

Science and natural resource management in Australia. Is there any hope?

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I'd like to thank the University for bestowing this award. It came as a complete surprise and I am truly honoured to receive it.

1) John Burton, UNE, and Lake Pedder.

When I was told about the award, I was asked to write a few words on how my experience at UNE influenced my subsequent career.

It got me thinking and I thought this would be a useful entry point to this speech on the interface of science and natural resource management in Australia today.

I went to UNE in 1975, straight from high school. Australia was enjoying a mining boom, but was in social turmoil over the Vietnam War. University was free. Only a handful of students could afford a car. There were no mobile phones, we used typewriters instead of computers, and we all had long hair and wore bell bottom jeans.

I spent much of my childhood in rural and outback Australia, and I was curious to learn about this weird land, where mammals laid eggs, and where wildflowers are borne from fire.

Looking back there were many people at UNE who had an influence on my career – great botanists, ecologists, and economists. They made me even more curious about how humans and natural world work, but the world-recognised economists - I used to argue with, and they would fail me essay after essay.

There was one professor in particular who had an incredible influence. He is deceased now – Professor John Burton, who established the School of Natural Resources that I went to study at in 1975.

John built dams for a living before becoming an academic in later life. He received an AO for his services to 'resource engineering and resource management education'.

John taught me a number of important lessons:

1. The first was that economics was a tool not a religion. He actually encouraged me to take on the economics professors. It didn't do much for my results, but it did force me to think hard about my world view, and it was crucial to my career that they allowed me to do it.
2. John taught me to understand that scientific knowledge is only of benefit to people when it is tested and applied in the real world.
3. He also taught me that the best way to pursue change was not by simply writing another learned paper, but by taking that knowledge and talking to people about it in the pub on a Friday night.

Burton was a tough bastard – he once said to me to stop wingeing about the state of the world, *'you're simply wasting your breath, and your life, by complaining'* and *'unless you are prepared to do something about it, and that when you do, you better come up with some solutions, otherwise you'll simply be ignored'*.

John experienced the blow torch of public controversy himself when he was asked by the Whitlam government to Chair the Commonwealth Commission of Inquiry into the Flooding of Lake Pedder.

Remember, he was a dam builder, so who better to justify the flooding of this magnificent natural wonder in the highlands of Tasmania.

But when John visited the site and reviewed the evidence he drew the opposite conclusion: *"... Lake Pedder ... had very significant scientific values ... (and) these values will be largely destroyed by the flooding of Lake Pedder."*¹

I still have a copy to this day.

The loss of Lake Pedder set the scene for a much bigger movement which led to the Franklin Dam campaign that ultimately contributed to a change in government in Canberra in 1983. And as a result, Tasmania - and the world - will forever enjoy the benefits of one of the most remarkable natural wildernesses left on this planet.

In his own small way, John Burton the dam builder, helped create the political conditions that led to one of the most remarkable conservation outcomes in Australian history.

2) The World Today.

It is now 40 years since I went to UNE, and while the specific issues might have changed, the underlying challenge of managing the nation's and the world's natural resources have not.

John Burton was a big thinker, but even he would have been astonished at how fast our world has changed.

On environmental issues, he would have been proud of the last half of the 20th century. Global conventions on biodiversity conservation and climate change started to make us think more about human development and the natural world.

In Australia, we witnessed massive advances in environmental condition in our cities and coastal estuaries. Here in Sydney the quality of the air has turned grey skies back to blue, and water pollution standards have seen the Parramatta River and Sydney Harbour turn from sewers into near-pristine waterways.

The public outrage of the flooding of Lake Pedder spawned the modern Australian environment movement. It became cool to be a greenie.

- Bob Hawke won the 1983 election that saved the Franklin,
- The bicentenary saw the birth of the Landcare movement,
- John Howard won the 1996 election with the largest environmental restoration program in Australia's history,
- Robert Hill introduced the EPBC Act and proclaimed Australia's first Indigenous Protected Area,
- David Kemp declared 30% of the Great Barrier Reef as a marine park,

- Bob Carr and Peter Beattie stopped broadscale land clearing in NSW and Queensland, and
- National Party Leader John Anderson introduced the National Water Initiative and Malcolm Turnbull, when Water Minister, shepherded through the Commonwealth Water Act, the first time since Federation the Commonwealth had power to manage Australia's water resources.

I could go on – it was a remarkable time. It helped to stimulate me and my colleagues to form the Wentworth Group of Concerned Scientists 15 years ago now, some of whom are present here tonight.

But Burton would have also been saying *'mate, these are nothing compared to the challenges the world will confront in the next 40 years'*.

