# UN Food Systems Summit National Dialogues

Webinar 2: Future Proofing our Food Systems - Boosting Resilience

2.00pm to 3.30pm Australian Eastern Standard Time

Thursday 20 May 2021

## Transcript

**David Pembroke:**

Hello, everyone, and welcome to the second of the Federal Department of Agriculture, Water and the Environment's National Food Systems Summit Dialogues. Today's session is titled *Future Proofing our Food Systems Through Boosting Resilience*. My name is David Pembroke. Thanks for joining me.

**David Pembroke:**

I'd like to begin today's dialogue by acknowledging the traditional custodians of the land we are meeting on, the Ngunnawal people, and pay my respects to their continuing culture and the contribution they make to the life of this city and region. We extend that recognition to the traditional custodians of other lands on which dialogue participants are gathered today and to all Aboriginal and Torres Strait Islander peoples attending today's dialogue.

**David Pembroke:**

The United National Secretary-General has called a food systems summit to highlight the critical role that agriculture and food systems play in our sustainable future and their importance in achieving the 17 UN Sustainable Development Goals. During 2021, in the lead-up to the summit, the United Nations is encouraging people to come together to participate in a series of dialogues to discuss how we can make our food systems more sustainable, healthy, and resilient. To explain more about Australia's approach to these national dialogues, I'm joined by Fleur Downard, who is Australia's National Dialogue Convener and a Director with the Department of Agriculture, Water and the Environment. Fleur.

**Fleur Downard:**

Thank you, David. Welcome, everyone, to today's webinar. The Australian government is providing a platform for you to raise your views and think about solutions for the issues facing our food systems. The aim for this is for these discussions to be as open and transparent as possible, and we want to represent your views. However, it is important to note that the views expressed today are independent to the views of the Australian government. We will be summarising feedback from these webinars directly into the UN Food System Summit processes. The Food System Summit webinars are designed to start a conversation. So, if after today you've got more to say, that's great. You can visit the department's ‘Have your Say’page for the UN Food System Summit. I'll talk more about this at the end of today's webinar.

**David Pembroke:**

Thanks, Fleur. So, in today's dialogue*: Future Proofing our Food Systems by Boosting Resilience*, we will explore how people and organisations across the Australian food supply chain are working to increase its resilience. To set the scene for today's discussion about future trends and risks for our food systems, I'm pleased to be joined in the studio by Peter Gooday, who's an Assistant Secretary at the Australian Bureau of Agriculture Resource Economics. Welcome, Peter.

**Peter Gooday:**

Thanks, very much, David. This is a good opportunity to introduce some of the work we've done looking at megatrends that will influence agriculture and the food system over the long term. There are powerful underlying forces that will shake the sector over the next 10, 20 or 30 years. Steven Hatfield Dodds from ABARES collaborated with some colleagues from CSIRO on this work. Hopefully, I can do it justice in the short time that I've got today. I only have time to mention each of the megatrends, but hopefully, this will give you a taste. The report is easy to find on our website, just search for ABARES megatrends and you'll get there quickly. Some of the other presenters this afternoon will be looking at some of this in more detail, so that's great. Let's have a look at the megatrends.

**Peter Gooday:**

So, five megatrends were identified? Some of these are present in what we're observing already, but they'll become more of a feature in the future. And as you'll be able to see, there's some strong connections between some of them. The first was called the ‘growth juggernaut’, which is about an increasing number of high-income consumers, brought about mainly by rapid growth in emerging Asian economies. So, an expanded and empowered middle class will demand higher volumes and quality of food and fibre, including more protein. And they'll have rising expectations for health, providence, sustainability, and ethics.

**Peter Gooday:**

The second megatrend was called ‘fractal politics’, which is about a more contested international trading landscape. Food and fibre markets, supply chains, and relationships will all become more complex as nations assert their sovereignty a bit differently than they might have in the past, often in pursuit of an internal agenda rather than mutual economic gains. Obviously, you can see some of that playing out now.

**Peter Gooday:**

The third megatrend is called ‘more from less’, which is about the need for continued productivity growth. We export the great majority of what we produce, so this has always been the case, but a group of emerging producers are improving rapidly, and they're adding to that competitive pressure quite substantially.

**Peter Gooday:**

The fourth megatrend is called ‘cascading planetary risks’. Now, that's mainly but not exclusively about a changing climate. Accelerating changes in earth systems are creating multiple risks and challenges but also some opportunities. Agriculture and food systems are already impacted, but it's also adapting already. Climate and commodity prices are expected to become more volatile while emerging markets for carbon and ecosystem services could transform some business models.

**Peter Gooday:**

And then the last megatrend is about ‘disruptive technologies’ and new technologies. The idea here is that substantial advances in digital technology, automation, genetics, and synthetics will disrupt and change how food and fibre products are made, how they're marketed, and how they're delivered. Production systems, supply chains, and customer engagement will all become more agile and interconnected, and that's going to require new skills and partnerships. So that also creates new risks and opportunities across the food sector supply chain, and in regional communities. That's pretty much all I've got time for, so I'll leave it there. Thanks very much.

**David Pembroke:**

Thank you very much, Peter. And certainly, the megatrends set the foundations for today's discussion. We will now continue with three short presentations. We'll then have that Q&A session with the opportunity to ask questions of the panellists. We are very grateful to be joined today by three experts on our topic; Dr. Mario Herrero, the Chief Research Scientist of Agriculture and Food at the CSIRO, Professor Mark Howden who is the Director at the Institute for Climate, Energy & Disaster Solutions at the Australian National University, and David Eyre, who is the Chief Executive Officer of Future Food Systems Cooperative Research Centre. During the question-and-answer session, I will also call upon Doug McNicholl, who is the Programme Manager for Sustainability and Innovation at the Meat & Livestock Australia. And we'll hear from Brianna Casey, who is the Chief Executive Officer of Foodbank Australia. And as I say, those Q&As are very important to us, and type them in as we go along.

**David Pembroke:**

So, to our first panellist, Dr. Mario Herrero who is the Chief Research Scientist of Agriculture and Food at the CSIRO. Dr. Herrero is a regular contributor to global discussions about the sustainability of our food systems. In fact, he is leading *Action Track 2: Shifts to sustainable food consumption* at the UN Food System Summit of 2021. He has held senior leadership positions on the Intergovernmental Panel on Climate Change, the EAT-Lancet Commission on Healthy Diets from Sustaining Food Systems, and the Lancet Commission on Obesity. Welcome to you, Mario.

**Mario Herrero:**

Thanks a lot for the invitation to present at this dialogue. It is great that I'm following Peter because the megatrends provide really useful background to what I'm going to present. Basically, there is broad consensus globally for the need to transform our global food systems. This is not only because of all the environmental pressures but also because the current food system has actually taken us down a path of increased malnutrition and increased non-communicable diseases that are really costing the world a lot of money and are really impacting our health systems. Just to give you an idea, the Australian adult obesity rates have increased from 57% to 67% in a period of 20 years. So, we are over consuming, and this is actually leading to increased risk of diabetes, increased disease of heart disease, and so on. So, this is something that we really need to get under control.

