A greener WA

Can we do more for the climate, oceans and environment?

DECOLONISE FOR CLIMATE JUSTICE

Madu Venkatesan
Climate action advocate
Photo: Gabriel Oliveira
Environmental excellence

How can we deliver the best mix of environmental and economic outcomes for WA?

OUR PARTNERS – HELPING US SHAPE GREAT FOR THE STATE

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The transport sector is one of the biggest contributors to greenhouse gas emissions in Australia and, on a per capita basis, our nation’s emissions are nearly four times the global average.

Low and zero emission vehicles, including electric vehicles (EVs), will play a clear role in helping Australia drive down everyday emissions, improve air quality and reduce the number of people killed each year due to exposure to harmful pollutants.

The rate of uptake is slowly improving, but Australia and WA continue to lag behind much of the world.

With action at the state and federal level we can improve this trajectory and accelerate the path toward a cleaner transport system.

(See page 10) ▶

WA’s vision of being an environmentally sustainable mining powerhouse relies on our capacity to manage and mitigate impacts on the environment.

(See page 11) ▶

The opportunity for Western Australia’s agriculture, forestry and fishing sectors lies in how to effectively use digital technologies and innovation to build on the state’s competitive advantage.

(See page 12) ▶

Great for the State
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The Future of Work

A Creative WA

Disruption

GREEN
A forest in WA’s south west.
Photo: Gabriel Oliveira

10 August 2020 | Great for the State
Reducing plastic in oceans is a passion for Western Australian researchers, volunteers and billionaires alike.

For Tangaroa Blue local coordinator Maureen Maher, one memory of her time working in the Cocos Keeling Islands and Christmas Island has stuck. The islands are near South-East Asia, and plastic waste washes across on to the beaches. “I saw a turtle nesting on a beach up there … burying her eggs,” Ms Maher said.

“As she’s trying to dig a hole I could hear the squelch, I could hear the squelch of polystyrene. It was disturbing. I’m passionate about stopping (plastic pollution). The whole world is drowning in plastic. When it starts washing up on Cottesloe Beach, that’s when people will know it.”

Tangaroa Blue is a not-for-profit organisation devoted to cleaning up beaches in Australia and tracking plastics back to their sources. It was founded in WA by Heidi Tait, although it is now based in Brisbane. Ms Maher said Tangaroa had compiled an online database of plastic sources, called the Australian Marine Debris Initiative. Members worked with organisations responsible for pollution to reduce their impact.

An example was in Geraldton, where plastic packaging tape was washing ashore. “The fishermen were going out with these full polystyrene boxes of bait … pulling (tape) off and throwing them in the ocean,” Ms Maher said.

“Tangaroa Blue is a not-for-profit organisation devoted to cleaning up beaches in Australia and tracking plastics back to their sources.”

Using seaweed products to replace plastic is just one of many Western Australian ideas under exploration to improve ocean health.

“They’re the kind of thing a seal can swim through.” But that had changed thanks to Tangaroa’s engagement, she said.

Another example was in Cottesloe, where the council had banned balloons to improve the coastline.

Iron ore magnate Andrew Forrest has been ambitious about reducing plastic ocean pollution, launching a $US 300 million initiative last year after completing a PhD in marine science.

Dr Forrest launched Sea the Future intending plastic manufacturers voluntarily contribute to a program to fund circular economy projects and encourage a move to recycled plastics.

The cash would be used towards ‘circular-economy’ initiatives.

His Minderoo Foundation is developing a Global Fishing Index to compare fishery protection policies internationally, invest in new ocean research facilities and advocate for technological change to eliminate plastic pollution.

About 220 million tonnes of plastic waste is dumped in the water every year, Minderoo has said.

Oceanographer Julia Reisser has an interest in multiple projects.

Dr Reisser is a co-founder of Uluu, a WA-based start-up hoping to replace plastic with a polymer created from seaweed.

“We need to start developing new polymers,” she told Business News.

Continued on page 4
"We need to move towards clean energy and clean materials."

Seaweed polymers had a number of benefits, she said. One was that they were organic, and decomposed into non-toxic materials.

By comparison, some plastics take hundreds of years to break down and release toxic chemicals.

Seaweed was fast-growing, did not require fertiliser, and could draw carbon dioxide from the atmosphere, Dr Reisser said.

“They’re carbon negative ... and they are compostable ... like wood,” she said.

“It’s not enough to decrease carbon emissions.

“We have to come up with production processes which use carbon.”

A solution is not imminent, however, because the startup is less than a year old and still in proof-of-concept stage.

Dr Reisser’s other works through the University of Western Australia have included finding microscopic lifeforms on small plastics in Australian oceans, and studying connectivity between plastic recycling exports and waste appearing in WA.

