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A transcript of Anna Skarbek's 2025 Forest Carbon Summit keynote address

Editor's note: This transcript has been lightly edited for clarity.

It's a great pleasure to be here. A really important sector at a really important time.

I also want to add my acknowledgement today that we meet on the unceded lands of the Ngunnawal and Ngambri people.

And for tens of thousands of years, First Nations communities have cared for these landscapes, managing forests and grasslands and waterways in ways that sustain biodiversity and maintain ecological balance, as well as provide the nourishment and landscapes and livelihoods that they relied on and that we still do today.

And so their knowledge is essential as we confront the twin challenges of climate change and biodiversity loss.

As we discuss the future of forests in carbon sequestration, we recognise that Indigenous land stewardship holds key lessons for achieving a truly sustainable and nature-positive future.

I'm looking forward to joining your discussions here today on what really is a critical challenge of our time.

How we harness the power of forests to combat climate change while ensuring biodiversity, resilience and a growing sustainable timber industry, while maintaining food production, of course, and our regional communities.

The core message is that achieving net zero is possible and that the land sector is critical to that goal.

But solving for carbon alone isn't enough. To be truly sustainable, we must also halt and reverse biodiversity loss.

And the good news is we can do both and continue to grow a productive, resilient economy.

The key is to manage and optimise competing land use needs.

And the tools now exist to help us do just that. I'm going to outline some of those tools here today.

We know that, with the right approach, environmental restoration and the growth of agriculture and land-based industries can go hand in hand.

The science is clear. To meet our net zero targets, we must sequester more carbon.

Carbon sequestration in the land sector is not a substitute for highly ambitious emissions reductions across all the sectors. We can't continue emitting across the rest of the economy at our current levels and expect the land to simply absorb the excess. Instead, we must pursue a dual strategy, cutting emissions at the source while leveraging nature's own carbon capture technologies, one of which is forests.

Climateworks Centre, over the last 15 years, has focused on solutions-oriented knowledge creation, working with the decision-makers who have the power to reduce emissions at scale. Our team of around 100 people work across all sectors of the economy in Australia and in Southeast Asia, including transport, household energy, industrial decarbonisation, and sustainable finance, among others.

At the core of our work in Australia is developing national pathways showing how to meet the Paris Agreement climate goals. Our latest multi-sector modelling, known as decarbonisation scenarios, maps out how Australia can achieve net zero in a way that’s cost-effective and is aligned with the Paris Agreement goals of limiting global warming to 1.5 degrees Celsius and staying well under 2 degrees.

This modelling informs government strategies now, including the Climate Change Authority's recent advice to the Australian Parliament, and also helps inform the Australian Energy Market Operator's scenarios for how it plans the energy market and has helped inform the sustainable finance taxonomy.

Let's look at the role of the land sector in those scenarios. These two charts are from Climateworks' decarbonisation scenarios, which I just referred to.

They represent the Paris Agreement temperature goals, solving for limiting Australia's share of the global carbon budget to, on my right, the 1.5°C temperature limit and on the other chart, the well-under-2°C .

The difference you'll see here is what happens in the land sector.

This shows what it looks like for Australia's economy and all of its sectors to achieve net zero emissions within the 2050 timeframe. These coloured wedges represent the emissions from buildings, transport, industry and agriculture.

The horizontal line there is the zero-emissions line, the light green is the agricultural emissions, the blue is industry, the light blue is transport and purple is buildings. All of those industrial sectors use electricity and so rather than double count that, there's a dotted yellow line representing the shape of electricity emissions.

And what we show is that electricity can and does, in an optimised scenario, reach net zero emissions in the early 2030s. So that's a fully decarbonised electricity grid, which contributes to decarbonising the other sectors.

Those sectors also, having decarbonised their electricity, need to look at decarbonising their liquid fuels: diesel, petrol, oil, and gas, which are used in industrial facilities and in transport. And renewable electricity plays a big role in that as well.

What we show is that we can reduce those industrial emissions and transport to almost zero by 2050, though not yet completely, under these scenarios. But our research shows that the technologies have been invented to completely eliminate emissions, even in Australia's hardest to abate sectors, heavy industry, aluminium, iron and steel and chemicals. We've recently seen new analysis that allows us to reduce those emissions up to 99%.

