

Sustainability 2016

Sustainable community living on the north coast

VOLUME 8, MAY 2016



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Sustainability 2016
– an *Echo* supplement



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Resilience and change the name of the game

Welcome to the eighth edition of our annual Sustainability supplement, which aims to provide you with tools and insights for the only game in town – surviving on a fragile planet in the vastness of space without mucking up the planet itself.

Since our first edition in 2009 there seems to be a greater awareness of the value of a sustainable lifestyle, made more urgent now by the onrush of climate change as well as the impacts of pollution and deforestation. How much that awareness is changed into action is a moot point, however. Even in so-called green Byron Shire, basic things like having residents separate their waste and renewables correctly into bins is an ongoing struggle.

But try we must. Building personal resilience is an essential first step in dealing with change, even just to deal with the psychological and emotional buffets everyday life can hand us, let alone with the changes sweeping the planet at an increasing pace. The north coast is one region interested in, if

not fanatical about, ‘personal growth’, expressed through innumerable workshops and festivals. Some offer practical advice; others are harmless flights of fancy or harmful excursions into ego-scented exploitation.

At *The Echo* we tend to focus on the brass tacks of survival and make no apology for it. We put more faith in earthworms than in unicorns and in our articles like to present positive solutions among the sometimes critical commentary.

Here you will find reviews on the progress of renewable energy and the populace’s willing uptake of solar systems – despite our federal government’s reluctance to detach itself from coal. We look at local educators such as Byron College and Southern Cross University and COREM who see that a self-sustaining community is possible. We see how your purchasing power can be directed to utilities and gadgets which do the Earth less harm, or none at all.

But there is no doubt that the road ahead to a sustainable future is hard

no matter how well we shape our own intentions. The superpowers continue to engage in warfare and spend on armaments vast amounts which could tackle global poverty and the increasing migrations caused by climate change and conflict.

Overcoming vested interests which persist in harming the planet even though their own children will suffer is a social struggle exemplified by groups such as the Knitting Nannas Against Gas, Solar Citizens and the Occupy movement. We see some hope in the determination of youth, as exemplified in movements such as the Australian Youth Climate Coalition and Youth Food Movement Australia.

Being resilient might mean doing well with less by living a simplified life which supports lower energy consumption, local markets, biodiversity and community gardens. It does not mean that luxury is gone. The real luxury lies in learning how much can be appreciated without damaging the Earth.

Michael McDonald

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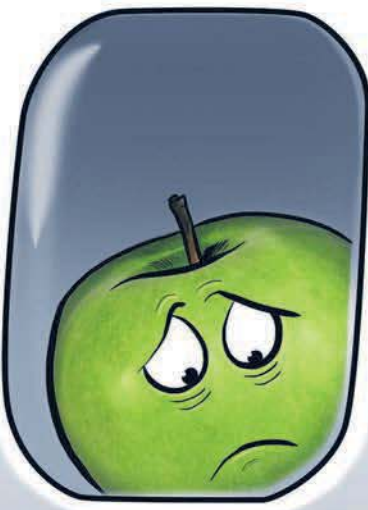


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The power model is being turned on its head

Mark Byrne

In a similar article last year I forecast that 2015 looked like being the year when batteries to store solar energy would take off. One year too early, maybe two. But thanks to the kickstart provided to the market by Tesla's Powerwall, this year there are at least twelve makers with competitive home battery products.

There is a rule of thumb that says that with new technology, prices fall by a quarter with every doubling of demand. Yet the reality for the battery market at the moment is that it doesn't make economic sense to install one to store your excess rooftop solar output unless your consumption is high when the sun isn't shining and you are on a tariff with a peak demand charge. This excludes most households and small businesses right now.

Not that that will deter early adopters. In the longer term, the likely impact of what is called 'distributed storage' may be hard to overestimate. For the past century the electricity system has been built around the idea of centralised generation – big, dirty, remote power stations pumping energy through a long grid of poles and wires to passive end users, you and me.