**Mario Herrero:**

Apart from that, we have the well-known problem of climate change. This is a global problem but, of course, this is mediated through the different contributions of different sectors to greenhouse gas emissions. In the case of Australia, we see that the sectors are really not diminishing the greenhouse gas emission at the rates that we really need to meet our commitments. We see, for example, the beef industry has done an amazing work at reducing emission from 2005, but they have now stagnated. We probably need to do a little bit better. And then there's concerns around other forms of environmental degradation like water sources biodiversity, and others that we really need to start taking on board. On top of that, one of the big elephants in the room that I think are the power asymmetries and policy distortions that actually make change in many cases so difficult.

**Mario Herrero:**

I want to give you some of the key points, things that we need to start talking and thinking about as we move forward. One of them is around healthy diets. We know that the conception of healthy diets is now in great debate, but the basic principle that we have is that we need to have a diverse diet, mostly composed of plant foods. Here you see you have a plate of veggies in your right, whole grains, some animal source, fruits, and very little discretionary foods, oils and sugars and things like that. On the right side you see how this translates to an Australian diet. We tried to put the weekly supply of a healthy diet for your average Australian, and you can see all the variety of products that that would contain. Certainly, some animal products, but look at the quantities of vegetables, the grains, and the range of others.

**Mario Herrero:**

This is an aspiration that we need. How do we get there? We need to reassess our values of what do we want from the food system and what do we want from the land as well. This is no mean feat. This requires a significant societal conversation to really work together on transition pathways. We really need to achieve a joint vision. Because if this is no longer just about productivity, this is really about multiple objectives from the land, multiple values that we desire the land to give us, including regeneration, including biodiversity, and a range of others that will be essential to achieve the resilience that we want from the system.

**Mario Herrero:**

On top of that, we have to acknowledge the issues. Technology will be very important, and there's an enormous pipeline. Here you see an inventory that we did at CSIRO on the kinds of things that are actually coming in the 10 next years. There's many technologies existing now, but also there's this pipeline that will potentially change the way we can do things. We need to embrace it. But at the end of the day, this is not a technological revolution. This is actually a revolution about starting to converse, being transparent, building trust, transforming our mindsets. There's a lot of dialogue elements, a lot of social science embedded into this for this happen. We will need transparency around social licence. We will need also changes in some policies and regulations, market incentives. We need to really think about indirect effects, which is something that will force us to think beyond the immediate primary impacts of actions that we take. Ultimately, we will need to really commit to this change through appropriate new investments and so on. So, some food for thought. Thank you very much.

**David Pembroke:**

Thank you very much, Mario. And indeed, plenty of food for thought and also with Peter setting out the megatrends there earlier. So, to our second presenter for today. It's Professor Mark Howden, who is the Director of the Australian National University's Climate Change Institute. Professor Howden is an honorary professor at the University of Melbourne and Vice Chair of the Intergovernmental Panel on Climate Change. He's a member also of the ACT Climate Change Council. He's a global expect on the impact of climate variability and climate change on food production, food security, and adaptation. And he is also expert on agriculture and food security, natural resources, ecosystems, biodiversity, energy, water, and urban systems. Professor Howden.

**Mark Howden:**

Thanks very much for the opportunity to present today. What I'm just going to do is give a really quick rundown particularly focusing on the climate elements but noting how will they fit in with what Mario's just talked about. When we actually look at what's going on, there's really significant existing trends towards increasing temperature in Australia and globally, but also in terms of temperature extremes which are particularly important for agriculture. We've seen changed rainfall seasonality, so in a sense, the tropics coming further south, and also in terms of totals if we look at southern parts of Australia and also the north west where it's going up. We've also seen increased rainfall intensity, which increases erosion risks and things like increased vapour pressure deficit, the dryness of the air which makes plants less water efficient. We've also seen overall increased climate variability due to things such as ENSO, which make the consistent production of food more challenging.

**Mark Howden:**

And these sorts of changes impacting on Australia and globally are already impacting on productivity and profitability. So, work at ABARES, for example Neal Hughes and colleagues, show that Australian broad acre agriculture production was already being dragged backwards by about 22% by the climate changes we've already seen. This isn't the future; this is what's already happened. A very recent study that came out, which is very similar in methodologies to the ABARES method, came out with a global number, which is a 21% reduction in agricultural productivity. So, climate change is already impacting very seriously on agriculture productivity. We would be much better off by the tune of 20% if it wasn't for climate change.

**Mark Howden:**

And importantly, these reductions are almost ubiquitous. They occur almost everywhere in the world with only a couple of exceptions in a couple of Northern Hemisphere countries. The really important thing here is if you draw a line between where we've come from and where we're going in terms of current climate change projections, it's essentially just a straight-line relationship. So, the future is going to be more of what we're already seen but with much greater degrees of change. And of course, that means it's extremely problematic outlook for food security, especially across the equatorial to subtropical developing nations.

**Mark Howden:**

This raises really significant questions about how well we're adapting to the changes and how do we adapt to a more challenging future. Unfortunately, in spite of the fact we have made significant progress in some parts of the world and especially Australia, we're generally behind the eight ball when it comes to adapting to climate change. So, examples in Australia where there has been effective adaptation [are where] viticulturists are moving from the Murray down to Tasmania where it's colder. We've seen fantastic improvements in water-use efficiency and cropping system across Australia, and a whole range of similar things.

**Mark Howden:**

But there are limits to that sort of adaptation. You just can't keep on pushing towards the efficiency boundary and expect to keep on getting those gains. As you come up against those efficiency boundaries, you start to actually lose steam in terms of adaptation. When we actually look at the investment in adaptation right across the spectrum, it's not just about the production side of this. This is a point that Mario also made. It's also about the social, psychological, and institutional elements that encompass and support our agriculture production systems and food systems. What we've seen to date is some incremental farm level adaptation, which has been done quite well, often with co-design principles. So, we've figured out how to do that pretty well. But there's been very little research on more systemic and transformational adaptation. And when that has been done, it's mostly on production systems, not on those other ones I mentioned, and not on things like loss and waste, which, as we can see from the mouse plague, is a crucial part of our systems in some years.

**Mark Howden:**

There's also very little adaptation work across value chains in relation to trade. In contrast with what we're actually investing, we see there's lot of rhetoric about farm adoption transformation adaptation. And consequently, that can leave farmers and others bearing the risk and trying to find their way in a complex landscape in the dark. I argue that emphasising transformational adaptation is only infrequently the best option at this point in time. But it should be on the table when we're having co-design type discussions and developing strategy. It should be included. but not preferenced.

**Mark Howden:**

And as Mario's pointed out, greenhouse gases from food and agriculture are really significant. The mid estimate is 29% of global emissions come from our food systems. It's far, far too big to ignore. So, when we're developing adaptation options, we also have to look at the same time as pushing down on our greenhouse gas emissions. And just moving to trade, I would just say critical to some of our industries, trade is a key means of climate adaptation. It moves food to even out supply and demand when it works well. Trade will be increasingly needed under future climates. However, increasing disruptions, and not only from climate but also from COVID and other things, demonstrate we actually need to pay a lot more attention to trade and value chain adaptation. And at the moment, we're not doing that.

