Summary | 12 June 2024

Towards Net Zero Forum

“This is a 21st century challenge, and we are committed to tackling it with a 21st century system.”

~ The Honourable Ed Husic

Welcome

“Look around the room today. This is the breadth of the community that will get us to net zero in a just, equitable, prosperous and sustainable way.”

- Grace Kirkby, Towards Net Zero mission, CSIRO

“Environmental leaders, we need you. The country is always talking to us, and it is crying out for help. The exploitative mindset of the last 200 years needs to shift. What can we do for our water? What can we do for our country? Then in turn we will benefit from that care.”

– Uncle Bill Nicholson, Wurundjeri Elder

Dr Doug Hilton and The Honourable Ed Husic

Dr Doug Hilton, CSIRO Chief Executive

- "*The road to net zero is humanity's most profound challenge. A challenge, that if we don't rise to it will impact our health, our environment, our economy and ultimately our existence.*"
- "*Navigating the road to net zero depends on our ability to come together as individuals and organisations. Not for one forum or one meeting but for weeks, months, years and indeed decades*."

The Honourable Ed Husic MP, Minister for Industry and Science

- *"We have already lost one decade. We do not need to wait for the work that needs to be done in the coming decade. We can get all that done now. We should and must get started*."
- Our industrial sector transformation is going to drive down emissions. It will create new economic and social opportunities, and we certainly don't underestimate the challenges that that is going to involve. Industry accounts for 44% of our emissions, and much of that is in our hard to abate sectors.
- The transition requires government, industry, research, and the community to collaborate in new ways to achieve the best outcomes.
- Australia is endowed with abundant renewable energy resources, it also has the required innovation, expertise, flexibility, drive and leadership achieve this.

Productivity, Net Zero & Industrial Policy

Emeritus Professor Roy Green

- “The productivity and net zero stories are coming together, and we cannot solve one without the other”.
- **Research and innovation:** The real driver of productivity growth is how well we innovate our businesses, and how well we manage them and release the talent and creativity of our workforces.
- Australia needs an industrial policy architecture built around innovation and skills. These are critical to transforming our industrial structure, increasing productivity growth and achieving net zero.

Critical elements include:

- **Mission-led industrial policy,** starting with technology foresighting. Where are our current and future areas of competitive advantage? What kind of strategic bets should we take?
- **Research and development**: we need to turbo-charge our efforts at the lower end of the technology readiness level scale to drive value creation at the upper end.
- **Place-based innovation ecosystems**: as an engine for translating ideas into commercial outcomes through collaboration among large companies, research institutions and SME supply chains.
- **We need to reimagine the public sector as an innovation driver:** Through new approaches to public procurement, sponsored research programs and public sector capability-building.
- Everything in successful public policy depends on **building the skills and knowledge base** of the economy so we can create the jobs and industries of the future.

Fireside Chat: Dr Michael Battaglia and Professor Libby Lester

- Earlier speakers called for new capabilities in the innovation system. Through Towards Net Zero Mission we are responding by building national capability to transition to net zero by:
  - Building options and pathways.
  - Mobilising resources at scale.
  - Understanding and mitigating risks and building mechanisms for discourse.
  - Bringing together interlocking end-to-end systems of use.
- We take both a place-based and value chain focus; while recognising some of the tensions this creates for pathway choices;
  - **Value chain focus**: it is through market and technological innovations along value chains that we will have the means to reduce emissions.
  - **Place-based focus**: It is on the ground, where decarbonisation will intersect with the things we value most. And where we will realise the opportunities of a low emissions economy to create new value and create opportunity to change other pressing challenges.
- "(the net zero transition) *urgent yes, hard yes, easy no, but doable. Only if we step into the complexity of the problem, recognise it as a social and behavioural problem as well as a technological problem and build our response, and innovation system capability accordingly."* – Dr Michael Battaglia
- *"This is a deeply interconnected problem. This interconnection means that 'net zero' will be part of a constellation of policy aims, none of which can be pursued in silos. We will require thinking to expand on where boundaries lie. On what is and what is not your problem to solve ."* – Dr Michael Battaglia
- **Different people are mobilising for different reasons**: *"Men are buying EVS mainly to be early adopters of new technology. Women are buying EVS to support climate change initiatives. There is complexity and opportunities in how we communicate and encourage EV ownership at accelerated rate*." – Professor Libby Lester, Monash Climate Change Communication Hub.