Now that model is being turned on its head, with every home and business becoming its own power station. And the thorn in the side of renewables up till now – that the sun doesn't always shine and the wind doesn't always blow, so we need so-called 'baseload' coal and gas to provide reliable power – is being overcome by the promise of affordable and local energy storage.

(Not that all batteries are created equal. There are sometimes significant amounts of embodied energy and rare or toxic materials in their manufacture. And the recycling pathways after their average warranty period of around a decade expires are uncertain in Australia. So potential buyers should carefully consider the lifecycle costs of the various technologies on offer – especially the old lead-acid and newer lithium-ion varieties. Some other chemistries, such as those using saltwater, claim to be non-toxic and sustainable.)

Transformation

The transformation of our energy system from a centralised and fossil fuelled to a decentralised and renewable one is welcome news to anyone concerned about climate change. The electricity industry still pumps out more than a third of our national emissions. Since the end of the carbon price in June 2014 national emissions have actually risen 5.5 per cent in spite of the boom in solar energy. The government's Direct Action policy has been ineffective and has no pathway to implement even our paltry 26–28 per cent target for reducing national emissions by 2030 over 2005 levels.

With national leadership lacking, increasingly local governments and communities are taking up the challenge. Council's Zero Emissions Byron plan, developed with Beyond Zero Emissions, aims to transition the entire shire to zero greenhouse gas emissions within 10 years – an Australian first. This is a big step in the right direction, but without the ongoing allocation of resources to implement it there is always



a danger that this radical plan for energy self-sufficiency will founder on the rocks of volunteer burnout.

Another new local initiative that is just getting started is Enova Energy. Australia's first community energy retailer will take on the Big Three (Origin, AGL and EnergyAustralia) when it opens its doors for business in May. With three thousand mostly small local investors stumping up nearly \$4 million to get it started, hopes are high. Enova will compete on price with the Big Three while also offering ten cents per kilowatt-hour for exported solar energy, investing in local renewables and returning half of its profits to the community. But it will take time for it to be able to offer 100 per cent local renewable energy.

Ten cents doesn't sound like a lot if you are coming off the old 60 cent premium feed-in tariff at the end of 2016. Most other retailers will only give you six cents. There are other options, but first you will probably need to switch your gross meter to a net one. TEC is getting a technical report done by the Alternative Technology Association on the range of options available, from do nothing to go off-grid. It will be out in May. Meanwhile,

read the fine print before signing up with any retailer that offers you a 'free' meter, because, well, it probably isn't really free.

North coast

The north coast has also been a hotbed of community energy innovation over the last year, with eight of the 19 groups receiving state government funding coming from this region. The most advanced of them is Lismore's two 100 kW community-owned solar farms on council land, which will be up and running before the end of the year. The hard reality for community energy groups, though, is that with low prices paid by retailers for energy exported into the grid, these projects usually only make financial sense where most of the energy is used onsite or 'behind the meter'. This limits their size and the potential benefit.

What could change that equation is if you weren't up for full network charges – half your bill – as soon as you put energy back into the grid, even if it is only being consumed next door or down the street. TEC and the City of Sydney have proposed a change to the national electricity rules that would result in local generators being paid a credit for

their contribution to keeping the grid small and local, but it's uncertain whether that proposal will be successful. If it is, it would radically improve the financial viability of a range of local energy projects by not only community energy groups but also councils and apartment owners, shopping centres and office buildings.

Two areas where the solar revolution hasn't shined much to date are rental properties and the commercial property sector. Landlords rarely install solar because they don't directly benefit, and businesses may be reluctant because the payback periods are longer (but not by much) than they usually require for new equipment. One of the state government funded community energy groups in Coffs Harbour has been developing a model that would work for community and public housing. And in Byron, 100 Go Solar is well on its way to living up to its name by encouraging local businesses to invest in their future – and ours.

Going off-grid

There have been some other interesting projects proposed locally in the past year, including plans for whole towns to go off-grid or for the creation of a micro-grid for part of Byron Shire. The hard reality is, though, that with massive investment in the existing grid over the past decade, it makes sense to utilise what we have already built and will – thanks to the way networks are regulated – be paying for for the next thirty years.