The good news is that Australia can remain a mining and minerals exporting nation, a real economic powerhouse, while repowering those facilities with renewable energy and replacing the current use of liquid fossil fuels with other forms of biogas and renewable hydrogen. Many industrial facility upgrades are required as part of that transformation.

Australia cannot meet the Paris Agreement temperature limits without nature-based sequestration, which we show below the line in the dark green wedges.

The difference between the two scenarios is a question of volume, of how many emissions will occur in the next three decades and how quickly we can reduce those emissions using technologies and nature.

The biggest opportunity to go faster is when we look at nature-based sequestration, which can do a lot of the work pre-2050 while the economy undergoes those major industrial transformations that I mentioned.

What this shows is that in the Paris-aligned 1.5°C scenario, our scenarios suggest that the cost-effective path could require up to eight times more land-based sequestration than is currently occurring today. That's what you see there stylised as that large green wedge.

So we've developed additional tools to study that in more detail.

This shows that the need is there and the potential is there. So what we do on the land matters, and how we do it matters. Also, the choice of these scenarios matters.

You will have heard climate scientists say that every tenth of a degree of avoided warming exponentially avoids increased harm. And I won't take up all of my time on a climate science presentation here, but the data is really stark and the reason that those two limits – 1.5°C and well-under 2°C – were put into the Paris Agreement.

1.5°C was considered the aspiration because when the science was first done (and it's updated every seven years or so) back when the Paris Agreement was signed, it was felt that the really dangerous environmental tipping points would occur around 2°C of warming.

But the update seven years later, the environmental evidence showed that those harms were occurring sooner than that, closer to 1.5°C of warming. That prompted the financial sector worldwide to commit to aspirations for net zero 2050, which would align with the more ambitious 1.5°C temperature limit and try to avoid the risk of temperatures rising beyond 1.5–2°C.

If that's what the financial asset managers responsible for our pensions in 2050 have done – their actuarial studies to say that the economy is better off – we can achieve these more ambitious sequestration targets. The bigger green wedge is part of that story.

So let's dig into that.

When we look more closely, we learn that spatial strategic planning really matters. It becomes an essential consideration for where carbon projects will be located because balancing land use is a challenge worldwide, even in a country as vast as Australia.

Australia needs enough agricultural production to support a growing population and the export markets while ensuring the prosperity and wellbeing of its regional communities. And we know we must increase the sequestration from nature-based solutions on our land.

Beyond carbon sequestration, our land sector must also move on to a nature-positive pathway to halt and reverse biodiversity loss. Along with the Paris Agreement, we now have our national commitments to the Kunming-Montreal Global Biodiversity Framework. Within this, Australia has set national targets to protect and conserve 30% of its land and marine areas by 2030 and take further action to restore the degraded ecosystems.

And we know these goals are not just about conservation for its own sake. Healthy ecosystems support agriculture, enhance water security, and strengthen resilience to climate change impacts, such as drought and extreme weather.

Fortunately, Australia is well-positioned to lead in this integrated approach to climate and nature. The challenge is to leverage the hard-earned lessons from climate action, policy, science, and market

improvements over the last decades and fast-track the alignment of the global climate and nature positive goals.

This means that the land and agriculture sectors now balance increasing food, fibre, and energy production with the need to protect and restore ecosystems, solving for multiple goals at one time as they themselves shift and adjust to climate change.

And we know that more is needed from the land sector, both in reducing emissions and increasing sequestration.

This is the challenge and also the opportunity. If done right, Australia can restore biodiversity and protect ecosystems and build resilience to climate extremes, all while supporting farmers, foresters and regional communities to diversify their businesses and future-proof their livelihoods.

Why do we have this confidence?

We've been working for years with CSIRO and Deakin University, and other experts on a tool called the Land Use Trade-offs Model. And we've developed version 2.0 of this tool, LUTO2, as we fondly call it. And through this tool, we've been able to study how to optimise for these multiple land use goals. It's a world-leading spatial optimisation model that maps the best way to use and manage land to achieve climate, biodiversity and economic goals simultaneously.

It also enables decision-makers to plan land use transformations that maximise co-benefits while minimising trade-offs, ensuring that climate action can strengthen rather than undermine nature.