And he would be disgusted with the farce that now masquerades as water reform in the Murray Darling Basin or the national energy policy.

Fifty years ago the average life expectancy of a human being was 46 years. Today it's 50% higher at 68 – in Australia it's 86. Over the past 40 years, global food production has more than doubled on only 10% more land.

But here's the rub – as a consequence of this unbelievable success, in the past 70 years human numbers have trebled, and humanity's ecological footprint is something like 50 times that since Darwin published "Origin of the Species" just 150 years ago.²

All these advances in human wellbeing stem from human innovation, and all this human innovation came from science from the moment James Watt developed the steam engine that sparked the industrial revolution in the 1780s; to when Alexander Fleming and the great Australian scientist Howard Florey developed penicillin; or when agricultural scientists discovered new ways to manipulate nature to turn more protons from the sun into more food for people.

The next 40 years will undoubtedly bring even more rapid change.

The world has entered the greatest economic expansion in human history – the Asian Century³ - and technologies such as Artificial Intelligence are set to transform human civilisation in ways nobody can possibly predict.

But there are some things – universal truths if you like – that we do know. We do know that Australia's environment is critical to our nation's economic future, and the health and wellbeing of its people.

From the comfort of our homes in cities like Sydney you wouldn't know it, but across vast areas of the continent, many of our key environmental assets are degraded and deteriorating – our agricultural soils, our rivers systems, our vast array of native flora and fauna.

And science can predict with great certainty that climate change will place even more pressure on these natural assets in the future.

This is the new reality that our generation will need to deal with, and the choices we make in the next 40 years will affect the future of human civilisation for centuries to come.

Here's our challenge:

1. How does humanity maintain the health of soils and river systems, and manage forests and fisheries to produce enough food for 10 billion people - forever?
2. How do we stabilise the world's climate system and manage the adaptation process for the inevitable transition, including the inevitable impacts of extreme natural events?
3. How do 10 billion people reach western living standards in a way that will allow us to conserve the world's biodiversity?

Let me ask you this: what do you think people in 40 years, 100 years, or even 200 years, will say about our generation if we don't?

These are not fringe issues that can put aside for tomorrow. They are great challenges for science, and they are challenges that cannot be solved by science alone.

But we have a major problem.

Despite all the material wealth and economic opportunity that has been generated over the past two centuries, an overwhelming distrust of our economic and political institutions has spread across the western world.

Something has changed.

At the very time we need leadership from our governments, when humanity is about to enter a massive economic transition that is placing unprecedented pressures on the world's natural resources, trust in the very institutions we need to manage this transition is at its lowest point in living memory.

The 2016 ANU Electoral Survey quantifies the level of distrust in Australia's political system. Only one in four Australians believe people in government can be trusted. This is an astonishing figure and it's the lowest ever recorded since the question was first asked almost 40 years ago.⁴

Collapse of trust is not confined to government, nor is it confined to Australia, nor is it likely to be short term in nature.

A global survey of 33,000 people across 28 countries shows that over two thirds of the general population do not have confidence that current leaders can address their country's challenges.

In two out of three countries less than half the population trust traditional institutions – business, government, the media or NGOs – to do the right thing.⁵

An article by economist Francis Fukuyama published in the Australian Financial Review provides an articulate explanation of the state of western democracies.⁶ He and many other commentators trace the source of this mistrust to the aftermath of the GFC.

This loss of trust is not only a problem for economists and business - it is also a big problem for science: Lenore Taylor writing for The Guardian: *"It's also a world where resentment of "elites" slides into a resentment of "experts", which leaves us just a short step from ... a world where people who know things are derided, ..., no more worth listening to ... than conclusions reached through ignorance or misinformation, or hunches, or just telling people what they want to hear."*⁷

Adding to this has been the rise of social media, which has had two impacts.

The first is that access to information has exploded with the internet and search engines. This explosion in access to knowledge has led to a new era of enlightenment, but it has also exposed many of the ugly sides of human nature that were once hidden from view.

It put the magnifying glass to unethical business practices, to corrupt political processes, to unforgivable abuses in the churches. This has had a shocking impact on our trust in traditional institutions.

The former Reserve Bank Governor Burnie Fraser believes that this erosion of trust is now so deep that our broader democratic and mixed-economy underpinnings are increasingly looking like damaged goods: *“less satisfying to countries which have them ..., and less appealing to countries which might be contemplating them.”*⁸

This vacuum has been increasingly filled by people who seek power rather than aspire to do good - extremists who actually don't believe in democracy - but who are motivated enough to take over our political parties, and often paid for by vested interests.