The latter research was recently published in the journal, Frontiers.

“We released virtual ocean plastics ... and saw where the overseas plastics that reach our shores are coming from,” she said.

The research found more than 70 per cent of plastics washing up on WA’s coast were from Indonesia, Dr Reisser said.

While that might not seem a locally caused problem, 20 per cent of Australian plastic waste exports go to Indonesia, she said.

“(There’s) a strong connectivity between the Indonesian plastic crisis and the Australian plastic crisis,” Dr Reisser said.

It’s intended the plastics will be recycled, but because of poor standards in the industry, much of the less valuable waste is simply discarded.

Dr Reisser said part of the problem was a lack of sorting before the plastic was shipped overseas, leading to contamination.

While there have been proposals for an immediate ban on plastic waste exports, Dr Reisser believes there’s more to it.

“For us to really progress to a cleaner environment ... it might be interesting to create a global convention to look at plastics,” she said.

We need to start developing new polymers
- Julia Reisser

$US300m Minderoo ocean research pledge

Continued from page 3
**When (plastic) starts washing up on Cottesloe Beach, that’s when people will know it**

— Maureen Maher

“Some policymakers think the solution is to stop (plastic waste) exports altogether ... I think we should consider a slower transition.”

Dr Reisser said a better solution would be to work with recycling systems that worked for both places.

WA’s ocean expertise extends beyond plastics.

*For Blue* founder Andrew Out-haite said WA was the marine science and industry hub of the Indian Ocean region.

Academics at The University of Western Australia were working on global fishing forecasts, Mr Outh-waite said, while the Indian Ocean branch of the United Nations Edu-cational, Scientific and Cultural Organisation’s oceanographic commission was in West Perth.

“We have an enormous amount of coastline,” Mr Outh-waite said.

“In Australia, 70 per cent of our territory is underwater.

“Western Australia has the largest coastline in the Indian Ocean (and) ecologically it’s very diverse.

“A lot of (our success) is down to our national assets.

“We have an advantage in our marine environment no one can compete with.

“It’s diverse, it’s pristine, it’s sustainably managed.”

**Biodiversity**

UWA lecturer Tim Langlois said another important subject in ocean health was biodiversity, protecting a variety of plant and animal life in a habitat.

Dr Langlois recently published a study on the population of sharks on coral reefs around the world in the journal, *Nature*.

“It contributed to the Global FinPrint Project, which studies underwater life using remotely operated video systems fitted with bait.

“Nearly 20 per cent of roughly 370 reefs studied had zero shark observations.

“Shark populations are a really important component of marine biodiversity,” Dr Langlois told *Business News*.

“My research is focused on how humans interact with the marine environment ... and maximising socio-economic benefits.

“Globally, reef sharks on coral reefs are in a pretty poor state.

“But there are bright spots around the globe that correlate with societies with good levels of regulation ... marine parks, etc.”

WA and Australia had performed well, although there was room for improvement.

An example was no-take zones, areas in marine parks where fishing was banned.

“There should be more zones, and existing zones should be larger, Dr Langlois said, partly to help benchmark biodiversity.

“There’s a lot of evidence that suggests we can do better,” he said.

“There’s a new set of marine parks being established ... but they have to cover a wide range of habitats.”

They also needed to be easily accessible to people, Dr Langlois said.

He said balancing benefits of the ocean was a careful process, weighing up fishing against seeing fish in a marine park, for example.

Biodiversity was critical to maximise socio-economic benefit from the ocean, Dr Langlois said.

“If you think about the general benefits we as a society get from the ocean, they’re all linked to biodiversity,” he said.

“It’s like the national parks, they improve people’s states of mind, particularly in these times.”

A big project gathering oceanic data was the International Indian Ocean Expedition 2, of which Murdoch University academic chair (marine science) Lynnath Beckley was a key part.

Australia is one of 12 nations in the project, which is seeking to replicate the initial International Indian Ocean Expedition of the 1960s.

Professor Beckley said there had been a lower level of research interest in the Indian Ocean compared with other oceans.

A range of disciplines will use the expedition research, which can be compared with the original work 50 years ago, including for assessing the impact of climate change.

“It climate change is affecting things in the ocean, we’ll see it,” Professor Beckley said.

Australia’s contribution included the use of the RV Investigator, a marine science vessel.

Investigator tracked the route of Australia’s original part of the expedition, visiting a line of stations along the ocean and checked the results every six weeks.

That collected a huge amount of data, Professor Beckley said, at one-second intervals along a column down to the sea floor.

Nearly 30 researchers participated in the journey, while the boat costs about $130,000 a day to operate.

Professor Beckley said it was an interesting challenge to ensure data was comparable to the original expedition, with technology changing and resolution improving.

