with consumer behaviour? Given our carbon price example, for instance, if you survey people and you say, 'You're worried about climate change,' and everyone goes, 'Yeah, I'm like Greta Thunberg. Yeah, I'm all for it.' But then once they pick up their power bill, they go, 'Oh gee, look at that.' Is there a case of pursuing, convincing people that when they put in their solar panels like in Adelaide in South Australia, when they start moving to renewable energy, that the bills are going to come down? Isn't that more convincing than just asking them what their view is on climate change?

**Dr Ross Lambie:**

Yeah, Tim, I think it's the cost. I don't think we've done a very good job of really being upfront with people –

**Professor Tim Harcourt:**

Who's that we?

**Dr Ross Lambie:**

I'm talking about governments. Governments and also, broader, those in civil society that can communicate effectively publicly, that this will come at an economic cost. But as we've been highlighting in the discussion today, this is about addressing an externality. That's not a bad thing, because when it comes down to the transition to renewable energy, and Australia's got a very ambitious target – we are talking about 82 percent by 2030 on the east coast here – and we hear a lot, and we saw a slide this morning about levelised cost of electricity. But I think, this is something that concerns me a little, because – and it's not just with our electricity – component costs don't matter at all. It's system costs that matter. It's how we get what we need from the supply through to the end user, and it's that total cost that we should be upfront about. And I'm not being pejorative about that. I'm just saying we've got to be transparent about it so that when people do pick up their electricity bills, and they might see there that if we had the breakdown that goes through it, the generation costs are down, but transmission costs are up and storage costs are up; they understand this is all part of getting us to where we need to be. Otherwise, I think there is a risk that people will arc up and probably be a little bit more reticent about getting on the pathway and supporting some of these initiatives.

**Professor Tim Harcourt:**

I had in mind South Australia when Jay Weatherall and his government had Elon Musk build the battery and there was a blackout in South Australia, nothing to do with the renewable energy. And of course, Malcolm Turnbull and Josh Frydenberg jumped on them and said, 'Well, there you go. The greeny policies have ruined your electricity.' If people play politics with it, then you're not going to make any progress, are you? Because they're going to be quite fearful of their economic future, would they not be?

**Dr Ross Lambie:**

Yeah, and I think what you're talking about there just highlights that we need to do this in a very transparent and planned way. I mean, look, getting to 82 percent on the east coast here is going to be challenging. Can it be done? I guess so. Do I feel as though there's risks? Yes, I think there's risks in terms of reliability and I think there's risks in terms of cost, given the small amount of time that we are setting out to achieve this. And if we can do it, I think it'll be wonderful, so don't get me wrong. But I think it's just really looking at it and being very, very clear that this hasn't been done anywhere else in terms of the scale of what we are looking to do, and therefore we are truly being world leaders in terms of this policy.

**Professor Tim Harcourt:**

So we can put the green back in the green and gold, Ross?

**Dr Ross Lambie:**

Yeah.

**Professor Tim Harcourt:**

Yeah, he's a Kiwi.

Emma, you talk a lot about collaboration of research institutions at Australian University. At UTS, we have some researchers from China who are now Australian who worked on the vaccine for COVID and the SARS vaccines as well that are world-class, from the northern reaches of China, for instance.

When I had to interview Kevin Rudd, former prime minister, now Ambassador of the United States, on my program, and Malcolm Turnbull, and various people, they had to fill in a little form to the government saying that they were working on my program sponsored by the *People's Daily Online* and Channel 7, and they'd report what it was about, and so had I. So when you think about collaboration, do you think it's that easy to collaborate with international partners when your federal government of the day is asking you to basically report back on your research collaboration in quite severe detail in some ways?