**Mark Howden:**

What I've just outlined here in a very quick space is it's very clear that adaptation needs to happen from the level of plants, so through genetic and means, you know breeding activities, right through to global trade. So right across those different levels of our systems. I actually suggest that this is a really good investment to make, because in a world which is overall negatively affected by climate change, the best adapted will win. Thank you.

**David Pembroke:**

Mark, thank you for that very clear and very compelling presentation. To our final presenter today, David Eyre, who is the Chief Executive Officer of the Future Food Systems Cooperative Research Centre. David's career has spanned the energy, water, and agrifood sectors with a focus on developing science, technology, engineering, and maths-based solutions to complex industry development challenges. Through the CRC, David aims to help transform the way the agrifood sector produces, adds value to, and delivers healthy goods to domestic and export markets. In addition to his current role, David is an Adjunct Associate Professor in the Faculty of Engineering at the University of New South Wales. David.

**David Eyre:**

Our CRC has been funded by the Commonwealth to really drive more sustainable and profitable future food systems. We've got core funding which gives us a bit of continuity, and it really aims to bring industry, government, and research along with the changes that we need to make in Australia. [There] are really great opportunities for Australia in providing healthy, trusted, and sustainable food to our population and also to the rest of the planet. We have an industry transformation agenda focused on the whole of the value chain. The first parts of that are how we get energy and investment into our region to build these connected future supply chains. The second is more about intense indoor cropping which allows us to control environmental variables, which is absolutely critical to consistent supply. And the third is focused on product innovation across healthy whole foods but right to precision nutrition, which is potentially a huge growth opportunity for Australia.

**David Eyre:**

These are our focus segments. These are segments which have been identified by CSIRO and the Food and Agribusiness Growth Centre (FIAL). They're very much consistent with the megatrends that were mentioned earlier, so premium whole foods, free-from foods, things like foods for allergy sufferers and organic foods and so on, and finally precision nutrition, which is where food starts intersecting with medicine.

**David Eyre:**

We've got three linked research programmes, and here's some examples of the partners we have involved in these programmes. The first, as I mentioned, is about the actual supply chain and how you plan a physical environment to do future food and then connect it up to logistics and supply chains. As Mark said, trade is incredibly important, but we need to remove friction from the system and do that trade far more efficiently. We need to move goods around more efficiently, control our inventories better, minimise wastage, and minimise spoilage so that the end result in terms of nutrition is optimised.

**David Eyre:**

Our second programme, as I mentioned, is indoor cropping where we've got Australia's two biggest horticultural firms involved and Horticulture Innovation Australia, and also some really interesting SMEs. We're moving into things like aquaponics and intensive indoor production. And finally, working with firms like Sanitarium to design new really healthy products in areas like plant-based protein and so on. We're really tapping into the megatrends around quality and sustainability in food goods.

**David Eyre:**

My key point today is really that sustainability has to go hand in hand with prosperity. If you're going to bring industry along and society along, you have to make it profitable, and Australia needs desperately to improve its competitive advantage, through things like trade partners. There is a wonderfully prosperous future for Australia in future food if we can get it right. This slide compares Australia to the Netherlands. You can see the comparison there that their value of exports in the food industry is massive and their land mass is smaller than the Sydney basin. This is because more than 80% of our farmers grow is exported as raw materials. So, to be prosperous, we have to get far better at value adding. We have to transform the way we think about the agricultural value chain, join farmers up to manufacturers processes here in Australia so we can value add more goods before we ship them overseas. And also, we can start replacing the goods on our supermarket shelves that are imported with those which are actually manufactured locally. The picture we saw of the food basket before, which was largely fresh food, isn't really realistic if you look at the average Australian food basket. A lot of what is bought each week is packaged, manufactured, processed. How do we make healthy manufactured food?

**David Eyre:**

So, we can learn from successful industry clusters like the Dutch. They're global leaders in sustainable development. They made a long-term commitment to building environmentally and economically efficient productions and supply chain systems. They have very deep collaboration between industry, research, and government, which is applied to planned outcomes. And they're applying their science and technology. They use their academic and R&D institutions to build smart technology into how they grow stuff, how they manufacture stuff, and also how they shift stuff because they're brilliant at logistics. They've mastered global trade. They know how to get goods out and around Europe and around the planet much more efficiently than we do. And every successful agrifood nation is brilliant at value adding and the logistics of trade.

**David Eyre:**

Finally, it's a pragmatic approach to collaboration. We talk a lot about collaboration in Australia, but we don't actually build that on economic relationships. So, we need to fundamentally improve the relationship between farmers and manufacturers in Australia, so farmers get a fairer share of the end value of goods and the farmers become genuine partners in the quality of the end product. So how do we do that? In the CRC, we're working with actual local governments, actual food clusters around the country to try and build those partnership relationships between the growers, between the manufacturers, and the service providers, maybe logistics parties and so on. What we desperately need in Australia is more contract manufacturing facilities and more contract distribution centres so we can break the hegemony of the really big providers, which are often transnationals rather than firms which are embedded in the local economies in places like Namoi in New South Wales, a group we're working with. We're also working with groups in Western Australia in Gippsland, in Western Sydney and in the Northern Territory.

**David Eyre:**

Really, systems integration is critical to value creation and sustainability. This is why we're called Future Food Systems. You have to think of the whole value chain, and you also need information. That's the life blood of a connected system. So, it's not just about the digital technology, it's about building functional relationships between firms in the value chain so they're willing to share data. And once you have data flowing across the whole system, you can start doing genuine optimization, which is where the math and the digital technology starts becoming genuinely valuable to the economic system, the economic food system. So, if you can connect up the value chain, you get much higher perceived value provision by the end consumer, be it an Australian consumer or an international one. Because you can show that you've done it more sustainable, that you can show that it's fresh, and you can really start making valid science-based claims about the nutritional quality of the end product. Which is where the final third programme of the CRC starts coming together with our value chain work, is being able to prove that Australian food is actually more nutritious or actually has a function benefit in the clinical sense, which is great for the medicine area.

**David Eyre:**

It also reduces the cost of regulation. Once you've got a digital package of data with a good, you can start automating and systematising your compliance processes. You can start having digital handshakes with your trade partners. I feel Australia desperately needs to catch up with other nations, which are selling to particularly North Asia where they are digitising their trade into phases. We're not quite ready to do that yet.

**David Eyre:**

This is my final slide. Really, we've got great science and technological expertise and intellectual property in Australia. We're not applying it fast enough within the food value chain. Now, we have scientists who are capable of developing quality measurement verification solutions for product claims. We can develop novel and new scientifically based formulations and processing technologies for enhancing functional properties of food. We can develop unique engineering solutions for supply chain optimization and advance manufacturing. We do almost no advanced manufacturing in the Australia food sector right now. We need to bring billions of dollars into future food factories, not just in our cities but in towns like Tamworth or Mandurah, Western Australia. And then that, of course, flows through to higher value jobs for regional people. Of course, new education and creative pathways. This sector can be a very, very attractive sector to young people because it's such a diversity of skills needed across the future food value chain. Thank you for that.