In a moment, I'll talk in more detail about what we've been able to include in this decision tool. We've taken account of domestic and international agricultural demand, global and national climate targets, global and national biodiversity targets, and accounted for Australia's own water limits in each catchment – and staying within those water use limits so that no catchments are pushed into water stress.

LUTO2 allows us to look at the optimal distribution of agricultural production and non-agricultural land use, combining it with land practices in agriculture and in environmental land management practices, while being aware of what's happening to climate change over the top of this landscape.

LUTO2 covers over 60% of Australia's land mass, representing all the privately owned non-urban land and the Crown Lease land in Australia, looking at Australia's agricultural productive landscapes and the non-urban land. It looks at a high spatial granularity, one kilometre square resolutions across all of this land area, which is over four million grid cells, taking into account, as I mentioned, the water availability.

And it integrates data on biodiversity, carbon sequestration, water use, agricultural productivity and food systems, and looks at each of these parcels of land for its agricultural opportunities, its climate impacts, and its biodiversity habitat features.

It also takes account of our trade in food and fibre products, takes account of food and waste, and can account for future dietary trends.

It allows us to fast forward towards 2050 and observe what would happen under different scenarios in four million one-kilometre square patches of land in Australia, under all of those conditions.

And that helps us identify where land use changes will be most effective and beneficial and offers insights into how different policies and different market mechanisms could drive these changes.

So what do we study? What do we include in this analysis?

A wide variety of agricultural land management practices. These include agricultural technology, such as fertiliser and the energy intensity uses, methane reduction in livestock measures, ecological grazing, early dry season savanna burning, biochar cropping soil amendment, as well as non-agricultural and mixed land uses, so environmental plantings, mixed species, and riparian buffer plantings with mixed species along waterways, as well as carbon plantings for hardwood and human

induced regeneration and agroforestry, which is mixed species plantings with sheep or beef, as well as farm forestry, so hardwood plantings with sheep or beef, and also looking at bioenergy with carbon capture and storage.

It also draws on an extensive set of biodiversity data sets, modelling more than 10,000 species that were not previously included in the landscape modelling that Australia had available to it.

This allows LUTO2 to identify where and how Australia can contribute to meeting the global biodiversity framework targets and help address the twin crises of nature restoration and climate mitigation.

Meeting biodiversity targets requires a strategic approach, one that represents the full diversity of our ecosystems and that ensures landscape connectivity, assessing the condition of existing habitat and factoring in the locations of threatened species, and crucially understanding how climate change will affect habitat suitability over time, so that we can ensure that restoration efforts we invest in today are both strategic now and resilient in the future.

The maps here show some of the analysis that feeds into this modelling and this understanding and these granular maps of Australia.

These charts illustrate the habitat suitability for one particular species, in this case, the common wallaroo, under different climate change scenarios. It looks at the IPCC scenarios of high extreme warming, RCP 8.5, as it's often known. On the right, it shows the extent to which the appropriate habitat area is dramatically reduced under that degree of warming.

This is just one of the biodiversity data layers used in this LUTO2 modelling.

So what does LUTO2 tell us? We'll be publishing a major study of scenario results later this year around October, but what we are learning is that we've been able to run the model to align with the Paris Agreement's ambitious 1.5°C target, as I mentioned, plus the Kunming-Montreal Global Biodiversity targets, plus meeting the projected increases in agricultural demand.

The good news is that we have scenarios that show it is possible to balance all of these different objectives. But, it does require significant changes in both how land is managed and how land is used.

We've also run the model with the Paris Agreement target and without the biodiversity targets. And what does that show us? Dramatically different strategies emerge. So, without the biodiversity considerations, the model prioritises large-scale monocultures to maximise carbon sequestration.

But when the biodiversity targets are included, a much more diverse landscape is suggested, one that incorporates environmental plantings, riparian restoration, agroforestry and other land management approaches that enhance ecosystem health while still delivering on the climate goals and carbon sequestration.

So this reinforces the importance of balancing carbon sequestration and other land uses.

We know this approach is not new to the industry, but the scale to which we need to do this is. Our modelling also highlights significant opportunities to integrate trees into farmland, helping meet climate and biodiversity goals while also providing benefits for agricultural productivity, such as improved livestock and soil health and improved water retention.

However, achieving these co-benefits, at the scale needed, requires targeted changes in land use decisions, planning and management. And the optimal approach depends heavily on the underlying potential for biodiversity and carbon sequestration of each of the different landscapes.