In addition to climate change analytics, researchers focused on food webs, which are the interconnection of food chains in a habitat.

That included analysing the genetics of the contents of fish guts to see what they are eating.

“If you find the food web is changing, the fisheries management plan has to change as well,” she said.

Professor Beckley said an example would be a shortage of plankton, small aquatic organisms, which would cause the population of southern bluefin tuna to crash and hit one of the world’s most valuable fishing stocks.

Discovering these shortages early would help alleviate a problem ahead of time.

“The Indian Ocean was particularly interesting for assessing food chains, because it was thought of as a food desert.”

“When you sample the water and look for nutrients, there’s nothing,” she said.

Following the expedition, however, scientists had found that nutrients were being produced by microbes, but were rapidly absorbed into the food chain leading to the appearance that little remained in the environment.

That explained why sampling would find low levels of nutrients in the water.

**Seismic impact**

At the Australian Institute of Marine Science, which operates out of Perth and Townsville, a focus has been assessing the impact of offshore seismic work by resources companies on aquatic life.

Oil and gas companies use seismology equipment to explore; creating and analysing sound waves to judge what is below the surface.

But the sound can have an impact on fish and other species.

AIMS chief executive Paul Hardisty said the institute had been part of a big, collaborative program assessing the impact of seismic work on pearl oysters and demersal fish.

Plankton studies will be next.

“There’s so much seismic done, it’s a global issue,” Dr Hardisty said.

“There have been earlier studies on a much smaller scale with very different types of equipment (compared with what was used in industry) ... and some of those suggested there were impacts on things like plankton.

“It’s a great example of WA being right on the forefront of marine research globally.”

However, the earlier results had not been easy to scale up to extrapolate to industrial-scale seismic projects.

AIMS took it up a level.

The organisation used a real seismic vessel, tagged hundreds of fish, and tracked tens of thousands of pearl oysters.

Findings will be published soon, Dr Hardisty said.

A second research topic was developing responses to the impact of climate change on reefs.

Existing techniques such as coral gardening, where coral is added to wire frames underwater, are labour intensive and not replicable at scale, he said.

“While the world has to get its emissions under control to prevent the damage ... we’re investigating if there’s anything we can do locally,” Dr Hardisty said.

AIMS was granted about $150 million over five years for a reef restoration program, he said.

That is focused on the Great Barrier Reef, but techniques will be applicable for WA reefs, too, such as Ningaloo and Scott Reef.

Dr Hardisty said localised programs to cool or shade waters were one option under consideration.

“Corals are so sensitive that it only takes a few weeks of temperatures elevated a degree or more over normal, 10-12 weeks, you get bleaching,” he said.

Corals are symbiotic, with two different types of organisms living together.

The relationship breaks down quickly if water gets too hot, even briefly, although reefs can gradually return to life after bleaching events.

Dr Hardisty said releasing a fine mist of salt into the sky above a reef to temporarily reduce temperatures slightly would be one option to limit the impact of heat waves.

And, increasingly, technology was enabling detection of bleaching events in advance, he said.
There’s much enthusiasm and many ideas for dramatically cutting WA’s carbon emissions, but a rapid transition would come at a cost.

Dreaming big and aiming high, possibly beyond our means, is vital - Madu Venkatesan

Madu Venkatesan has no reservations about setting an ambitious expectation for Western Australia to cut carbon emissions, a view shared by many of her politically active peers.

"(We need) a really radical shift in the way we as a society operate," 21-year old green advocate Ms Venkatesan said.

"Dreaming big and aiming high, possibly beyond our means, is vital. There’s not enough time to be timid on this stuff.

"I’d like to see net negative (carbon emissions) by 2030."

Net negative emissions would mean WA absorbs more carbon emissions than it produces, through abatements and sequestration below ground.

In WA, emissions were about 92 million tonnes in 2018, with almost 40 per cent produced by the energy sector.

"It’s absolutely possible, feasible," Ms Venkatesan said.

"(US politician) Alexandria Ocasio-Cortez said it best; we have the technology, the expertise to take the leap.

"We have no other option.

"Either we have uncomfortable conversations now, or in 50 years the planet will be unliveable."

Ms Venkatesan is also among those young activists who are sceptical of capitalism.

A poll by the Centre of Independent Studies in 2018 found 59 per cent of millennials believed capitalism had failed and governments should exercise more control of the economy.

While Ms Venkatesan would be considered Generation Z, not a millennial, she said capitalism had an "extractivist" mindset, and criticised the way wealth was distributed.

"I think capitalism arose for a specific reason at a specific time," Ms Venkatesan said.

"It’s clear capitalism will not lead us out of this. "Capitalism is inherently exploitative and dangerous."

The local example perhaps provides an interesting counterpoint.