Young Perspectives on the Transition

Tiahni Adamson, Gavin Choong, Paul Stark and Grace Kirkby

- **Reciprocity in relationships**: Consultation should be about building connections and relationships; it should be ongoing and there should be accountability to communicate impacts back to communities.
- **Deep, connected listening across diverse stakeholder groups**: We need to share consultation insights for joined up knowledge and action. Leverage what is already out there and the consultations that have already been done.
- **Intergenerational equity**: traditionally we have been taking from the future for the benefit of now. R&D however is about investing now for the future.
- *"Younger farmers are more concerned about climate change impacts and ability to continue to do farming. There is some denial amongst young farmers, which is driven by fear and local perspectives"* – Paul Stark, Policy and Farmer Engagement Officer, Farmers for Climate Action
- "*We don't want the net zero transition to be a net zero (outcome) for first nations peoples.*" – Tiahni Adamson, SA Young Australian of the Year 2024
- "*How do we reignite hope that is grounded in realism for the benefit of future generations. Solutions that go to benefits beyond the minority of people. This must also show in our leadership."* – Gavin Choong, UN Youth Ambassador for Australia, 2024

Place-based Transformation

Helen Steel, Nick Palousis, Andrew Taylor & Jody Bruce

- This is about more than reaching net zero. It is about how we get there and the society we build. There is a need to ensure the pathways chosen recognise broader benefits and needs.
- Place-based exemplars like the Bega Circular Economy Initiative can “bring people closer to the whole story” - Andrew Taylor, Circularity Program Manager, Bega Circular Economy Initiative.
- From boardrooms to communities, there is a need to build the capacity to engage in the transition. From literacy around the tech to understanding feasible pathways, trade-offs and building a shared vision for action. There is a key role for information brokers and institutions that share and translate knowledge to action. “We need to get more science and confidence into business”, Nick Palousis, CEO, 2XE.
- Local governments are feeling the real impacts of climate change, and they’re also the gateway to understand community impacts and perspectives. Through planning and regulations, local councils drive decision making around new industries and practices such as circular economy and can build in societal aspirations.
- Language is important: “In dealing with communities the language of opportunity is less disempowering than the language of emergency.” Helen Steel, CEO, SECCCA
- Place based approaches make it easier to connect to those hard-to-reach groups that are at risk of missing the opportunities the net zero transition can provide, such as small-medium enterprises, urban groups and those who are disengaged.

Roadmaps to action: Kath Rowley

Department of Climate Change, Energy, the Environment and Water

- Climate change is everyone's responsibility and opportunity.
- "Net zero planning is not a set and forget activity - it is a repeat game – we plan, we act, we learn, we plan again".
- We are seeing significant decarbonisation, and we are on track for 42% emissions reduction by 2035 with the new policy initiatives.
- "The fact that Australia has committed $23bn to FMIA is telling of a shift."
- Electricity, transport, industry, agriculture are all connected. The pathways to decarbonise these sectors depend on actions in others. Therefore, collaboration and coordination will be key to achieving accelerated action that mitigates risk and delivers benefits to all.

Value Chain Transformations

Rob Evans, Kath Rowley, Dr Humair Nadeem and Warren Flentje.