Microgrids are a viable alternative for towns at the end of long skinny power lines that need replacing or upgrading to cope with extra demand. They also

make sense for new housing developments, where most of the energy needed can be generated onsite by bioenergy as well as solar, with the excess stored in a central battery and distributed when it is needed. These developments typically operate as their own mini-retailer and only need a small single connection to the main grid. To see how it can be done, google Alkimos Beach and White Gum Valley, both near Perth. Why aren't there more innovative housing projects being built in this area?

Finally to electric vehicles, which haven't taken off in Australia thanks mostly to the lack of government incentives to overcome the high purchase price. The other problem is range anxiety, which is gradually becoming a thing of the past thanks to better vehicle batteries and the spread of charging stations. Brisbane-based charging station maker Tritium has an ambitious plan for a string of fast chargers every 80 kilometres along highways, including the Pacific, from Townsville to Adelaide.

One way or another it's going to happen eventually. It's just a matter of whether we can wean ourselves off fossil fuels in time to stave off the impacts of catastrophic climate change. The early warning signs are evident this very month, from coral bleaching off Cape York to the drought that has emptied Tasmania's hydro dams and producing the government's kneejerk reaction of bringing in 200 megawatts of diesel generators in shipping containers to meet the state's electricity demand. That's like pouring oil on a fire.

• Mark Byrne is energy market advocate at the Total Environment Centre.



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COREM to join in Renew Fest



Some of the COREM team, from left, Tim Hodgson, Shane Sylvanspring, Ella Goninan, Dave Rawlins and Rob Passey.

In a celebration of World Environment Day, Byron Shire Council, Community Owned Renewable Energy Mullumbimby (corem.org.au) and other community organisations are partnering to host the inaugural Renew Fest in Mullumbimby.

Renew Fest 2016 will be a day-long celebration of all things sustainable with a particular focus on biodiversity and renewable energy.

Organisers say, 'It is the seed planting of a fresh new festival in this shire, set to grow into a three-day experience of sustainability, from which its practices and proceeds will be going towards the 100 per cent sustainable transition of the Byron Shire.'

'Set for Saturday, June 18, this collaborative new festival reflects the Shire's forward thinking in arts and culture,

creative industries, and sustainable technologies.

'There will be interesting workshops, opportunities to engage with local action groups, support for the emergence of new action groups addressing gaps in sustainable community practice, entertaining music, inspiring keynote speakers, stalls filled with innovative sustainable products, yummy food and amazing people to share ideas with.'

Check in with the website renewfest.org.au closer to the date.

COREM's story

COREM is a not-for-profit community action group dedicated to setting up community-owned renewable energy projects in the Mullumbimby area in the pursuit and promotion of a 100 per cent renewable

energy future for the region. The group recently raised enough money through public donations to put a solar system on the roof of the Drill Hall and now plans a system for the Mullumbimby Showgrounds.

The COREM model of community-owned renewable energy aims to increase the amount of renewables in the region, allow wider access to renewable energy, offer community ownership and invest profits back into the community for more sustainable and renewable energy projects.

COREM is run by local volunteers who are actively engaged in a number of community-owned renewable-energy projects in the Mullumbimby area. The group welcomes new members.

Electric WAVE ready to roll

Details of the world's largest electric vehicle rally WAVE (World Advanced Vehicle Expedition) Trophy 2016 have been announced.

Many electric-car enthusiasts from all over the world will take part in June, travelling over 1,000 miles through three countries in central Europe.

In 2016 WAVE Trophy starts on June 11 in Bremerhaven (northern Germany) and travels down to France.

The convoy will stop at the United Nations in Geneva and finish near Basel, Switzerland, on June 18.

On the way the participants will stop in 60 cities using the WAVE gathering to raise awareness of green transport and promote sustainable living. It is also an opportunity for participants to enhance their knowledge of electric vehicles, to network and socialise.