**Associate Professor Emma Aisbett:**

Well, I think if you're collaborating on the sort of things that I work on, which is regulation, that's actually pretty good if you're talking to the government, because they're ultimately the ones that you need to have on board and that need to implement. On the other hand, it depends if it's being weaponised and it can work against more technology-focused research. And that's where I think what we all need to do throughout this transition in every element, there are plenty of wins, there is still a lot of low hanging fruit. And I just think the way to get through this is to just go for those opportunities and not spend as much time agonising about the things that we can't do yet. Because I think these things, they snowball, they build momentum. So do the things that we can do now and that will help make it easier to do the things that are looking pretty hard right now, and that's all the way across technology, markets, and, I think, government-to-government collaboration.

**Professor Tim Harcourt:**

On the show, we interviewed GREENSTEEL in Whyalla. We interviewed the German industry minister, because she was looking at green hydrogen from Australia to Germany because they can't get no gas from Russia anymore. And a lot of this is maybe 10 years in advance, but they're making the investments now. And what I was amazed with was the number of mining companies that have traditionally been in LNG and coal and iron ore, they were the ones taking the investments forward into renewable energy, like your Fortescue's and so on. That's got to be part of the show, doesn't it?

**Dr Ross Lambie:**

Oh, it is. And it's happening and it has to happen. At the moment, those operations in remote locations are basically running off diesel generators, so they know that's not sustainable. They're doing a lot in this area. But look, there's one technology I'm just going to throw out there because I think it's got to be discussed and that's nuclear. I think nuclear has a role to play globally in this decarbonisation effort. And you talk about Germany, they made a conscious decision to shut down nuclear power plants and rely on coal. And I struggle to follow the logic when we're talking about a carbon budget. So nuclear is something that we are pretty strong advocates for. Further down the track, our mining operations, the big ones, they'd like nothing more than to have small modular reactors that they could rely on. But at the moment, they're putting in what they have to in terms of renewables and storage.

**Professor Tim Harcourt:**

And your views, Yongping, on nuclear?

**Dr Yongping Zhai:**

Yes. Actually, once I studied in France and I went there, the most interesting I found was French nuclear program. And even today, 70 percent of French power is nuclear. 70 percent. And to the extent that in France

the carbon intensity of one kilowatt-hour is about 50 grams. Well, in Germany, maybe 500. It's basically coal. So if we look at the objective or the end result of what we want to achieve is a failure in Germany, frankly speaking. It's a failure.

And France, they never said that they want – actually, they have their own version of transition, but they already have achieved a low carbon system, so nuclear has a key role to play. Of course, I know that different countries have different conditions, public opinion, perception, all this counts. You can't develop nuclear in any place because of this issue. Public opinion, perception is an important factor for nuclear and that's to be recognised. But I think if the whole world want to achieve carbon neutrality or net zero, nuclear must be there. Otherwise, the whole process may be delayed for 20, 30 more years because this is clean low carbon and working base load, working together with renewable energy. That's a good couple and they work together with the intermittent renewable plus nuclear. But I know that there are different opinions on that. But what I want to say that without nuclear, the world will not achieve, necessarily.

**Professor Tim Harcourt:**

Okay, Emma.

**Associate Professor Emma Aisbett:**

Thanks. I can't let that one go.

Sure. Nuclear makes sense in some places. I think it's an unnecessary diversion in Australia. We know it's going to lead to social division. We know it's more expensive. We know it's more complicated, so I don't understand why it gets brought into the conversation in Australia except as a diversion tactic, except as a delaying tactic for the transition. And I don't know why we're talking about base load. Everyone knows we don't need base load, we need dispatchable energy. For example, pumped hydro or river-pumped hydro batteries. So I don't know why old-fashioned language is being brought out, all due respect.

**Dr Yongping Zhai:**

Just to clarify just about this word base load, because I understand what you're saying. I agree with you because when the base load is coal and combined cycle of gas, I agree with you. But when the base load itself is clean, why not use it? That's the issue.

**Associate Professor Emma Aisbett:**

Sure. But we don't need base load. That's not what energy systems need. They need dispatchable energy.

**Dr Yongping Zhai:**

Well, we can use whatever way to describe the physical system, if we don't use the word base load and there will be something. That something can come from nuclear.