**David Pembroke:**

No, David, thank you for that presentation, again, around the work of the Future Food Systems CRC and very practical demonstration and identification of a number of issues about the food value chain here in Australia. So, thanks to David. Thanks also to Mark, Mario, and Peter for their setup presentations. We will be hearing from Doug McNicholl from Meat & Livestock Australia in a few moments time as we get through a couple of questions, and also from Brianna Casey who's the CEO of Foodbank. So, we'll be hearing from those two presenters during the Q&A session.

**David Pembroke:**

But to get us started today, Peter, I might throw a question first that has come through. "When considering the challenges and opportunities posed by the future trends, the future megatrends including climate change, potential trade, and supply chain disruptions, what do you think are the key characteristics of resilient and sustainable food systems in Australia by 2030 and beyond?"

**Peter Gooday:**

All of those trends are important. But I suppose picking up where David left off, I think it's going to be increasingly important for us to be able to demonstrate how we've produced something, what's in it, where it was grown. Because increasingly, the trend I talked about of the growth juggernaut is not so much from our perspective to do with increased population, it's to do with increased incomes. As people's incomes increase, they're going to want to know more about whether food's healthy, what the carbon footprint of it was, what the animal rights conditions were, all those sorts of things. In terms of something we probably need to get cracking on that we're not doing already, because we're doing things across all these areas, none of them are new, but I think that's the one where we need to be careful that we're not left behind, because others are doing that, and we need to get on with it as well.

**David Pembroke:**

David Eyre, I see you're nodding your head there. Would you like to add to Peter's answer there?

**David Eyre:**

Yes, certainly. The time is now. We need to move more quickly in this country. COVID's created an opportunity for us to really focus on internalising some of our valuating systems and also making our whole supply chain a bit smarter so we can keep up with our trade competitors. The competitive advantage of nations is a real thing, and most of the growth in the food sector is occurring just five nations around the world. China's at the top of those nations. We cannot continue to be a commodity platform. We simply cannot afford economically to be one. That means all of us pulling together to bring capital more rapidly into this future food industry, which could be bigger than mining for Australia. If you look at how Japan invested in Western Australia to create, effectively, our mining industry, we really need to look at that level of investment in the future food industry and think very, very big. That's probably going to involve bringing in new players from outside, but we want to add investment on our terms so that it is genuinely sustainable in a socially economic sense.

**David Pembroke:**

Okay, great. Mario Herrero, anything to add there from your point of view?

**Mario Herrero:**

No. I'll pass for now. That's okay.

**David Pembroke:**

Okay, great. While I've got you there, I will ask you the next question that's come through. "How well do we work between health and agriculture to coordinate for outcomes good for the environment and good for people?" So, Mario, I'll throw that one to you.

**Mario Herrero:**

Okay. That's a very good question. Probably we don't work as much as we should at the moment, but this is certainly one space where greater coordination needs to occur. Because it's a very persuasive argument, the fact that you can actually link agriculture, diets, and the environmental performance of a country or region. If we can actually start designing policies that will actually help in those three aspects, it would really generate very efficient policies. It is critical that we really start talking between departments and trying to get some level of policy hominization between the different ministries. I think that that's essential, or also the creation of new institutions. Many countries are actually starting to think about how to integrate the whole concept of sustainable food systems and whether these actually will require additional institutions to deal with the interactions. Because it's in the interactions that we find the greatest solutions for sustainability, and it is something that we really need to address explicitly.

**David Pembroke:**

David Eyre.

**David Eyre:**

Yes. Sorry, I was just reading one of the questions on the Q&A, and I sort of lost track of it there. Context, please.

**David Pembroke:**

The context of that question was around the health and the agriculture systems, getting them to work together more efficiently. Do you have a view as to how, in fact, health benefits, agriculture benefits can work together to deliver greater sustainability and resilience in food supply?

**David Eyre:**

Yeah, no, it's a terrific question and some of the ones which are coming in on the live dialogue are very much in that space. Well, look, one of our partners is The George Institute for Global Health. If you're aware of them, they're a very large group, works internationally based in Sydney and really looks seriously at measuring heart disease, salt, sugar all these things but does it in a practical way by trying to bring industry along with gradual change in formulation and in consumer preferences. And also, we work with Sanitarium who work with growers to specify at variety level and cropping technique the inputs that the farmer is providing to enable them to formulate and create a processed health food which minimises the necessity for any unhealthy ingredients.

**David Eyre:**

Let me approach this from a different angle. Over the last 100 years, as food's been commodified, priority has been things like shelf life and palatability to a consumer in a shortcut kind of way. If you want to design a sustainable healthy food, you need to address, yes, the formulation and come up with clever ways to maintain shelf life and palatability using natural ingredients. But you also need to work with the farmer to grow something which is inherently more stable, more flavoursome, and is more densely nutritious. It all comes together in growing Australian nutrient-dense foods, and then figuring out how to take them through to the consumer in a format which they're going to want to eat and are willing to pay for, because it has to be cheap enough to be accessible to the majority. It can't just be a luxury food. Now, all of that can be achieved through applied science and technology if there's a will to do it. That answered your question?

**David Pembroke:**

All right. It certainly does. Thank you very much, David. Professor Mark Howden, I might ask you the next question given your expertise around agriculture and food security. The question is, "What are the best ways to drive changes in sustainability on farms?"

**Mark Howden:**

Yeah, that's a really complex question there. Clearly there's a need for consumer demand which is, hopefully, informed consumer demand which ties in some of the answers to the questions which you've just heard: how do we actually get the right sort of food prepared and delivered in the right sorts of way that result in good health outcomes? There's a consumer demand element there. I think there's also a policy leadership element, which is actually about communicating broadly to Australians both the benefits of healthy diets but also the benefits of having sustainable agriculture and ones which in a sense tell us a narrative of how this is actually contributing to the wellbeing of all Australians. Whereas, at the moment, there seems to be a growing rural urban divide. And so, we need to have policy leadership which actually closes that and allows people to understand what a sustainable landscape is. It's more than the superficial, it actually starts to get people to understand some of the issues that we have to deal with. And one of the big ones which is right on our TVs at the moment is the mouse plague. And so, people often get the narrative of agriculture being it's a mouse plague or it's a drought or it's a flood or there's dead cattle, starving cattle, flooded cattle, trashed crops, et cetera. And so, we need to be changing that narrative so that people actually have a feeling for what is sustainable and why.

**Mark Howden:**

And lastly, I think as a really important part of having the information base and having the options available so that people can move towards more sustainable practises. This is the information based which is what are the natural resources we're dealing with in this particular paddock or this particular farm or region or across the value chain, what are the options to actually improve the status of those resources, how can people do that cost effectively ensuring that they continue to deliver what's needed to the market but at the same time improving their base resource.