Porsche's proposed electric sports car.

Last year WAVE attracted 577 electric vehicles, setting a new world record for the world's largest EV parade in Berlin at Formula-E.

Participants were driving vehicles from major car manufacturers including Citroen, Tesla, Nissan, Renault, BMW, Volkswagen, Renault and E-Smarts.

WAVE founder Louis Palmer is holder of the UN Environmental Programme 'Champion of the Earth Award' for driving two times around the world in solar-powered vehicles.

He spoke about WAVE

2016 and said, 'After the signing the Paris Climate Change agreement we feel it is not enough to inspire.'

'So through the WAVE international electric vehicle trophy and schools initiative we are acting. We urge society and leaders to be part of the needed change – now it's time for action, before it's too late.'

A WAVE was held in Byron Bay in March this year, with Karin Ochsner as its ambassador and Dieter Hortsmann of Byron Eco Park driving an electric BMWi3.

More at www.wave.earth.

www.echo.net.au/sustainability

Local councils take on the issues



Met Uretir from Lismore's Revolve Shop presents one of the attractive items collected. Photo Tree Faerie treefaeriefotos.com

Eve Jeffery
Councils are still having a big win with sustainable practices and our four local bodies are covering a diverse range of issues and ideas in an effort to make the planet a better and more liveable place into the future:

BYRON

Byron Council continues to forge its way down the path of sustainability with a multi-pronged attack on fossil fuels. They have a new Nissan Leaf EV for use by our paid-parking officers in Byron Bay. Byron will soon to be the first northern rivers council to have a fast-charging station, which will be renewable-energy powered thanks to Enova Energy. They are also soon to release their Northern Rivers Electric Vehicle Strategy to assist in the uptake of EV in the region. In a celebration of World Environment Day, Byron Shire Council, Community Owned Renewable Energy Mullumbimby and other community organisations are partnering to host the inaugural Renew Fest in Mullumbimby. Renew Festival is a day-long celebration of all things 'sustainability' with a particular focus this year on biodiversity and renewable energy.

Council, in partnership with our community, is soon to have finalised the first stage of the Zero Emissions Byron project, to create an emissions baseline for the Shire that includes both Council and community. Council will soon be creating a 10-year action plan to help the transition.

Solar, solar and more solar, Council is also buzzing along

with their solar installations plan. Highlights include a 25kW solar system at the Cavanbah Sports Centre installed last June – creating lots of savings; assisting COREM to get solar on the Drill Hall and future works that will include 60kW for the Byron Bay Library; 12kW for Sandhills Childcare Centre and 10Kw for Mullumbimby Neighbourhood Centre.

LISMORE

One of the fantastic continuing projects at the Lismore Recycling & Recovery Centre on Wyrallah Road is the Revolve Shop. Lismore is already at the forefront of local councils with their food and garden waste and 100 per cent composting project; but wait! you also get to visit what we called in the good ol' days: the Tip Shop. But don't be mistaken, Revolve is far from a rubbish seller.

Met Uretir is in charge of the business of turning trash into treasure and he takes his work very seriously. The shop, which opened last June, sells a range of quality secondhand goods with everything from bikes and lawnmowers to suitcases, camping gear, lounge suites, building materials and even the kitchen sink!

Thanks to Met and his team of crack recyclers, a whole lot of stuff that would otherwise end up as landfill is rescued from the refuse, cleaned-up and getting a new life. They are not only saving the planet on a practical level but also educating folk with the idea that, just because something has been discarded by someone, it doesn't mean it's rubbish.

With a background in retail in traditional products

in Europe, Met has embraced the concept that items for sale are revolving and recycled and not 'tip' items. 'I love the diversity in the job', says Met. 'There is not the sales press that you might get in another job but we take pride in our work and we want to move as much stuff as possible so the prices are good. We like to look after our customers.'

There has also been space created in the front of Revolve for the new Recycled Markets where people will sell recycled and reused goods from small shops made out of shipping containers.