We're continuing this work and collaborating with the Carbon Market Institute to identify areas and methods where an integrated nature and carbon approach can deliver the greatest economic and environmental outcomes. So stay tuned later in the year for that work, too.

In addition to studying the national scenarios for how we get there and optimizing for all of these goals simultaneously, we also know that we need to consider nature's broader value.

Natural capital beyond carbon sequestration.

By show of hands, who's heard of the ISSB, the International Sustainability Standards Board?

Good, amongst friends here.

I used to say amongst many of the climate movement, one of my favourite acronyms that came out of the Glasgow COP was the ISSB. It's playing a really important role in shifting mindset and practice in the financial sector, as well as guiding many of the financial instruments and incentives that are important in this sector.

So it has now commenced work on natural capital, nature-related issues, following the recommendations of the TNFD, the Task Force on Nature-related Financial Disclosures.

Most of you would be aware that the TCFD, its predecessor, has now also made its way through the ISSB and international legislation, and Australia's own climate-related financial disclosures have now been legislated and commenced this financial year coming.

ISSB is now working on nature and the expectation is that nature will follow climate into standard corporate reporting at financial annual report time. We know that the audit sector in Australia is gearing up to understand how this becomes business as usual for boardrooms and companies and investors to include not just their climate-related risks and opportunities, and then their nature-related risks and opportunities.

So we knew that this would be a very important feature for how to support Australian businesses and investors in the future.

We've got Australian businesses, investors and land managers optimising for all of those goals, all at one time, But measuring changes in ecosystems and species is more challenging than measuring greenhouse gas emissions alone.

There are only six greenhouse gases with a CO2 equivalent, which makes it very simple for financial markets. Natural capital is more complex. Of course, there's not one individual metric.

But there are many, and our team has mapped 160 natural capital metrics because we know that scientifically credible and standardised metrics are needed to show whether actions taken by companies or governments are halting and reversing nature loss and how Australia is reaching its targets.

So I'm going to share with you now a bit more about the Natural Capital Measurement Catalog, which is a new user-friendly, scientifically rigorous natural capital measurement resource.

Natural capital is the value of everything that comes from nature, soil, air, water and all living creatures. It provides the foundation for human life and economic activities.

More than half of the world's GDP is moderately or highly dependent on nature and its services.

In Australia, roughly half, or nearly a trillion dollars, of our GDP has a moderate or very high direct dependence on nature. Half of Australia's GDP. We know that we manage what we measure.

Until now, there has been no agreed way to measure natural capital, and Climateworks worked with the natural capital sector experts, with support from the Macdoch Foundation, to fill that gap.

And we believe this is a world-first resource. It provides consistent measurement of natural capital in Australia, because it outlines what to measure, how to measure it, and where there are publicly available data sources to support those metrics.

This catalogue has been developed with support from a technical reference panel of experts from research institutions and organisations across Australia, including CSIRO, ANU, Latrobe University, Griffith University, Federation University, Accounting for Nature, Farming for the Future, and an advisory group comprising more than 50 organisations, from financial institutions, government, land

management, research and supply chains, farming groups, measurement providers and consultancies.

For the first time, organisations can now access a standardised approach to measuring natural capital that has been tested, debated and agreed by this wide group.

This will help ensure that the impacts of nature being measured on biodiversity, water resources, soil health, and other ecosystem services are properly accounted for.

This will help landowners, farmers, foresters, and governments understand the size, condition, and benefits of their natural assets.

It also enables businesses to make informed decisions about how to enhance or protect their natural capital in a way that supports climate resilience and biodiversity recovery.

We've also made sure that this catalogue, the NCMC, as we fondly call it, is aligned with the key local and international frameworks. This includes the TNFD, the Capital Coalition's Natural Capital Toolkit and the new Nature Positive Initiative, Draft State of Nature Metrics.

It's also consistent with the UN Environmental Accounting Standards and many other frameworks.

I know from my work with the financial sector how important it is to integrate natural capital decision-making into assessing financial risks and opportunities. This has flow-on effects for informing investors, lenders and insurers to incorporate natural capital into their decision-making. And this then fosters a more sustainable allocation of capital and financial risk management.

So, we see this as an essential step towards ensuring that land use decisions we make today consider production in a way that's both climate-aligned and nature-positive and can benefit business and society.