Businesses and environmental-
ists alike have despaired at the federal government’s inability to settle on a consistent, credible energy and climate policy. The WA government has also been criticised in some circles for a lack of ambition on emissions cuts.

Meanwhile, businesses are pursuing long-term plans, some of which are detailed below. But there are calls for more. Green lobby group Clean State has been rolling out a series of 25 ideas for emissions reduction in WA, which it claims will create 240,000 jobs over the medium term.

To put that into context, it represents more than six of the WA labour force.

Director of research and policy Chantal Caruso said Clean State believed a big program to cut emissions would create more jobs than many alternative post-pandemic stimulus proposals.

“Decarbonising the economy is the single biggest exciting opportunity before us,” Ms Caruso said.

The policies announced so far are in the areas of social housing and tourism, while more suggestions will be released in coming weeks.

Ms Caruso said part of the plan was for the government to build 15,000 new social housing premises with 73-star energy efficiency, and to retrofit 44,000 existing dwellings to improve energy efficiency.

Examples include replacing gas cooking equipment with electric, improving insulation and installing solar panels.

She said this would create jobs, reduce emissions, house the homeless and reduce bills for people in public housing.

WA should take inspiration from the European Union, Ms Caruso said, which announced a €500 billion ($824 billion) green stimulus package in response to the economic impact of the COVID-19 pandemic.

So far, the state government has announced $66 million for renewables in response to the crisis.

Clean State is also critical of plans to build two new major offshore gas projects, Woodside Petroleum’s Scarborough and Browse, which will be tied back into existing processing facilities near Karratha.

Ms Caruso said WA needed to cut emissions 7.6 per cent annually to reach the aspirational Paris agreement objective, so the Woodside expansion and life extension plans at Karratha were incompatible with a safe climate.

“Climate change is our single biggest threat, globally and locally,” she said.

“(Industry is acting) as if you can keep driving at the wall and take your foot off the pedal just before we hit the wall.

“We don’t think new (developments) such as Burrup Hub are compatible with net zero by 2050.”

Ms Caruso said the existing system of emissions regulation for the LNG industry was ineffective, and that a strong policy framework would ensure businesses and the community were clear about which direction they were heading in.

The International Panel on Climate Change’s most recent report forecasting mitigation pathways does expect continuing, albeit decreasing, use of fossil fuels in decades ahead.

“By 2050, renewables (will) supply a share of 52–67 per cent of primary energy in 1.5 degree (warming) pathways with no or limited overshoot; while the share from coal decreases to 1–7 per cent, with a large fraction of this coal use combined with carbon capture and storage,” the report said.

“From 2020 to 2050 the primary energy supplied by oil declines in most pathways (−39 per cent to −77 per cent).

“Natural gas changes by −13 per cent to −62 per cent, but some pathways show a marked increase albeit with widespread deployment of carbon capture and storage.”

Chevron operates a carbon capture and storage facility at the Gorgon LNG plant on Barrow Island, although its effectiveness has been the subject of wide debate.

While Clean State’s target is ambitious, there could be challenges in implementation.

For example, it would require a huge portion of the state’s labour force to be redirected from value-creating industries towards emissions reduction, while the government would need to tax or borrow to fund the program.

All of that would have flow-on impacts, including through spiking wages in some sectors, reducing availability of workers for other sectors of the economy, and increasing prices.

A longer-term consequence of such a big program would be shifting capital away from its most productive uses, with much economic research finding stimulus programs lead to lower GDP over the long term.

But Ms Caruso is confident the community ultimately supports green investment.

“People know in their hearts, they want their kids working in renewables,” she said.

A change in policy direction was flagged last year by the Environmental Protection Authority, proposing big companies fully offset emissions for new investments.

The final version of the guidelines, released in April 2020, was that proponents of big projects should have a plan to achieve net-zero emissions by 2050.

After the EPA took the lead, the state government also announced a net zero by 2050 target.

Internationally, businesses such as BP have since adopted similar objectives.

Chairman Tom Hatton told Business News the state government and EPA had moved forward in parallel, and there was a lot of work to be done to get the state’s emissions down.

“Absolutely it can be done, it’ll take a lot of work, investment and innovation,” Mr Hatton said. But action was vital.

“We have to (do better), we being the whole community,” Mr Hatton said.

“Everybody has to do better, it’s unambiguous.”

**Energising grid transition**

The energy sector is already undergoing transition, with distributed solar, batteries and hydrogen all highlighted as playing a role to reduce emissions.

For the year to July, coal produced about 44 per cent of electricity generated in WA, gas 42 per cent and wind 12 per cent, with those numbers excluding behind-the-grid rooftop solar production.