TWEED

Tweed Council is doing their bit to create sustainability by addressing issues around the protection of coastal, agricultural and riparian environments.

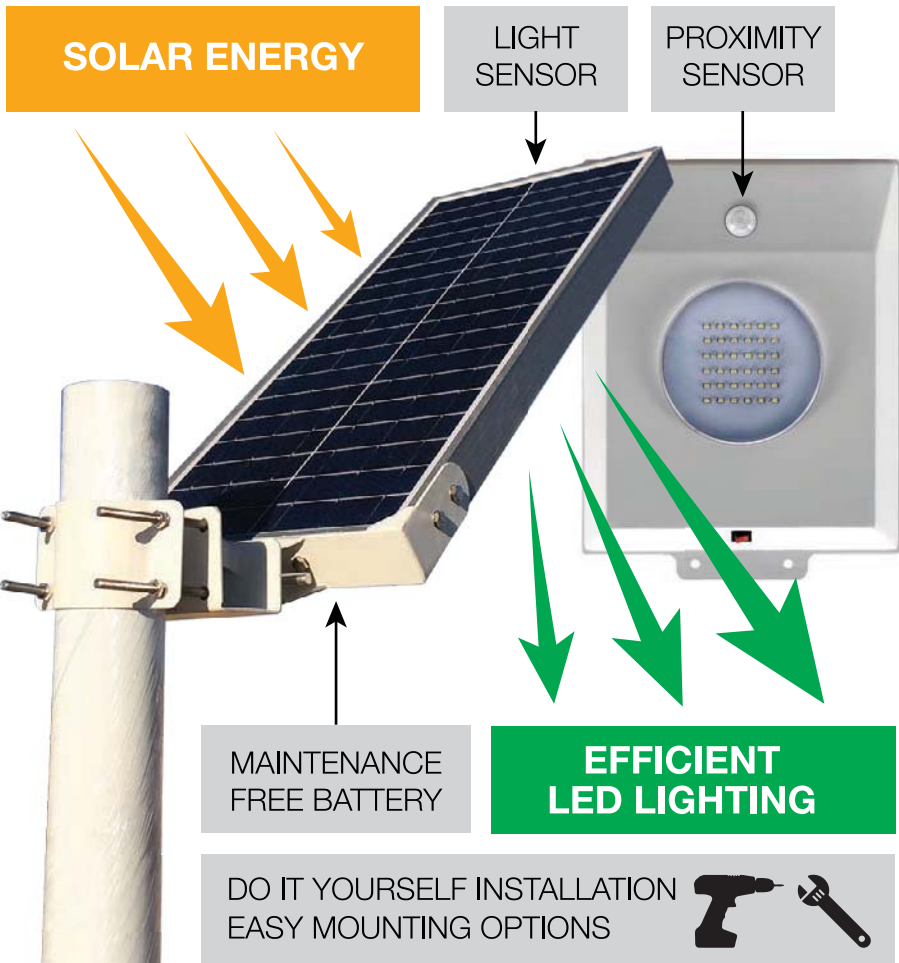
Council has welcomed funding from the NSW government to ensure ongoing sustainable management of the Tweed River for the next ten years with \$97,500 granted for the Tweed Estuary Coastal Zone Management Plan.

Mayor of Tweed, Cr Katie Milne, welcomed the funds, which will be matched dollar-for-dollar by Tweed Shire Council. 'It's important that we protect this beautiful but fragile estuary and address the issues we now face, especially with sea-level rise, riverbank erosion, amenity issues and development pressures', says Cr Milne.