**Professor Tim Harcourt:**

Now, Ross, you're not a diversion guy. You're not a stirrer.

**Dr Ross Lambie:**

No, I'm not. I almost disagree with everything Emma's just said there. Look, theoretically, yes, we can have renewables and we can have battery storage and pumped hydro. It is an immense amount that we're going to

need. Battery storage needs to be extremely deep and we need lots of it to deal with those times. And we get it in Australia and we get it on the east coast here every year – three to five days where we have a deficiency of either wind or solar. Once your battery goes flat, you've got to recharge it. And if there's nothing there to recharge it, you need other batteries there to come into play. Simon Micho from the circular economy unit at the university – sorry, the geoscience –

**Professor Tim Harcourt:**

What was the principle?

**Dr Ross Lambie:**

Yeah, over in Finland, geological survey in Finland, sorry.

**Professor Tim Harcourt:**

They're all in circular economy.

**Dr Ross Lambie:**

Yeah, he's done some work on the material requirements by moving solely to renewables and storage, and the material requirements are absolutely astronomical. They're huge. As I said in my opening statement, unbelievable. So we can't get there without having renewables supported by good base load. Now, whether that's coal with CCUS, gas with CCUS, or nuclear, we need something there to support the renewables. It's not an either or, it's just we need it there to be able to make an energy system work.

**Professor Tim Harcourt:**

He did spend a lot of time in the sauna, that guy, I've got to say, that guy from Finland. But I've been to the circular economy place in Finland. Very interesting, Helsinki.

We've got some time for questions and the worst thing for a moderator is to have a panel that agrees with each other, so this is really good that there's a bit of disagreement. So I'm going to ask for the floor for questions and there'll also be some questions online.

Anthony? Yep. You got a mic coming?

**Audience question:**

Of course. The question and the topic is for collaboration, and I think the debate is perfect example of that. Australia exported just \$500 million worth of uranium last year, which is less than we did in beef. And the point in from China's perspective is that they are transitioning 500 of their 2,000 coal powered plants to uranium, and they're moving to small reactors, and there's an opportunity for collaboration for new fuel supply and lifecycle management.

**Professor Tim Harcourt:**

Okay. Which question to the panel?

**Audience question:**

So the comment is about what our needs are and our challenges are and our opportunities for collaborate. Is there areas for collaboration on uranium fuel?

**Professor Tim Harcourt:**

Who wants to start? Or you start, Ross.

**Dr Ross Lambie:**

Yeah. Look, I think the answer to the question there, there obviously is the opportunity to do it given the fact that what we are allowed to do in Australia here is mine the uranium and export it. We can't do anything else with it.

**Professor Tim Harcourt:**

Where do we put the waste?

**Dr Ross Lambie:**

Well, at the moment what we do is we export uranium to several countries around the world and they deal with waste.

**Dr Yongping Zhai:**

With the consuming country.

**Professor Tim Harcourt:**

Oh, okay. It's part of the deal. Did you want to add to that?

**Professor Tim Harcourt:**

I have a question online from Summer Xi. Now, she's asked, 'Any examples of specific areas where Australia and China can collaborate, either traditional or emerging?' Who wants to have a crack at that one? What do you reckon?

**Dr Yongping Zhai:**

I try to start by repeating what I said, so the rest, the other panelists –

**Professor Tim Harcourt:**

You're dominating today, aren't you?

**Dr Yongping Zhai:**

Just simply one word. CCUS is the area of cooperation.

**Professor Tim Harcourt:**

Yeah. Okay. Do you want to add to that? You haven't said anything in a while.

**Professor Qinhua Xu:**

I heard from the visitor of your government that example that how we can have some collaboration in the clean coal technology.

**Professor Tim Harcourt:**

Clean coal technology?

**Professor Qinhua Xu:**

Yeah.