**Mark Howden:**

I think we can do that. I think we've actually been able to do it for a couple of decades, but we haven't done that. And so, one simple example is the single biggest asset for most farmers is the farm. And so, if you actually improve the status of your farm in terms of sustainability matrix, you're probably going to be improving your asset. You're actually got a monetary benefit for that, and at the moment we don't really categorise that. We don't classify that. We don't measure that. And so, there's a really direct market signal that we could and should do, which actually gives people information to make better decisions.

**David Pembroke:**

David Eyre.

**David Eyre:**

The key to this is really shifting to growing the right thing from the point of view of the consumer. So, if you start moving towards a connected value chain, it's possible to shorten that distance between the grower and the consumer and to really instead of thinking commodity platform where you grow something and then hope to sell it, you grow something because you know who's going to buy it and you know exactly what they want. That inherently removes wastage from the system. If you look at any production catchment in Australia, farmers aren't necessarily growing the most sustainable thing, by sustainable I also mean profitable, because they don't necessarily have a clear market signal about what the upstream value could be if they grew something else.

**David Eyre:**

So, you could be growing a fine animal for a boutique butchery, let's say, or for a halal market and doing it on sustainable soil because it's sequestering your carbon, purely grass fed, whatever the market wants, or you could be growing a specialised input to a plant-based protein product because there's a factory for creating plant-based protein precursors in your neighbouring country town. By the way, one of my concerns about plant-based protein, although it's only a small part of the market at the moment, is that if you want to make it in Australia you've got to import those precursors from overseas because we don't have those factories yet in Australia. So, it's echoing what Mark is saying, is it's about connecting it up and understanding what you're growing and why and where you're growing it, for whom, and then what the boundary conditions are around soil and climate.

**David Eyre:**

My final point really is if you're going to do upstream evaluating whether it's simply attaching a provenance story or a fresh food or some sustainable packaging around it, or it's actually creating an elaborate healthy fresh convenience meal, whatever you're doing, you need to have that connect to a story to a consumer and flip the model around, so its demand driven rather than supply driven.

**David Pembroke:**

And Mario Herrero.

**Mario Herrero:**

Yeah, so I want to make a couple of points. The first one is that it's a great initiative that we're doing these dialogues as part of the Food System Summit. But what I want to tell everyone is that this cannot stop here. This has to be just the start of an ongoing conversation. We really need to keep this going so that we can actually understand what consumers want, what consumers will demand in the future. As Peter said, the demographics are changing, income is increasing, consumers are getting more interested in the quality of food, in provenance and things like that. And those elements will actually be able to drive a... well, our production response to move away from just the traditional things that we actually produce. This is also important from an export perspective because the importers are getting also more interested in sustainability credentials and so on. We need to start internalising this in the R&D councils, in producer forums and everything, so that we can actually elicit the changes at the farm level.

**Mario Herrero:**

I think that it's really important. But the conversation cannot stop with today. We need to find a mechanism for really continue engage in this discussion and be able to constantly really look for how to define the food system that we want.

**David Pembroke:**

Well, thank you for that. There's certainly great interest today. There's a very big audience for today's dialogue. But for the moment, we'll hear from our next presenter, and that's Doug McNicholl from Meat & Livestock Australia. Doug is Sustainability Innovation Manager at Meat & Livestock Australia, overseeing investment into innovation processes where sustainability considerations such as environmental, social, and economic are integrated into the Australian red meat value chain, from idea generation through to commercialization. This applies to new technology, products, services, as well as new business models. Former positions for Doug include R&D Programme Manager at the Australian Meat Processor Corporation and various renewable energy project development roles in the United Kingdom. Thanks, Doug. Doug, what do you think a resilient and nature-positive red meat and animal livestock sector looks like in Australia?

**Doug McNicholl:**

Hi, David, and hello listeners. Great to be with you. I'm going to take probably three or four minutes of your time to delve into that question and look forward to the Q&A after.

**Doug McNicholl:**

I think a resilient and nature-positive red meat and animal livestock sector produces clean, safe, nutritious, and high eating quality red meat and co-products in a manner that is socially, environmentally, and economically responsible. In accordance with the Australian Beef and Sheep Sustainability Frameworks, red meat and animal livestock production is undertaken with care for our natural resources, people in the community, the health and welfare of animals, and unparalleled drive for continuous improvement. But this vision requires healthy economic models that create and capture value from the farm through to the fork and enable continued growth in total fact of productivity and adequate rates of return to industry stakeholders, so that they can continue to invest in innovation that supports sustainable development pathways, for example, business models that reward livestock producers for the provision of environmental services alongside livestock production, such as carbon farming and biodiversity enhancement using existing technologies and practises, not technologies in 20 years or 10 years’ time, technologies and practises that exist now. Healthy and productive livestock with an emphasis on technologies and practises that improve animal health, livestock handling, transportation, husbandry, and an end-of-life procedures plus minimised buyer security risks to Australian production enterprises. Thirdly, demonstrated environmental stewardship practises that are nature inspired and linked to economic models that enable their development and uptake.

**Doug McNicholl:**

As Albert Einstein said, "Look deep into nature, and you will understand everything better." So environmental prioritises in the Australian red meat industry include soil health., we have the poorer soils of our bio competitors, managing biodiversity, mitigating climate change impact, adapting to future climate change, plus managing energy, water, and waste from farm through to fork. Lastly, a safe physically and mentally health and capable workforce, contributing to thriving rural, regional, and urban communities. The sector's workforce provides safe, functional, nutritious products derived from livestock directly, and also indirectly through the provision of ecosystem services that are enabled during livestock production, not in place of livestock production.

**Doug McNicholl:**

And so, if we think about what the sector needs for this vision to come to fruition, it's three key areas. Firstly, continued industry commitment through sustainable development pathways that stop reacting to new ideas and new ways of thinking, embracing them, and getting on with the job. Secondly, increased investment in research and development into adoption of promising technologies and practises such as new livestock forages, livestock supplements, genetic selection, that's not genetic modification, that's selecting more productive livestock, objective management technologies that enable improved management of soil health, animal feed base and land condition, plus R&D into product and packaging innovation. That's all so critical to new value creation international competitiveness.

**Doug McNicholl:**

And then my final comment, the sector also needs stable, science-based industry and government policy incentivizing economic development, environmental stewardship, plus the health and wellbeing of our workforce, our consumers in the community, and our animals, all in an integrated manner. The policy needs to acknowledge the unique issues and opportunities faced by the Australian red meat and livestock sector relative to other countries. We are a unique environment. There are my thoughts, David, looking forward to further discussion.

**David Pembroke:**

Well, certainly plenty in that, Doug. And already, David Eyre has his hand up to respond. So, I'll throw to you David for a response to Doug's presentation.

**David Eyre:**

Okay. Doug, plant-based protein has got a very small share of the market at the moment. How do you see it co-existing with animal protein in 10, 20, 30 years?