In the theme of ambitious plans for emissions reduction, some local activist groups have been calling for renewables to account for 100 per cent of electricity supply in WA by as soon as 2025.

That would involve three economic challenges.

The state’s South-West power grid has more than 4,700 megawatts of capacity certified for non-renewable generation, with about 36 per cent for gas power and a further 53 per cent for coal.

Renewable capacity is about 1,170MW, with a further approximately 1,200MW of rooftop solar, forecast to grow to 2,600MW by 2030.

To put the aspiration in context, fully replacing the fossil fuel capacity would require about 50 new wind farms the size of Alinta Energy’s $700 million under-construction Yandina wind farm, adjusting for capacity factor.

Intermittent renewable capacity would need to be backed up by storage.

It would also mean the state never uses the full value of its other potential energy production sources, which would need to be written off.

Views differ about an appropriate time frame for a transition of this scale.

Curtin University professor of sustainability Peter Newman said he was confident WA could reach 100 per cent renewables by 2040.

Rooftop solar, batteries and internet connectivity of units across the grid would be key, he said, and WA already had one of the highest penetrations of rooftop solar in the world.

“The three together are an extraordinary combination and they’re sweeping the world in their ability to replace coal and gas,” Professor Newman said.

“We can lead the world in how we (adapt the grid), it’s a business opportunity.”

Responding to concerns about storage needs, Professor Newman had a range of suggested alternatives beyond utility-scale batteries and home batteries.

Electric vehicle batteries could contribute to grid management, he said, with parked cars being used as a rapid-response spinning reserve option for grid stabilisation, if they were connected.

About 100,000 cars would provide 500MW of storage, Professor Newman said.

While batteries are excellent for rapid response, they have capacity limitations for longer-term resilience.

**Projected WA rooftop solar capacity, 2030**

*Source: AEMO*
(Industry is acting) as if you can keep driving at the wall and take your foot off the pedal just before we hit the wall

Chantal Caruso
storage for periods when solar and wind are both unavailable for many hours or days.

Professor Newman highlighted the possibilities of pumped hydro storage, and hydrogen, which can also be used to store electricity.

For Alinta Energy, the Yandin wind farm will be firm-uped by the company’s existing fleet of gas-peakking generators, which can kick into operation faster than alternatives such as coal, providing a backstop to intermittent renewables.

Alinta has installed a 30MW battery at Newman and is building 60MW of solar capacity, plus transmission, for Fortescue Metals Group’s iron ore mining operations.

“We are making a lot of investment into renewables,” Alinta general manager WA Chris Campbell told Business News.

“The state is in a really good position for renewable investment.

“We’ve got existing infrastructure in gas (generation) that’s flexible and can accommodate renewables.

“There’s also a pretty large opportunity to decarbonise the Pilbara.”

Mr Campbell said WA’s characteristics supported renewables, and predicted ongoing moves by the state government to close down coal-fired generation would support a continued switch.

Improving economics and technological change were pushing momentum behind renewables, but there was still some way to go.

“We’re going to need a mix of generation sources for some time yet,” he said.

“We’re seeing rapid change at the moment.”

WA Independent Power Association chairman Richard Harris cautioned that the focus should be on setting up a market which could deliver the best outcome, rather than picking winners.

“We need to set up a system that can cope with change, all we know is that it is going to change,” Mr Harris said.

“Technology comes quicker than we think.

“Governments are not the (best) ones to make investments, they usually get it wrong and it’s far more expensive than it needs to be.”

He said he expected an increasing uptake of battery storage in WA in the next five years, which would help smooth out solar power production to match peak demand.

“We don’t need much more energy of any sort, what we do need is to smooth it out,” Mr Harris said.

“You have to design a market that sends the right signals for those investments.”

Some of the challenges of a more rapid transition were that WA’s grid was isolated from the rest of the country, and that it would make existing assets redundant, he said.

Wood Mackenzie principal analyst Robert Liew said moving completely to renewables would be a challenge with the current state of technology, although he said Australia could do much more than it was by developing a clear, long-term vision.

“No country has 100 per cent renewables,” Mr Liew said.

“It’s very difficult to upgrade.

“Unless battery systems are in place to support solar and wind for days or weeks, it’s very hard.”

Hydrogen

While renewables are being used to reduce the emissions profile of electricity, hydrogen is touted as the alternative to natural gas.

The hydrogen industry is still in its infancy in WA, and around the world.

One early development was at gas distributor Atco’s Jandakot headquarters, where solar panels are powering electrolyzers which transform water into hydrogen.

Atco general manager business development Russel James said hydrogen would have an increasing role in the gas system.

“We wanted to show what the long-term future of gas networks were,” Mr James said.

The site has 300 kilowatts of solar capacity installed, which charges batteries during the morning and is used for hydrogen production at peak times in the day.