**Professor Tim Harcourt:**

There you go. Oh, there you go. Well, there's –

**Associate Professor Emma Aisbett:**

And iron and steel supply chains, obviously. Decarbonised iron and steel supply chains – where exactly? So traditionally we just dig it up and send the ore in big ships to China. We know we're working with other countries as well who we supply, because we're the world's like just exporter of iron ore, about how decarbonised iron and steel supply chains might involve some of the use of the great co-location of some of the world's best renewable energy resources and world's biggest iron ore resources in northwestern Australia. And so that's obviously got a lot of geopolitical element to it, obviously one that would be really great if we could collaborate in a respectful way.

**Professor Qinhua Xu:**

I do want to add some information. It was a story – because very impressive to me that in 2019, 100 people held in Japan, and when South Korean diplomat asked the Australian diplomat, so we bought a large amount of coal from Australia – we only need the coal, we don't like the carbon. So how can we combat the coal and then we ship back the carbon to your country? So I think, that it might be that only China and Australia can have some sort of collaboration in the clean-coal technology, maybe so many countries in the world they do want. And in my knowing that at that time there is no technology can ship, that so-heavy carbon back to some place. But now there is. It was invented by your Australian, some university, and to rebuild by the liquified gas, the ship. So Australia is top one in many technology, but I think maybe the applications, and also maybe other technology transferring, should be, how to say, quicken or step forward faster than before, in my understanding. Thank you.

**Professor Tim Harcourt:**

Thank you. I've got another online question.

Yongping, you are very popular. There's another question for you. Okay. All right. It's a long question so you make the answer short. So Bridget McIntosh, 'I was intrigued by your comment that CCUS was essential, because China and Australia cannot avoid using coal because we have it in abundance. Australia and China have many abundant energy resources, coal, solar, wind, water. Why would you say that coal was unavoidable?'

**Dr Yongping Zhai:**

Okay. I will use one of the slides presented this morning by one professor. He's shown that by 2060, between 50 and 60 –

**Associate Professor Emma Aisbett:**

Microphone, sorry, online.

**Dr Yongping Zhai:**

One of the presentation presented by eminent professor this morning in his slide is showing that by 2060, around that time, that we are very close to carbon neutrality. But there maybe, oh I have to get this right, 10 million tons of CO2 left. Because even by that time there's still coal being used, by that time there's still coal used, even not for power, but there for steel industry. So for that reason, if you want to achieve net zero, that 10 million tons CO2 emission from coal must be tackled, and CCUS is the only way to tackle that part of emission. So that's the answer.

**Professor Tim Harcourt:**

She did say that she thought Tencent was doing amazing things in digital variable renewable integration. So to be fair, yeah, but she thought coal's a bit last century. Okay.

Any other questions for the panel here?

Yes.

**Audience question:**

First of all, thank you very much for access to –

**Professor Tim Harcourt:**

We have a microphone for you for the online crew.

**Audience question:**

Thank you very much for the panel. Very impressive with the discussions. I have a question to Professor Zhai. Just to mention that – I know you are very popular today. You mentioned that China the peaking carbon already by this year is really surprise us. Of course, we see some of the think tanks for the outlook: according to the Chinese government by the 2030, and some the think tanks think about maybe earlier, but for this year already it seems not too much. So I'd like you maybe give some further elaboration and the explanations for this one. And also, you quoted this from the think tank. Do you personally believe this or not? Okay, maybe I'll give you a little information by the China's statistics, October China's co-production –

**Dr Yongping Zhai:**

Okay, I understand your question. Now let me answer this. I think, yeah, I'll do it.

So I personally believe that China has reached a level of plateau of coal consumption, if not have peaked this year, it will be next year or so. So we reach the plateau – not going up very sharply. I say that because even you see a lot of power plant being built, coal-fire power being built, but their utilisation rate is low, capacity factor

is low. Say, these plants are designed to run 60,000 hours per year plus, but actually they're running around 3,500 per year right now, because of the penetration of renewable energy. And last week China government issued a directive saying that we could now keep these power plants idle and paying them for capacity fee for not running. You see? So I kind of believe it because even you see a lot of power plant capacity over there, but actual utilisation rate is low and they'll be there just for energy security.