**Doug McNicholl:**

In the Australian context, David, I think our natural environment will determine the extent to which farmers in Australia can produce plant-placed proteins alongside livestock. I think it's going to be an area of opportunity for non-red meat and red meat producers. I think when we examine those opportunities, we see the fact that half of Australian land mass currently is resided over by livestock producers. That's 355 million hectares. When you consider that only 9% of Australian land mass is suitable to arable cropping, we have some fundamental limitations of what we can grow and where we can grow it. But in the internationally competitive market, we encourage and welcome innovation, and I think there's mutual opportunities for Australian producers in both sectors.

**David Pembroke:**

Just-

**David Eyre:**

Just a follow on... Yeah, go ahead.

**David Pembroke:**

No, no, sorry, David. Follow-on question from you?

**David Eyre:**

Well, a number of growers I've spoken to expressed interest in better access to contract-based processes so that they retain ownership of their animal right to the end consumer until that provenance story. Can you say a bit about any innovation that's occurring in that space, small or more agile processing facilities that will contract process goods and also in very specific ways, for example, for halal markets or for that sort of thing?

**Doug McNicholl:**

Look, as long as the red meat industry has existed, if you consider there's 55,000 red meat businesses in Australia, by nature of the market forces, there are always businesses looking at unique niche market opportunities. So specialised on-farm processing through to large scale volume plants has always been a part of the sector. I think there's been a bit of a resurgence of interest in innovative processing technologies that are regionally based or rural based. Some of the limitations there though are based on access to labour in those regions. That's always been a long-standing challenge. But we're also working on automation and robotic technology that may overcome some of those limitations and might enable future uptake of more decentralised processing. But very early days at this point, and we're yet to see those technologies really run to ground.

**David Pembroke:**

The next question is to you Dr. Herrero. It says, "It would be great to discuss what some of these policy changes and power asymmetries are in detail. For example, there was no mention of policies to help people reduce their red and processed meat consumption despite this being one of the biggest food system drivers of climate and sustainability issues." So, Dr. Herrero, that's a question for you.

**Mario Herrero:**

Dave, thanks. Yeah, the power of asymmetries come in many shapes and forms. What I would say is that every stakeholder needs to be prepared to have the difficult conversations. In many cases, some stakeholders when they see some results from research that don't benefit their industries, they tend to actually, well, go fiercely against some of those results. I think it's really necessary not to dismiss the results but to really engage in a conversation of how could we actually promote change. For example, I commend MLA in the sense that they've developed a carbon neutral plan to 2030. If you think about it, it's the second or third largest exporter of beef in the world. Committing to something like that, I think it's really very commendable to at least really, well, try to do something about it.

**Mario Herrero:**

But in reality, it's a real minefield. We see a lot of lobbying from commodity industries that try to prevent the formulation of policies towards healthy diet, toward promoting change. It's really about really starting to engage in those in a way that actually make... If we're going to create a change in the demand for something, well, let's make sure that there's alternatives for producers to be able not to lose their income and so on, or to be adequately retributive.

**Mario Herrero:**

One of the key things that we need to start thinking about is really how to internalise the true cost of food in Australia and all parts of the world. I think it's totally necessary not to go for the cheapest food but to actually really started bearing, well, environmental costs and so on. There's a lot of interest in that at the moment. There's a lot of interest also in adding regulations not necessarily for meat, but there's a lot of discretionary being consumed in Australia and elsewhere. A third of the energy intake of Australians comes from discretionary food. This is crisps and all sorts of things.

**Mario Herrero:**

We are in a position now to really modify our food environment and to really start taxing some of these products if there was a need to do so. Now we have the right information to be able to act upon this. But it certainly will require that we have an honest discussion with several of the processing industries as well.

**David Pembroke:**

All right, thank you very much. Mark Howden.

**Mark Howden:**

Just to pitch in on that argument that Mario was developing is that if you want a couple of examples of asymmetries, it's groups where they have no voice or weak voices, and two obvious examples, one is new or emerging industries such as the meat alternative industries. They have a very, very much weaker voice than the existing commodity industries. That then plays out in all sorts of ways in terms of the market, which shelves Woolworths can actually put the fake meats next to the real meats sort of thing. Another one, obviously, is future generations who have, essentially, no voice in what's going on. This relates, I think, to a latter question which Andrew Bartlett raised which is, "If we had a time machine, what would agriculture look like in 50 years?" Well, you can just twist that around and you say, "Well, what would the people who are living in Australia, our children and grandchildren, what agriculture would they want to see?" And then let's start to think about heading towards that. At the moment, we have got power asymmetries, and to some extent that is holding us back from moving in more sustainable directions.

**David Pembroke:**

Fantastic. Thank you very much, Mark Howden. Now, we've heard today about the potential impacts of natural disasters, supply chain disruptions, and other challenges for the functioning of our food systems and the impact that this can have on everyday Australians in their daily lives. Now, we're fortunate now to be able to hear from Brianna Casey who is the Chief Executive Officer of Foodbank via a pre-recorded video message. That will provide some insight into how Foodbank helps address food security issues during and outside times of crisis. So, we'll roll the tape now.

**Brianna Casey:**

Believe it or not, Australia does, in fact, have a hunger problem. We know that we produce enough to feed our population three times over, but yet, outside of times of COVID and bush fires, we know that one in five Australians at some point throughout the year experiences food insecurity. And we use the same definition that the United Nations does, in that we talk about having reliable access to culturally appropriate food that meets people's dietary needs.

**Brianna Casey:**

Foodbank strives to make sure that we can get food and grocery items to those who need it the most. We work through a network of 2,400 charities across the country to get food to those in need. How do we source that food? We rely on the wonderful work of our farmers, our food and grocery industry, and our retailers, to make sure that each and every day those who require food relief have access to it. The difference with Foodbank is, unlike the food industry and unlike our farmers, we don't operate in a supply chain. We actually operate in a surprise chain. We never know day-in, day-out the type of food and groceries that we're going to receive.

**Brianna Casey:**

To give you a sense of scale, in a normal year, outside of COVID, and I know that we're going to have a new normal, about 48,8 million kilograms of food and groceries is sourced to allow us to get those food and grocery items to those in need. We work directly with our farmers. We work very closely with the National Farmers Federation and all of the peak commodity counsels. We work with packing sheds, logistics companies. We work with the incredible Australian food and grocery industry, and we work with all of the major retailers to make sure that food and grocery items that may not otherwise make it market but are still fit for purpose, still nutritious, are able to be rescued. And about 80% of that 48,8 million kilograms of food and groceries is actually sourced through food rescue.

**Brianna Casey:**

So, we do an extraordinary job not only in eliminating or reducing food waste but also, more importantly, in making sure surplus in the supply chain is given some purpose. The challenge in natural disasters, the challenge in pandemics, is that those supply chain changed markedly. And supply chain disruption whist a negative for many reasons, can be an incredible positive. So, we were able to take advantage of those opportunities to source products that may not make it to market because of those challenges brought about through COVID, whether it be shipping lanes that were closed, whether it be transport challenges, whether it be the incredible panic buying going on, to make sure we could access those products.