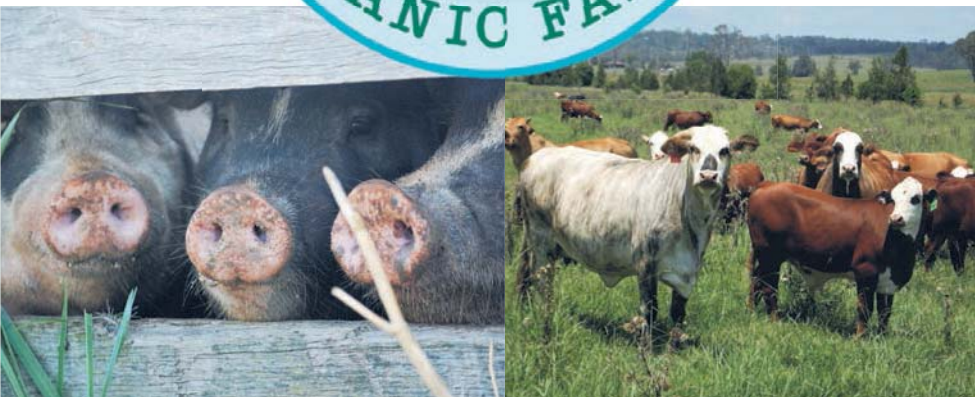
'This will be the vision for how the community wants to see the Tweed River Estuary so it's very important the community has their say'

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Better global fishing management a must

Julie Cohen

New groundbreaking research shows that with improved fishing approaches – compared to business as usual – the majority of the world’s wild fisheries could be at healthy levels in just ten years and global fish populations could double by 2050.

The study conducted by researchers from UC Santa Barbara, the University of Washington and the Environmental Defense Fund appears in the Proceedings of the National Academy of Sciences.

‘This research shows that we really can have our fish and eat them, too,’ said lead author Christopher Costello, a professor of environmental and resource economics at UCSB’s Bren School of Environmental Science & Management.

‘We no longer need to see ocean fisheries as a series of trade-offs. In fact, we show that we can have more fish in the water, more food on the plate and more prosperous fishing communities – and it can happen relatively quickly.’



Pole-and-line fishing in the Maldives. Image from poleandlinecaught.com


The paper demonstrates that by 2050, applying the same improved fishing approaches could increase profits from the world’s ocean fisheries by 204 per cent versus what can be expected under a business-as-usual approach. The increased harvest would be enough to provide a significant source of protein for an additional 500 million people. In the coming decades, with a projected 9.5 billion people competing for more food from maxed-out resources, finding sustainable ways to increase food production has

become a critical challenge, Costello noted. Calculations performed by the investigators showed that if reforms were implemented today, three-quarters of exploited fisheries worldwide could attain population goals within ten years – and 98 per cent by mid-century. The team used a massive database of 4,713 fisheries representing 78 per cent of the ocean’s catch. This enabled a far more precise and more granular analysis than ever before. ‘We’ve uncovered a really important insight: There is ur-

gency and a tremendous upside in reforming thousands of small-scale, community fisheries around the world,’ said co-author Ray Hilborn, a professor of marine biology and fisheries science at the University of Washington. ‘The research adds to the body of work showing that most of the world’s large fisheries are doing relatively well, but it emphasises the critical need to rebuild local fisheries, most of which are in the developing world where millions depend on fisheries for food and their livelihoods.’

The analysis suggests that implementing reforms such as those based on secure fishing rights is critical to providing the combined benefits of increased fish populations, food production and profits. ‘Fishing rights’ is a fishery management approach that ends the desperate race to fish by asking fishers to adhere to strict, science-based catch limits in exchange for a right to a share of the catch or to a traditional fishing area. ‘We now have a clear roadmap for how to recover fisheries: Give fishermen secure fishing rights so they can control and protect their future,’ said co-author Amanda Leland, senior vice-president for oceans at the Environmental Defense Fund. ‘Countries from the US to Belize to Namibia are leading a turnaround by implementing secure fishing rights and realising benefits for people and the oceans.’ Since 2000, overfishing in US federal waters has dropped by 70 per cent

as the number of species managed with fishing rights or ‘catch shares’ has quadrupled. In the past three years, fishing industry jobs have increased 31 per cent and fishing revenues have grown by 44 per cent. In Belize, a fishing-rights program newly implemented by the government for small-scale fishermen has dramatically increased compliance and shows tremendous potential for recovering important local species. ‘Our research reveals a stark choice: Either manage fisheries sustainably and realise the tremendous potential of the world’s oceans, or allow the status quo to continue to draw down the natural capital of our oceans,’ said Costello. • Other UCSB co-authors affiliated with the Bren School include dean Steve Gaines; PhD student Daniel Ovando; alumnus Tyler Clavelle and postdoctoral researcher Cody S Szuwalski. See more at news.ucsb.edu/2016/016603/better-global-ocean-management.