Like Germany, you have seen that when they're in trouble they brought coal power plant back. But if days are better, I'm sure they go for the renewable. China would have this fleet of coal-fire power plant for energy security, and China is on track to achieve carbon neutrality and carbon peaking. And that this peaking, if it's not yet, but around this year, we're already in the plateau.

**Audience question:**

Okay, thanks. We hope so.

**Professor Tim Harcourt:**

Professor, we're all set with the question.

**Audience question:**

Thank you very much. Professor Aisbett, you mentioned the opportunity for Australia-China collaboration on green iron, probably the single biggest opportunity for Australia to export embodied decarbonisation. So I agree with you. What is the investment signal that BHP, Hancock and Rio [Tinto] need to drive investment in this area?

**Associate Professor Emma Aisbett:**

That's an excellent question and I think it probably comes down to needing the other end of the supply chain to be in agreement. So if China for example, continues to only want to import the iron ore and not the at least pelletised, somewhat refined embedded renewable energy version, then we can set up all we want if there's no buyer. So I think we're probably in fierce agreement that it's the number one opportunity for Australian and Chinese governments to really work on improving relationships and working on developing a new green supply chain.

**Professor Tim Harcourt:**

Any other questions from the floor? No, I've got none online. Ah yes, well done sir.

**Audience question:**

Thank you so much for the insightful discussion so far. And I have a question. I know that there are lots of opportunities for promoting Australian-China cooperation, but there are also many practical limit and challenges in making things happen, and policy support is definitely important, and how to generate sufficient policy support for making change to start the ball rolling and to make things happen. This question is for all the panellists.

**Professor Tim Harcourt:**

All right, do you want to start?

**Professor Qinhua Xu:**

I think it's a very difficult question to be answered, but though that even between the United States and China now can break ice and have some agreement in Los Angeles. I am sure that in following years there will be better between Australia and China. And also energy cooperation and the climate change cooperation will be, too, the key. I think the key interesting and the beneficial things for both two countries we can enjoy, both. Thank you.

**Professor Tim Harcourt:**

Emma?

**Associate Professor Emma Aisbett:**

Yeah, I think that's an excellent point. I think this decarbonisation collaboration offers a great opportunity for a good news story and a positive story about Australia-China relationships. So fully agree on that, and we should capture that.

**Professor Tim Harcourt:**

Ross?

**Dr Ross Lambie:**

China does most of the processing for critical minerals, and there's no doubt China will continue to do over 70 percent of the processing for critical minerals for years to come. And I think there's really a good opportunity here for engagement on how we ensure that the supply chain, from extraction through to processing through to manufacture, is aligned with the principles of clean outcomes, so clean green outcomes. And I think it's just making sure that we get the regulatory settings right in place and there is cooperation in terms of both parties adhering to those regulations so that we can give consumers and users the ultimate confidence that what they're getting is being done in the best way to meet ESG standards. And I think that's going to be really important and I think it's going to be important for both Australia and China given that connection.

**Dr Yongping Zhai:**

I can't agree more with them.

**Professor Tim Harcourt:**

With them?

**Dr Yongping Zhai:**

Yeah.

**Professor Tim Harcourt:**

Why?

**Dr Yongping Zhai:**

I agree with them.

**Professor Tim Harcourt:**

Yeah, but you've got to say why, you can't just agree.

**Dr Yongping Zhai:**

Yes, I agree.

**Professor Tim Harcourt:**

Okay. That's not very helpful. Okay.

**Professor Qinhua Xu:**

We do want you to say more.

**Professor Tim Harcourt:**

You do?

**Professor Qinhua Xu:**

Next question.

**Professor Tim Harcourt:**

Oh okay. All right good.

**Dr Yongping Zhai:**

Next question.

**Professor Tim Harcourt:**

Well we've got room for one more question before I'm going to – Anything online, Amy? No, no, we're done?

All right, well yes, well done. Sold to the man on the left.

It'll be the last question.