- Industry and government must ensure objectives are aligned. Synchronization of the elements needed to shift value chains is required: technology, raw material supply, energy, markets, policy support.
- "*Enablers need to be put in place to ensure a low emissions transition. There is a coalition of willing and committed partners*"
- There is significant risk (and opportunity) for industry but through partnering with others in each space to pool infrastructure, resources, skills and capital we can derisk the transition.
- Energy efficiency is as important as is scaling renewables – this shrinks the size of the challenge.
- "*There is some urgency, because we have left this quite late.*"

Sustainable Aviation Fuels

Heidi Hauf, Dr Cathryn O'Sullivan, Shahana McKenzie & Warren Flentje

- As we transition to a bioeconomy our land sector will be asked to do a lot more. We need to balance these needs, for food and feedstocks with environmental needs.
- Australia's liquid fuel consumption makes up 45% of our energy mix. We need to prioritise our finite bio-feedstocks to these ends and not stationary power generation which can be served through solar, wind and hydroelectricity.
- Renewable liquid fuels (SAF and Renewable Diesel) can contribute to Australia's decarbonisation targets and will be heavily relied upon by hard-to-abate sectors.
- Low carbon liquid fuel production is a huge opportunity for Australia: bio feedstocks, plans for abundant renewable energy and domestic (and regional) demand mean Australia is well placed to contribute globally.
- Urgency is required to meet both Australian decarbonisation targets and to secure global investment in SAF & RD production.

Mobilising finance to drive the transition

Dr Michael Battaglia, Emma Jenkin & Malcolm Thornton.

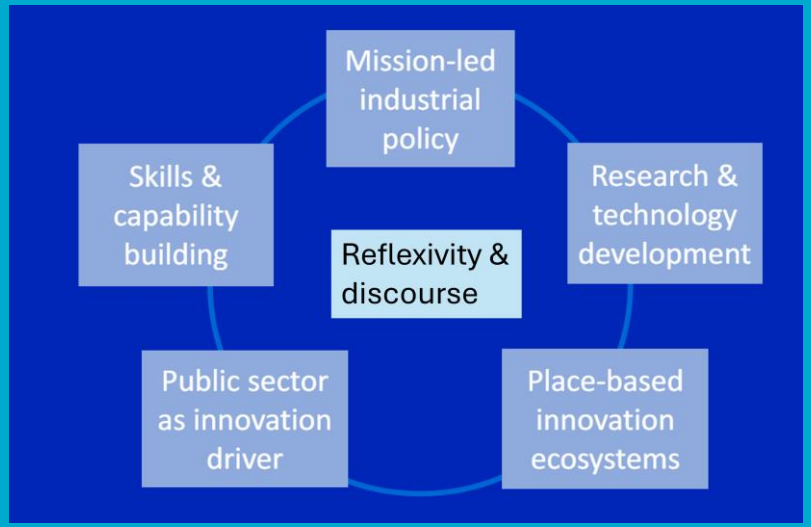
- Science gives finance and the market confidence to act and invest.
- **Derisking investment:** increase industry partnerships to support precincts, to identify pathways, to invest in technology options to reduce investment risk and increase adoption.
- Early-stage government investment can derisk investment by other sources of capital.
- **We need innovation in finance policy as much as we need the partnerships**: there are examples of funding models that can open the funnel of options we have rather than closing them down to 'comfortable' options.
- Regulatory frameworks and approval process reform and improvement can help mobilise capital and accelerate investment.
- "*One of our biggest opportunities is to rapidly adapt and adopt the scale up playbooks that have successfully created global transformations through science and technology"* – Malcolm Thornton, Head of Impact Capital, CEFC

Early Career Research Scientists

Dr Philippa Hammond, Dr Humair Nadeem, Dr Courtney Regan, Dr Zelalem Moti and Dr Michelle Miller.

Rising to the challenge of net zero requires investments in advanced research skills. We heard from early career scientists that:

- We need to **understand context and capability** to successfully scale action. Which is particularly evident in agriculture.
- Build **reflexivity** (ability to observe and learn from what is happening on the ground) into the innovation system. This will allow us to monitor progress and learn about the adaptive capacity of systems.
- As we progress through the transition, we all need to develop the **capacity for dialogue** and discourse if we are going to understand the needs of communities.
- Industry success (Humair talked about the iron ore to steel industry) requires multiple inputs and conditions and we need to take a whole of system view as we transform sectors.