“We take the excess solar and put it through an electrolyser,” Mr James said.

“It’s another way of capturing renewables, similar to a battery.”

Whether by battery or hydrogen, the power can be stored for later use, with a small level of energy loss.

Hydrogen could then be blended into the existing natural gas distribution network, to be used in appliances or potentially accessed later for electricity production.

The existing network could easily handle a 10 per cent hydrogen blend, Mr James said, while most household appliances could operate with up to 15 per cent hydrogen.

There is historical precedent for a higher gas blend, he said.

When WA was mostly powered by town gas, which was made from cracked coal, hydrogen content had been as high as 50 per cent, Mr James said.

Atco also developed a blending station for Jandakot which had been used as a model for a project in Canada.

Mr James said hitting a 10 per cent blend would be the first step in developing a local hydrogen industry, which could then export.

While there have been calls to transition away from gas through increased electrification, he said that would be capital intensive, and hydrogen blending was complementary to other methods of emissions reduction.

“One of the ways to look at it is, there’s already a lot of existing infrastructure in the ground,” he said.

“Gas networks are very reliable.”

Blending hydrogen and increased electrification would be complementary ways of transitioning, Mr James said.

Curtin’s Professor Newman said hydrogen could be used to replace gas for industrial purposes, both in the Pilbara and for manufacturers in Kwinana or Kemerton.

“They can all use hydrogen,” he said.

“It’s a cleaner fuel that can easily be made.”

Hydrogen production would also be distributed, and perhaps not channelled through the existing gas grid, he speculated.

“It’s best produced right next to where it’s needed,” Professor Newman said.

There’s still much work which will need to be done to make hydrogen competitive, however.

Australia’s National Hydrogen Strategy estimated a breakeven price of $1.20 per kilogram would make hydrogen competitive against natural gas.

That would mean the price of renewable hydrogen would need to fall below a quarter of its current level.

$1.20/kg

Hydrogen cost to compete with gas

Source: National Hydrogen Strategy
The quokka, Carnaby’s black cockatoo and southern right whale are high-profile Western Australian wildlife, but their longevity is not necessarily guaranteed.

Carnaby’s black cockatoo
Calyptrorhynchus latirostris

The sound of the Carnaby’s black cockatoo is iconically Western Australian, according to BirdLife Australia project coordinator Adam Peck.

“They give a real sense of place to the south west, if you hear a Carnaby’s you know you’re in Perth or the South West,” Mr Peck told Business News.

But numbers of the threatened species have been falling, which has prompted a $3 million grant from the federal government to a series of community organisations, supported by BirdLife, to turnaround the population.

The recently announced funding package promised to assist 1,800 fledgling birds join the flock.

“There’s a lot of recovery actions happening,” Mr Peck said.

“Things like the installation of artificial hollows, revegetation.

“(Numbers are) still going down because there’s a lot of land clearing going on.

“That’s the number one driver of the fall – land clearing.”

Coastal property development was the biggest contributor, followed by mining and agriculture, he said.

About 70 per cent of the Carnaby’s population in the Perth region lived in pine plantations north of Perth, which were all to be harvested without replacement, Mr Peck said.

“They feed and roost in those pine plantations around Gnangara, Pinjar and Yanchep,” he said.

“They’ve adapted to the loss of most of their native feeding habitat, banksia woodlands, and taken to eating pine cones.

“Research suggests if you clear that much habitat birds will starve and die … (but) it can’t be proven.

“If you can save habitats you can save a whole bunch of species from extinction.”

Seven threatened species and how WA is protecting them

Accelerating uptake of low and zero emission vehicles

Around the world we’ve witnessed how during COVID-19 lockdowns, with fewer cars on the road, air quality in cities has improved. This is one of the important learnings from such a difficult period in our lives.

Conversely, we’ve seen how quickly things can turn in the opposite direction. The ongoing impacts of the pandemic have driven people away from public and shared transport and toward their own cars. In Perth, where more people are starting to return to their workplace, harmful vehicle emissions are almost certainly on the rise.

While advances in technology are increasing the availability of cleaner, more sustainable vehicles and fuels, greater action to increase the uptake of low and zero emission vehicles is needed.

A 2019 survey of RAC members revealed nearly 90 per cent of Western Australians believe the world’s climate is changing, and a majority attributed the cause to human activity. The same survey also found 64 per cent wanted more government action to reduce vehicle emissions, and almost 50 per cent would consider buying an electric or hybrid vehicle as their next car.

Public appetite for low and zero emissions vehicles is clear. However, despite growth internationally, local sales have been much slower. Currently only three per cent of Western Australians own an electric or hybrid as their primary vehicle, with EV registrations in WA totalling just 1,175 vehicles as of 30 June 2020.