So these two new tools go hand in hand: understanding in what direction Australia's landscapes need to head and what multiple goals we can optimise for at the landscape scale. And then, at the property scale, how do you know what contribution you're making to that?

This catalogue provides the standardised library of metrics.

When asked about their impact on nature, companies can now draw from 160 different natural capital metrics from this library. And with support of government, we've mapped how many of those metrics already have a publicly available database.

Geospatial data, remote sensing data, are already mapped through the environmental public resources of governments, state and federal.

And I'm pleased to report that 80–90 of the 160 metrics in this catalogue do have a publicly available data source already produced. And we've linked that into this catalogue, which is available online at naturalcapitalmeasurement.org.

You'll often hear natural capital reporting is too hard, there's not enough data or the data's too hard or difficult to understand. Direct people to this catalogue in response to that. There is data, it can be clearly understood and this is a resource that's free for everyone, that has the backing of all the expert groups that I mentioned earlier to help make it clearer and easier of what we already have to work with in measuring and understanding natural capital.

In closing, this helps us address what I know you hear a lot about in your industry: social licence in land use planning. The holistic approach that we've talked about for a systems-level approach to balancing climate action, biodiversity protection, and agricultural production, of course, also needs to include society and community impacts.

This needs to acknowledge the need for many significant land use changes to meet our goals while also supporting the communities who live on and with our land. We know there's a lot of contention and differing views on future land use change. And we know that we can and must respond to this

challenge in a way that optimises for and understands the economic, social, and cultural values and impacts in different regions.

Through our conversations, we've been really pleased to see that underneath all of the debates, those common goals are shared, that we all seek to achieve a safe climate, sufficient natural capital to maintain our wellbeing and agricultural and ecosystem health as well as vibrant regional communities.

We know those goals are shared. We also know it gets difficult in the granular detail of parcels of land and particular decisions. And so we're pleased to have contributed these open-source information tools that help provide transparency, reason and shared evidence in navigating these social and community transitions.

We also know that fostering markets, financial incentives, and policy incentives to support sustainable land management and food and timber production is a key part of the transition.

We know that we can design those incentives to also drive nature-based solutions that create multiple benefits, sequestering carbon, restoring ecosystems and maintaining productive landscapes.

At Climateworks, we often talk about this concept of backcasting.

Forecasting is very common. Where are we today? Where do we need to go next? Start from today and take the next step. Backcasting is standing in the shoes of success in the future. Where do we know we need to be? And what are we solving for? And we've spent our time helping create visibility for that, all the natural capital metrics, all the landscape goals and what it looks like in a healthy, successful, prosperous Australia, even when there is some climate change and yet in a global net zero economy that has achieved the Kunming-Montreal Global Biodiversity targets.

We've helped show what that success looks like and we encourage those who are designing market incentives, market products and services and financial contracts and structures, stand in the shoes of success and backcast from there so that you start with what you're solving for and be confident that when you add more than one goal to what you're solving for, it might feel like it's making it more complex, but what I've learned is that it often makes it easier to solve for it.

You avoid the one-step-forward, two-step-back problem. As the renewables industry is discovering, we can do community benefit sharing, and when we broaden out what we solve for in citing renewables developments, for example, it broadens the conversation. It makes it more complex to determine who might be at the table at the start, but you can solve for multiple goals for future success at the beginning and then chart a smoother path forward having done that.

So I encourage you all to take backcasting as your goal. We can see what a successful future looks like and we're encouraged that it is possible.

One way to strengthen social licence is through transparency in environmental performance, and natural capital accounting can help businesses and policy-makers demonstrate their commitment to sustainability.

So I close where I began, just to repeat that the role of forestry and climate mitigation is clear and complex.

It's not just about trees as carbon stores; it's about embedding forestry within a broader strategy of deep emissions reductions, ecosystem restoration, and sustainable land management.

We know we can achieve this with sound science, robust policy frameworks, and coordinated efforts of policy-makers.

And I'm pleased that Climateworks has two of the tools we've worked on and we will continue working with all of the stakeholders in this sector to make those more available and more mainstream in decision-making to help you all solve for the multiple goals that we know we all share.

So, I hope I have left you with confidence that it's achievable, and I look forward to your sector's contributions to achieving it. Thank you.