Summary

- Climate change is everyone's responsibility and everyone's opportunity.
- We heard loud and clear that collaboration and reciprocity will be key elements of a successful and equitable transition.
- An emerging view of the innovation system required shows the need for both the technical and institutional elements of transition, but also needs to be centered around a capacity for discourse and engagement to articulate and embrace common aspirations.
- We are late to the challenge, and because of that we need to consider adaptation and mitigation together, but we are seeing momentum building.

Towards Net Zero

Decarbonising Australia's hard-to-abate sectors

The transition to net zero will require change in most sectors of the economy. But it will also present new opportunities which Australia is well placed to grasp. Processes involved in stationary energy production, fuel use, and passenger transport accounted for 80% of Australia's accountable emissions in 2020. The challenge to reduce emissions from these sources is underway. However, a national net zero target needs us to address all emission sources.

The last 20% involves industries such as steel, aviation and agriculture that make critical economic contributions to Australia's prosperity, helping shape the fabric and vibrancy of regional Australia.

What we're doing about it

The Towards Net Zero mission focuses on supporting the construction of low emissions industry value chains. Working with government, industry, and communities to ensure that place-based benefits are realised, and risks anticipated so that opportunities for technology deployment into broader systems of use are identified and coordinated.

By focusing on three industry value chains; iron ore to steel, sustainable aviation fuel and agriculture the mission will accelerate decarbonisation in these sectors and use learnings to identify approaches for other hard-to-abate sectors.

We take both a value chain and a place-based focus. The value chain focus creates technological pathways for change, while the place-based focus works with regions and communities where value chain transformation effects are felt. Intersecting with other societal goals that determine which transition pathways are preferred.

The planned impact is that by 2035, hard-to-abate sectors reduce emissions by half, and in doing so generate environmental, societal, and regional benefits.

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Towards Net Zero

Programs of Work

The Towards Net Zero mission is building Australia's national capability to transition to net zero emissions by enabling Australia to prosper in a low emissions world through new economic, societal and environmental value.

Our Role

- Increase Australia's technology choices, and inform pathway choices.
- Provide an evidence base for policy and regulatory interventions and industry investments.
- Build learning networks and analytic tools to accelerate the net zero transition towards agreed societal goals.
- Build regional transition examples and demonstrators to understand requirements for technology scaling and reduce investment risk.

Some of our Research & Impact

New Options and Technology

- Genotyping/phenotyping to establish giant kelp strains for restoration that are tolerant to warmer oceans.
- Rumen ecology to develop new and scale existing anti-methanogenic feed additive technologies.
- Novel techniques to assess animal methane emission using animal tissue isotopic composition.
- Low temperature iron ore agglomeration.
- Analysis of 60+ global net zero transitions to identify transferable patterns for transformative change.
- Assessing co-benefits and risk reduction outcomes of coupling net-zero and broader sustainability transitions.
- Next generation power to liquid fuels.

Development for Real World Applications

- Developing technology pathways, feedstocks and processes to decarbonise iron and steelmaking.
- Designing assessment frameworks to assess biodiversity benefits and trade-offs from carbon projects with cutting edge ecology approaches.
- Developing and demonstrating enabling technology for low-cost, high-volume production of renewable micro-algal oils for plastics and fuels.
- Executing integrated economic assessment capability to model emissions reduction trajectories and understand trade-offs/multi-metric outcomes.
- Building capacity of SMEs to participate in the low emissions economy.

Innovation Uptake & Scaling

- Biomass gasification project through the Aus-India Green Steel Partnership.
- FutureFeed scale-up to tackle enteric methane.
- Establishment with industry community and levels of govt an enduring Industrial Regions Network to share learning and identify actions.
- Analysing supply/demand for low emissions liquid fuel feedstocks and production in Australia.
- Underpinning financial instruments to scale low-emissions agriculture practices with science.
- National bio sequestration assessment potential for revision of national emission reduction target.
- Developing new evidence-based funding mechanisms for low emissions agriculture.