**Audience question:**

When I visited Australia University, the National University of Australia, the first time I discussed with Australian professor, mainly focusing on the ETS of Australia. At that time the Australia national ETS, the policy design, very [inaudible] and interesting. It's divided into two stage. The first stage is fixed the price, and the second stage of flexible price – it's just like integration of carbon tax and ETS together. Very interesting. But unfortunately, it all stopped. And I want to know, if in the not far future, Australia will restart carbon pricing policy, or we don't know?

**Associate Professor Emma Aisbett:**

Excellent question. Do you want to go first?

**Dr Ross Lambie:**

You go Emma.

**Associate Professor Emma Aisbett:**

Being the policy academic, I think it's not exaggerated to say amongst policymakers there's post-traumatic stress disorder about carbon pricing in this country. There's been so many failed attempts. So if we have carbon prices in Australia, they'll essentially be implicit, because there is a great fear of – if you raise the word 'carbon price' or particularly 'carbon tax' – that it will be used as a political tool against you as an incumbent government. So our safeguard mechanism will actually probably start to operate a little bit like an emissions trading scheme. But you will see the government trying very hard not to make that obvious.

**Professor Tim Harcourt:**

Okay, Ross?

**Dr Ross Lambie:**

Very good question. I did my PhD on carbon pricing in Australia. So putting my economist hat on, I think carbon pricing was always a very good way of going about bringing about behavioural change. But at the same time, I understand the magnitude of the change at hand. And we are talking about a transformation of energy systems. We are talking about structural change to economies. So other policies need to come into play as well. And Australia has chosen to go down the sectoral approach. We're looking at, in terms of the higher emitting sectors coming under the safeguard mechanism, which has a price there in terms of the offset, the price for offsets that companies can buy for their emissions that are above the baseline. So we do have some price signals that are coming through. It's not as pure as a national carbon pricing mechanism, but I think the sector approach here is going to be, at least for the foreseeable future, the main driver in terms of getting to the outcomes. And, in some ways, I think that's not a bad outcome given how short the time is in terms of trying to get us to decarbonise, because each sector is going to have their own very unique challenges. So we need policies that actually address those challenges to help them move along faster than I think they would move along under a carbon pricing regime.

**Professor Tim Harcourt:**

Okay, last one.

**Audience question:**

Not really a question, just a quick comments if I may. Thank you because it's such a great panel and even a greater audience here that can help to make some comments. We're here to talk about Australia-China cooperation and we realise cooperation is not always easy. And we have seen the last couple of years and the bumpy road to this point today. And I don't know how many of you have noticed the Prime Minister Albanese walking on the street in Shanghai and talking to the people there, the citizens in Shanghai. It was such warm feeling and it generated a lot of media attention, both the official media and the social media as well. So I think that is such a great moment to see, after a couple of years of this turbulence between the two countries, we are now back toward that normal relations.

And earlier today, Professor Laurenceson presented some great cases that lithium, for example, export from Australia, import to China, the majority of the deal just between these two countries. And it's such an important element, chemical element, and that links the two countries and actually links today and the future, because it's such important for our EVs, our batteries.

And just would like to give another example. The solar PV – China produces half of the solar PVS worldwide. Worldwide. I'm sure most people knows. And where is that technology created? It's created just right here in this town. And Professor Martin Green was the father of the solar PV, and it actually have such a great development in China. So I think that is what we meant and that is what we should target for cooperation. And for one, I choose to be optimistic. I think we all need to be optimistic about that.

**Professor Tim Harcourt:**

Thanks very much for your contribution. Well, my family's Australian-American. My daughter's from China, my son's from Taiwan. We have one big happy family free trade agreement, mostly with copper usually. Can we please thank the panel, Professor Emma, Professor Qinhua, Dr Ross Lambie and Dr Yongping Zhai. Welcome. Thank you.

Can I thank Amy and the team for their help? And thank you for joining us online and in person. And this event was supported by the Department of Foreign Affairs and Trade's National Foundation for Australia-China Relations. And we'll soon have the recording on the website.

So thanks very much. Xiexie.