**Brianna Casey:**

It wasn't easy. We had to change the way that we operate. We had to scale up. But we're incredibly proud of the fact that we are so incredibly resilient to shocks in the market. And we want to continue working with the Australian government, and all of the food and grocery industry, to make sure that we are applying systems thinking to what is a really challenging problem.

**David Pembroke:**

Fantastic. Well, thank you very much. Brianna, you have been standing by listening to the conversation so far. I love that reference to not a supply chain but a surprise chain. But you've listened to the presentations and the questions that have been answered by Peter, Mark, David, Mario, and Doug. From the Foodbank's perspective, is there perhaps one or two things that you could take from those presentations that had an influence on the way that you're thinking about resilience in the supply chains?

**Brianna Casey:**

I think in particular the work that all of the speakers are doing in terms of making sure the right products are grown in the right region and have an easy path to market is really important for us. We're in this unique situation where the better and more efficient our farmers and manufacturers become, the less product there is for Foodbank to actually rescue. So, it is a bit of a conundrum for us. But we welcome the efficiencies that are being made on farm and throughout those supply chains. What is really important for us is looking at barriers to being able to get healthier and more appropriate food to communities who need it.

**Brianna Casey:**

To give but one example, one of the challenges we have in not being able to get more fresh produce and frozen and chilled products into comms that need is the high energy cost of running fridges and freezers. So, for us, it's critically important that we have systems thinking wrapped around all the parameters to do with our supply chain. We throw about paddock to plate and farm to fork far too often without really understanding whether the barriers and opportunities are. I think one of the best things to have come out of COVID is a real appreciation from the Australian community about the fact that, one, we do produce enough food to feed our population three times over, but we also recognise through those supply chain disruptions and the vulnerability brought about through panic buying that when people are irresponsible with their purchasing patterns it is the vulnerable communities across Australia that suffer the most. We have to really have front of mind how best we can ensure that that incredible food that's grown in our country can get everywhere it's needed, not just to those who can afford it.

**David Pembroke:**

Brianna, thank you very much. We'll get you to stick around because Mario wants to respond to what you've just had to say.

**Mario Herrero:**

Brianna, you made a really, really important point. What we want the spirit of the food summit is really a food systems transformation that leaves no one behind. And that no one behind in some countries, people don't think of that. Here, the rural/urban divide is really something that we really need to engage in in Australia. I think it's essential that we really start thinking of the places that are inland and how would a sustainable food system really look like that beyond just thinking of safety nets and other things like that. That has to be central to the conversations.

**Brianna Casey:**

Couldn't agree with you more.

**David Pembroke:**

David Eyre, you have something to say.

**David Eyre:**

One thing we urgently need in Australia is better data about our food networks. COVID really highlighted the asymmetries that Brianna was talking about. We actually know very little in a public sense about how food moves around the country. The big firms, the retailers, and big producers have their own transport networks. Avocados and so on are flying around the country and moving them from north to south and south to north back to the supermarket 100 metres away from where the mango is grown and that sort of stuff. And then we have supermarkets in country towns that we truly can't get anything at the time of crisis because they're at the end of the supply chain.

**David Eyre:**

What we wanted to do at UNSW is do a mapping, if you like it, for food markets in Australia and the material flows of goods. I mean, that's a step towards understanding who's getting what and where the major deficiencies are, where the gaps are in the food system. That will, of course, help disadvantaged people and help address the food desert issues that we have in peri-urban Australia and in country towns. But it will also improve the economic efficiency and the environmental efficiency for whole logistical system. The trouble is that the kind of data collection and analytics I'm talking about is never going to be part of our industry. It's a market value problem. I think it'd be really helpful for the Australian government to step up and say, "Yes, this is something is urgent. It's something we need to do now." We've got the expertise in the country to look at that kind of work. It wouldn't take too long either just to model that.

**David Eyre:**

I thought I'd throw that in in case anyone wants to pay us to do it.

**David Pembroke:**

Okay. Very good. Never miss an opportunity, David, so that's well taken. Now, listen, we will return to the questions and thanks again to the audience today for the number of questions that are coming through. Mark, I might throw this question to you to start with, but please all panellists feel like you can offer your views. But the question is, "What role will gene technology play in future proofing our food systems?" Mark.

**Mark Howden:**

Thanks, David. It's an interesting one. I'd wrap this in with a previous question which is about efficiency boundaries as well. And so, what I'd suggest here, and probably be shut down for, is that a lot of our existing R&D is focusing on moving from where we are towards an efficiency boundary. So, it's actually moving towards potential. And that comes in many different forms, whether it's improving a weak variety or improving our distribution systems such as Brianna was just taking about.

**Mark Howden:**

And so, that's an absolutely worthwhile and important thing to do. But that's different from actually shifting where that efficiency boundary is and expanding your efficiency boundary. I don't think we're actually investing as much in that as we are in terms of the efficiency itself, the moving towards the efficiency boundary. That actually requires different thinking. It actually requires what are the possibilities within the decision space that we have that we can actually significantly improve, where we can change the nature of the trade-offs. And introducing genetic technologies is one potential option for that, where you can actually change the nature of trade-offs within your system. Often, it's used just to push towards the efficiency boundary, such as insecticide-embodied or herbicide-resistant crops et cetera. But sometimes you can actually use that to change the fundamental physical relationships.

**Mark Howden:**

So, when we say dealing with water use efficiency, there are physical relationships about the water transfer in and out of the leaf which determines that. And so, when you're actually trying to change the efficiency boundary, you have to change something pretty fundamental. So that's within system view. The other one, of course, is thinking outside your existing system. So rather than just tweaking your existing system, introducing new components into it that actually give you improved efficiency such, again, change the nature of the trade-offs. So that might be introducing a new component into a farming system or fundamentally changing supply chain to take out or add in other elements that improve fundamentally the delivery.

**Mark Howden:**

So, I think we should be, for sure, thinking about the incremental, thinking about the efficiency, but also increasingly think about how we change the nature of the system and change those trade-offs.

**David Pembroke:**

Thank you very much. Now question to Dr. Herrero. "Dr. Herrero mentioned a need for a joint vision for food systems. How can be balance the competing objectives of food systems, health, food, security, economy, jobs, environment, equity, et cetera, when policies are created and implemented often across siloed sectors?" Dr. Herrero.

**Mario Herrero:**

Yeah. Well, the easy answer to that is that we need to break the silos. The more complex answer to that is that definitely not all places will yield the same multiple benefits. For example, there's places where you can actually produce without having to think so hardly about biodiversity. There are places where you may not have water scarcity, so you can actually grow certain things and so on. This leads to us really thinking differently about the opportunity cost of how we produce food and really trying to ensure that we are growing things in the right places. I think that it was David who mentioned something like this. I think it is essential to take a very broad land use perspective when doing this so that we actually match what we grow in the food system to the best use of resources.

**Mario Herrero:**

In many cases, achieving all the different dimensions might not be possible. But let's, at least, acknowledge that in different places, different trade-offs will play differently, and let's do the right analysis to grow food where we should grow it best and making the most while diminishing the trade-offs as much as we can.