To drive more purchases, we need to address concerns such as cost, range anxiety and access to charging infrastructure.

To enable a wider range of options for car-buyers, we also need a commitment to introduce a mandatory national CO2 standard for new light vehicles — Australia is the only developed nation without one.

While moving in the right direction, market dynamics alone will not deliver the changes we need to accelerate our transition to cleaner energy. It is critical governments at all levels complement these encouraging trends by taking action and applying the right policy levers.

Tax breaks and exemptions for EVs, subsidies on purchases and even options like parking discounts should all be explored as potential opportunities to encourage the uptake of low and zero emissions vehicles and drive down harmful vehicle emissions over years to come.

Rob Slocombe
Group CEO, RAC

With 11 fast charging stations between Perth and Augusta, the RAC Electric Highway® has opened the road down south to electric vehicles.

Photo: Geoff Hunter

Carnaby’s black cockatoo is iconic.

FAMOUS
Carnaby’s black cockatoo is iconic.

Photo: Geoff Hunter

Matt Mckenzie
Business News

KPMG

For the better

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Threatened species include those which are vulnerable, endangered, or critically endangered in Western Australia or nationally, either under the EPA Act or EPBC Act.

Quokka

*Setonix brachyurus*

If Instagram is anything to go by, the quokka is perhaps WA’s most-loved animal.

Contrary to popular belief, the marsupial also lives on the mainland, in addition to Rottnest Island, although land clearing and introduced predators such as foxes and feral cats are reducing numbers.

The marsupial is listed as a vulnerable species, of less concern than an endangered species.

An initiative announced in 2018 was a monitoring program, funded by sales from The Margaret River Chocolate Company, targeting quokkas affected by the Northcliffe bushfires.

The quokka recovery plan also includes recommendations for captive breeding, and continued management of *Phytophthora* dieback, a fungus which kills vegetation.

Abrolhos painted button-quail

*Turnix varius scintillans*

In 2017, this endangered bird species was given a 70 per cent probability of extinction in the next 20 years.

The quail lives only on seven small islands in the Abrolhos archipelago, with part of the planned response including developing quarantine procedures to prevent other fauna entering the islands.

The tamar wallaby has degraded the quail’s habitat, and the federal environment department said action had been undertaken to remove the wallaby from the island.

There’s also the threat of invasive plant species such as the golden crownbeard, which was introduced in gravel used for airstrip repairs in 1998.

Work has been undertaken to eradicate those plants to prevent them interfering in nesting areas.

Dibbler

*Parantechinus apicalis*

A small marsupial, the dibbler was thought to be extinct for decades until it was rediscovered in 1967.

While it shares the challenges of fires, feral predators and habitat loss with other threatened species, the state’s environmental department is also concerned about the impact of mice, which will compete for resources.

Perth Zoo said it successfully bred its first dibbler in 1997, with 26 released on to a secure island away from mice and predators.

In the 20 years following, 904 dibblers were bred at the zoo.

Action to control foxes in the Fitzgerald River National Park was also found to support growth of the population.

Continued on page 12

Towards a more sustainable mining future

Western Australia’s mining industry continues to make a strong economic contribution to our State and national economy, particularly during the COVID-19 pandemic, but this is partly contingent on managing and mitigating environmental impacts.

Despite the current global economic downturn, overall outlook for demand for many mineral resources remains strong, and will remain so as countries continue to become more urbanised and industrialised.

Iron ore provides the steel for cities to grow, aluminium offers a lightweight material for our transport systems, and increasingly lithium and other ‘green technology’ elements will power our digital future.

Recent high-profile failures of tailings storage facilities in mines at Brumadinho and Fundão in Brazil, which store by-products of mining and refining processes, have led to global changes to improve monitoring, regulation, financing, and management of mine sites and their environmental impacts.

Global mining companies such as Rio Tinto and BHP are playing their part with the launch last month of Future Tails – a new initiative that aims to improve global tailings management – through a partnership between The University of Western Australia, Rio Tinto and BHP.

The initiative includes leading-edge training programs to build talent and capability; publications that summarise state-of-the-art tailings analysis, design, operation and management; and new research collaborations with industry to drive further innovation.

Investing in research, development, and training is key to delivering the innovative solutions that will solve the critical environmental challenges posed by mining. A key part of this investment is training the workforce of the future, including upskilling and reskilling.

Embedding authentic real world experiences as part of these degrees and training programs provides crucial opportunities for future professionals to build their understanding of decision-making processes and technical aspects of mine site operations and management.

UWA’s degrees in Environmental Science include a number of field trips to mine sites around the State and students also have the opportunity to pursue their passion for environmental management in mining through research projects with industry partners at Honours, Masters, and PhD level.