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Our lives are inextricably tied to healthy oceans

Mary Gardner

Our sense of a marine future starts from within, springing from culture and self. The topic seems far removed from committees of international agencies or local councils. But it affects the seafood platter we may eat and the ways we live on the coast. Of the many issues that tangle together, here are a few I am watching. What transformation will these bring?

The first issue is large-scale marine planning. Here in Byron Bay, we missed out on the first chance to be part of that. Under pressure from the likes of the Fishers and Shooters Party, the Abbott government altered the proposed Commonwealth Marine Reserve Network. Plans for a large area beyond the Cape Byron Marine Park were dropped. Now there are fourteen such sites around the world of which twelve are in the Pacific Ocean.

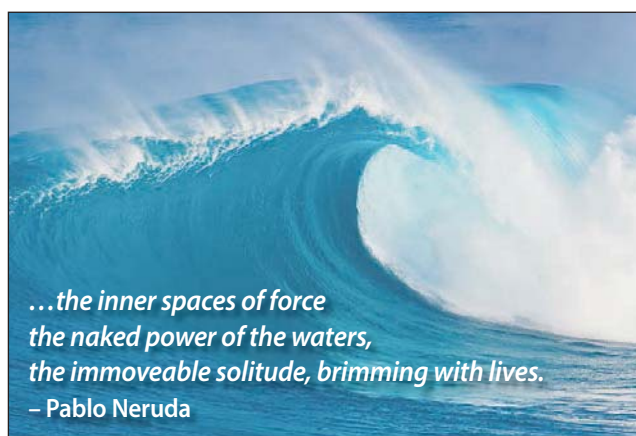
So far, Chile, Cook Islands and Kiribati rub shoulders with Australia, US, France and the UK. Last year, the Province of British Columbia and 18 First Nations designated another site in the Pacific

Northwest. Plans are in various stages for the Mediterranean Sea, Palau, Kermedecs and the Marquesas.

This Big Ocean Club brings together skills and wits to meet the overt pressures of oil and mineral exploration, industrialised fishing and shipping. New legal questions rise about the rights of different peoples to manage their economic zones on islands that are becoming uninhabitable. Shall nations of migrating Pacific Islanders retain legal rights to their marine resources? Certainly this would give them and their cultures some clout in their new homes.

The works on the Spratly Islands raise the reverse question. The 2005 exploration accord by oil companies of China, Philippines and Vietnam is only a fraction of the joint management that large-scale marine planning can offer.

Big Ocean planning also keeps alive conservation goals. Remember the International Convention for Biodiversity in 2010? It set a target for marine protected areas at 10 per cent of all coasts? That's a start. Profes-



sor Bill Ballantine, founder of 'no-take' sanctuaries in Aotearoa/New Zealand, always insisted 30 per cent was the biologically significant percentage. The 45 years of 'no-take' of his first project, the Leigh Marine Reserve, now astonishes specialists and tourists. Doves of fish darting around at your ankles speak for themselves.

This leads into another issue. We're all there with David Attenborough viewing the deep Reef from inside a submersible. But these marine communities are now part of the largest global coral-bleaching event. More than 40 per cent of the 2,300 kilometre system has been damaged; 90 per cent of northern reefs bleached.

To varying degrees, the global band of reefs across the Pacific, Indian and Atlantic oceans are damaged. Hurricane Winston hurt in Fiji but it also lowered the water temperature. The long weeks of high temperatures in the sea do the most damage. Since the bleachings of 1998 and 2002, researchers warned of stronger El Nino events and more intense global warming.