**David Pembroke:**

All right. Thank you very much, Dr. Herrero, for your answer to that question. The next question, David Eyre, I might throw this your way to start with. "Value addition is critical but also universal benefit. How do we shift our view from looking at profit as the measure for success?"

**David Eyre:**

That's a great question. It's a question of the ages, I believe. Value creation, it has a number of dimensions, doesn't it? Profit is one of those. But we really need to shift the focus onto the purpose of food, which is nutrition at the end of the day. In Australia, we've created a very nice connection between profit and nutritional outcomes, food safety, scientifically validated health claims, and a general approach to high quality across every aspect of our food sector can allow us to link a nutritional outcome for a consumer to a decent and fair price for that product. And then by applying energy efficiency, water efficiency, logistics efficiency throughout that value chain, we can not only increase the marketing value of a product, but we can also reduce the production cost, which should improve the overall margin at the end of the day.

**David Eyre:**

So, in other words, I don't see it as being a binary proposition, you have either profit, or you have sustainability, and you absolutely have to join the two together. Prosperity, as I said at the beginning, goes hand in hand with sustainability. The issue is how does Australia walk the walk and how quickly can we do it, how quickly as a nation can we become a sustainable food platform, which also increases our national advantage? It's possible but we have to get organised collectively across all sectors; government, research, and industry to make it happen. That means bringing a lot of people along the different ways of thinking.

**David Pembroke:**

All right. I have another question, and it is, and I'll direct this question to Mark Howden. "With Australia exporting 70% of its agriculture production, are we at risk of rising sentiment towards eat locally in overseas markets that might see our trade diminish?"

**Mark Howden:**

Yeah. Interesting one. I don't think I've encountered this before. But my first cut at this is that people often eat locally because they're being made more aware of specific characteristics of their food. So, whether that's an environmental characteristic or a health characteristic or a cultural characteristic. And so, then that then feeds into changes in choice, so where people have a choice. Because as Brianna's mentioned, not everyone has a choice in terms of food. So, I would actually say that if you actually apply David Eyre's sort of thinking, which he expressed before, which is actually about people not producing a commodity but actually producing something that has a demand and there's a great opportunity to actually supply that demand for people who are more informed about their food choices and who can afford them.

**Mark Howden:**

And so, I don't see that as a fundamental problem. I actually see that as a potential opportunity if we position ourselves well. I'd go back a step though and there are a few caveats here. If you actually think about the fundamental framing of, say, the UN Food Security, that's not just about food choice, it's about food quality, it's about food affordability, it's about food stability. I think we need to be thinking about all these characteristics in terms of what might be a successful food system but having informed consumers who are actually changing their practises because of that information, I think, is a great step towards that.

**David Pembroke:**

All right. David Eyre.

**David Eyre:**

Just very quickly, the formula for sustainability is really doing more with less. And if we focus on making more money out of few imports and we're focusing on a value-added product, then Australia can still very more globally competitive. Right now, we're putting immense amount of energy, water, labour into shipping out commodities and our transport logistics in this structure is very oriented around that. Now, what if we focus some of that energy on value-adding goods locally and creating those goods which are inherently higher value to a smaller number of people but for a larger net profit? That would address a lot of our sustainability problems at the same time. We would require less water to do it. There'd be less pressure on our souls.

**David Eyre:**

But of course, you have to bring regional communities along and a farmer along so they can still make more money. Right now, most of farmers are price taggers. They lose contact when their good at farm gate and they're receiving a low as possible price for the upstream person can pay them for it. And upstream party is usually an international company. We're not capturing the value of Australian agricultural production within the Australian economy, and we're certainly not within regional economies where we should be capturing. We can absolutely be competitive in global markets, I think is the short answer, but we have to change our thinking.

**David Pembroke:**

All right. Well, listen, we are closing in on time. The dialogue is due to wind up in a few minutes time. But I might just ask each of the panellists going from left... or my left to right, and I'll call you through, just a quick summary of what you would like to leave the audience with today, a brief thought. But David Eyre, I might start with you, just a quick wrap up on today's discussion: Future Proofing our Food Systems by Boosting Resilience.

**David Eyre:**

The time is now to start doing it, to demonstrate in practical ways that we can actually achieve it. And we've certainly got the capability.

**David Pembroke:**

Excellent. Brianna, a final word from you.

**Brianna Casey:**

We've got an awfully long way to get to zero hunger by 2030, but we want with farmers and the entire industry to make it happen.

**David Pembroke:**

Thank you very much. Dr. Herrero.

**Mario Herrero:**

Yeah, we need to change our food system. This is already an idea in the mainstream and the dialogue is just starting. So, let's engage in it.

**David Pembroke:**

Doug McNicholl.

**Doug McNicholl:**

Make sure we keep producers front and centre. At the end of the day, they're the drivers of the innovation ecosystem to deliver solutions. Let's continue investing in R&D and make sure we've got stable science-based policies in the industry now.

**David Pembroke:**

And the final word to Professor Howden.

**Mark Howden:**

Thanks, David. Look, I think the future is both full of opportunities but full of challenges. To address this, we actually need to be forward-looking not backward-looking. We need to ask questions of ourselves, and we need to think about why we're doing things, how we're doing them, and what we expect to be success measures. And we need to be thinking right across the value chain because it's not just about the farmers, it's not about the consumers, it's about everyone in between.

**David Pembroke:**

And sorry, second to last. But last is Peter Gooday. A final word from you Peter having listened to those presentations today.

**Peter Gooday:**

Yeah, I think a lot of it it's actually about incentives in the supply chain, so making sure that incentives are flowing from consumers all the way back to producers so they know what consumers are actually valuing, so they can be producing the right thing. Without that demand pull, we won't get what we want.

**David Pembroke:**

Well, Peter Gooday, thank you very much and also to Dr. Mario Herrero, Professor Mark Howden, David Eyre, Doug McNicholl, and Brianna Casey for that wonderful and compelling discussion. As Dr. Herrero said a little bit earlier, this has to be the beginning of the conversation certainly not the end of it as we look towards the Food Systems Summit.

**David Pembroke:**

Now, we would encourage you to visit and upload your views and ideas for the Food System Summit using the department's Have Your Say page. If you'd like to visit the Have Your Say page for the Food System Summit, you will be able to put your thoughts and your questions, perhaps, forward in that forum. Apologies for the questions that we weren't able to get to today. But we also do hope you will register for the next webinar in this series, which is Eating for Our Health and the Environment: Balancing Nutrition and Sustainability. This will be held on Thursday the 27th of May at the same time of 2:00 to 3:30 Australian Eastern Standard Time. You can find the registration link for this and future webinars and other information on the Department of Agriculture, Water and Environment UN Food Systems Summit 2021 webpage.

**David Pembroke:**

Thank you to Fleur. And remember that these dialogues are happening elsewhere, both in Australia and globally. If you would like to engage further, please use these links. But thank you again for all your attendance and questions. And until next week's webinar, it's goodbye.