These placements and projects have benefits beyond just the immediate scientific outcomes and environmental improvements: they spark ongoing collaborations and partnerships, and provide a job-ready talent pool to deliver WA’s vision of being an environmentally sustainable mining powerhouse.

Western Australia is a world leader in mineral exports – we have the opportunity to be a world leader in environmental management too.

Dr Talitha Santini
Senior Lecturer, Environmental Science
UWA School of Agriculture and Environment
UWA Mining Innovation Network

*Photo: Perth Zoo*
Seven threatened species and how WA is protecting them

Continued from page 11

Southern right whale
Eubalaena australis

With calving grounds near Geographe Bay, the southern right whale is popular with whale-watching tourists. But the species is endangered, threatened by entanglement, vessel disturbance, whaling, noise interference and the potential development of offshore infrastructure.

Protecting the species from whaling outside Australian waters, through the International Whaling Commission, is highlighted as one priority in the federal government’s conservation plan for the species.

The government has also increased the number of marine parks in recent years, some of which cover southern right whale habitats.

The plan also suggested developing a code of conduct with fishing industries to minimise their interactions with whales.

Western ringtail possum
Pseudocheirus occidentalis

One key issue for the longevity of the western ringtail possum will be identifying its most critical habitats, according to the federal environment department.

It has been listed as critically endangered under the state’s environmental regulations, with less than 8,000 estimated to be living in the wild.

Guidelines for tree growing and harvesting have been modified to support the possum, re-vegetation of lands around Bunbury and Busselton, and moving or restocking the species in less-populated habitats have also been implemented.

Attempts to move and restock have been reasonably unsuccessful in the past, partly because of predators such as cats.

According to Perth Zoo, it is not yet clear how long the possum gestates its young.

Loggerhead turtles
Caretta caretta

Light pollution is one of the biggest threats for turtles in WA and south-east Queensland, according to the national Recovery Plan for Marine Turtles.

“As hatchlings orient towards the lowest light horizon rather than being directly attracted to bright lights, lights of any wavelength can affect behaviour and light glow can disrupt marine turtles when it out-competes natural light sources,” the plan said, noting that local councils in relevant areas would be responsible.

While there are six species in the plan, the loggerhead turtle is possibly WA’s most threatened turtle, and it is listed as endangered in WA.

It nests in Dirk Hartog Island, Muiron Islands, Gnaraloo Bay and the Ningaloo coast.

Digital can offer Western Australia’s agrifood sector a competitive advantage

Western Australia has 1,064,700 square kilometres occupied by agriculture, and this vast area is supported by 35,000 people working in the agriculture, forestry and fishing industries. This workforce helps to support the growing and diversifying consumption habits of the global population against the backdrop of changing climatic conditions, evolving supply chains, increasing competition and more recently the impact of COVID-19 pandemic.

Further opportunity now lies in how West Australians can effectively use digital technologies and innovation to protect and extend the state’s competitive advantages in becoming a recognised agrifood leader.

This opportunity can be realised when all participants across the value chain are able to access, embrace and apply digital technologies. This can generate new levels of productivity and employment through improved insights and decision making enabled by better, shared and insightful data and Internet-of-Thing (IoT) devices such as sensors or automated vehicles.

When we imagine the benefits of digital technologies and innovation, we are considering how, for example, a grain producer in Western Australia’s South West Wheatbelt is able to:

- Gain insights into global and regional demand and supply factors by accessing local and international data sources and exchanges to support decisions about which crops to plant.
- Develop short and long term strategies about key weather, pests, cost and supply predictions from public and private service and data providers so that appropriate supplies are purchased and routes-to-market defined.
- Improve seedling and crop yield results by deploying technologies such as moisture sensors and soil pH tests and relating these with historical and forecast yield data.
- Make better use of resources such as water with integration into the Bureau of Meteorology and local weather stations to access insights into weather history and forecasts.
- Develop a competitive advantage around yield, price, customer satisfaction and carbon footprint as to when to harvest, which port and logistics providers to use, how to track delivery and gain insights from customer satisfaction feedback loops.
- To enable this opportunity, there are some obstacles that need to be overcome.
- Improved connectivity for fast, affordable and reliable digital telecommunications.
- Create and expose people within the sector to digital skills and technologies to evaluate opportunities.
- Enhanced data integration, interoperability and access across disparate systems.
- Develop a culture of trust and transparency that supports data sharing and innovation.
- Ensure that the technologies, data and systems are secure and safe with appropriate security protocols.

While challenging to enable, the opportunity for Western Australia is great. It provides a means for our regions to thrive, create new jobs and attract people to the sector.

Talk to our food and agribusiness specialists today, at KPMG.com.au

James Arnott
Partner, Management Consulting
KPMG

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