These people have been so successful, they've even managed to make the word 'progressive' a bad thing!

The second consequence with the rise of social media is the decline in quality journalism, which means fewer and fewer issues are able to be properly thought through. The political process has reacted to these events in ways that have effectively reduced any chance of considered long-term reform to 140 character tweets.

The reason for giving these issues such prominence tonight is because if we are to stand any chance of effectively dealing with the growing pressures that the future holds, science must change the way it does business.

3) Science in a Post-truth World.

So where does science fit in this post truth world? This should be a time in human history when the earth sciences reach the status that the medical and engineering sciences reached last century.

Is there any hope?

Well of course there is. Never in human history has a generation had such wealth and knowledge to control our own destiny.

As many of you know I have spent a great deal of my career working in politics and for politicians and I have come to understand just what a difficult job it is. I have been very lucky to have met and worked for many outstanding Australian politicians - Robert Hill, Tom Uren, and Janine Haines, just to name three.

There are still many good people in politics, but they have been overwhelmed by circumstances, and as a consequence, right now, long-term reform can't come from politicians. The numbers simply aren't there.

So the answer once again, is that change will have to be led by civil society. And the very first step is for civil society leaders to regain trust.

So what can science do to rebuild trust so that we can create a political mandate to address these massive, long-term intergenerational challenges?

Today Karen and I have the good fortune to live less than 100 km east of that most remarkable natural wilderness in Tasmania, in the beautiful Huon Valley.

A couple of weeks ago, I met up with a fellow Huon Valley resident, Dr Bob Brown, to ask him what influence he thought the loss of Lake Pedder had on the subsequent Franklin Dam campaign, and what lessons we might draw from that today.

Bob said that it was from the ashes of the loss of Lake Pedder that rose the national campaign to save the Franklin.

He said the **first lesson** was that facts are not enough – that simply presenting evidence to government controlled inquiries will achieve nothing without widespread public support.

The **second lesson** was that in order to get public support, the community first needs to understand there is a problem, and once that is achieved, dedicating resources to empowering sufficient people to take direct action, well in advance of a decision, in order to create a democratic platform for change.

The **third lesson** was that as well as advocating for change they also needed to tackle any short-term adverse impacts on employment and the economy – what we today call “jobs and growth”.

In all this we must continue to stand up for science – to put into the public domain the facts, so that people are given a choice.

The obvious outstanding example of our times is the contribution of science to the global challenge of climate change. Despite everything the fossil fuel lobby has thrown at it, science has been heard - the vast majority of people do accept the science that climate change is real and that action is urgent.

But important as this is, there are many other major environmental issues that need equal attention – water scarcity, soil degradation, the world’s fisheries, and biodiversity loss.

Another great Australian, former President of the Royal Society, Sir Robert May, gave an enlightened talk entitled ‘*Science advice and policy making*’, here in Sydney in 2011. He said: *“These problems could all, in principle, be solved. But such solutions require ... cooperation at the level of neighbourhoods and communities through to nation states. And there is little evidence, as yet, of the willingness to acknowledge these needs for such cooperative activity.”*⁹

The bottom line is that it is no longer sufficient for science to produce learned papers and try and convince politicians. The lesson from the past decade is that building a mandate for change requires a broad coalition of respected organisations and citizens, working together, to show through positive examples that a vision for a healthy environment and a productive economy can become a reality.¹⁰

That’s precisely what Bob Brown told me last week and what John Burton told me 40 years ago.

4) The Power of Science to Change the World.

Let me conclude with these few words and then turn over to questions.

I went to Uni eager to learn about Australia's nature. It is a passion that still drives me today. Along the way, I learned that conservation was way more than simply protecting habitat for Koala's or the marveling at a family of Eastern Grey kangaroos grazing the beautiful New England tablelands.

Through science I learned of the fundamental importance of natural resources – that without healthy soils, seas and rivers, and a stable climate, human civilisation as we know it would simply not exist.

I also learned that the great successes of the past two centuries that allowed me and others of my generation the luxury of turning a passion into a profession, is also bringing with it permanent damage to those natural systems that underpin our civilisation.

I still think the combustion engine is the greatest invention in all of history, but I've also discovered that it is no longer possible to burn the products of 1 million years of photosynthesis in a single year without destroying the very foundations of our industrial society.

I've also discovered the power of the market to drive innovation, whether it be the green revolution of the 1960s, or the renewable energy revolution of the 21st century.¹¹

But the most important lesson of all was the insights and encouragement from teachers like Professor Burton, to question, to challenge perceived wisdoms, and to strive for a new economic model where conservation and economic growth are both seen as progress.

Thank you.

References

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