These factors ensure the east coast of Australia is changing rapidly and consistently. Marine animals, from fish, invertebrates, macro-algae and maybe even some coral, are all shifting south. They are moving at a rate of seven kilometres every year.

The big question: how

are we people living on the coast to extend hospitality to marine animal refugees? The worst thing we can do is 'armour' the beaches. In Europe and Asia, some cultures have used stone to build up and fortify sandy beaches and coastal waterways. Settler culture in Australia finds it all quite picturesque as well as practical. But around the world, hardening the shore is linked to declines in fish populations and less room for marine life. Not quite a welcome for the migrants who seek shelter, food and places to raise young.

Biologists recommend softening the coastline. Encourage mangroves, lagoons, oyster reefs and shellfish beds. Here in Byron Bay, we have a unique situation. In contrast with much of the Gold Coast, our waterways the Belongil and the Tallow are still free of rocks. They are rare temperamental entities officially known as Intermittently Closed and Open Lagoons and Lakes (ICOLLs).

Some of the shores adjacent to the waterways are still sandy. Others are still recovering after mining. Parts have some semblance

of coastal vegetation. From the many perspectives we use to consider these places, perhaps the most fundamental is this: how does it work as sanctuary for coastal and marine species?

A soft coastline is more than a physical buffer, whatever the sea-level change or the storms that blow. It's full of scope for marine life to make of it what they can. This is the start of local and regional food security. Rebuilding wetlands for indigenous crops and wild foods, we may grow the surpluses to feed other people too. As a community, we could learn again how to live and share in wet, changeable places. We may yet become part of a large-scale marine protected area.

The politics and economics of the Pacific are based on living oceans. So are the cultures, whose proud histories are long and full of marine experiences. Whose words have developed on these shores. *Binungal*. From Bundjalung. Stop, look and listen!

• Mary Gardner is a biologist and writer. See her earlier work at www.echo.net.au/tangle-of-life.

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Australia could be world leader in solar-powered EV

Giles Parkinson

The shift from petrol cars to electric vehicles appears to be more than a consumer-driven, Tesla-inspired phenomenon. The big utilities are also getting on board.

Origin Energy, one of the country's big three utilities, says Australia could be a market leader in solar-powered electric vehicles, given the right incentives and policies that could encourage the uptake of renewable energy and force the closure of the most polluting brown-coal power stations.

'With an already high penetration of residential solar PV systems in Queensland and South Australia and the emergence of home battery technologies, there is an exciting opportunity for Australia to be a market leader in electric vehicles powered by solar energy,' the company says in a submission to the Climate Change Authority.

Nearly one quarter of Australian homes are equipped with rooftop solar, and Australia is seen as the likely first 'mass-market' for battery storage – because of that high solar penetration and



The much-hyped Tesla Model 3.

because of the country's high electricity prices, courtesy of its high-cost grid.

Anecdotal evidence suggests that many of the early adopters of electric vehicles are already charging their EVs with their own rooftop solar, and utilities are already switching controlled loads for electric hot water systems back to the daytime from overnight to take advantage of excess solar power.

Utilities say EVs can fill the same function, and the uptake of battery storage could help shift that solar-charging into the evening. And by using rooftop solar, it addresses criticism that EVs don't really reduce emissions in a coal-intensive grid.

Origin says the potential for EVs is significant, but the take-up so far in Australia has been small, with fewer than 1,000 vehicles sold up to the end of 2014, although those numbers have since been boosted by the enthusiasm for the upmarket Tesla Model S, and more recently the huge interest in the yet-to-be delivered Model 3.

Origin suggests a range of policies that would help increase demand, such as support for fleet purchases, infrastructure such as charge points, and reductions for stamp duty and registration, along with preferential parking and traffic-lanes treatment.

It also suggests electric-

vehicle sales can be coupled with GreenPower or similar products so that they are immediately powered by fully renewable electricity generation.

Origin also points to the opportunities for Australian industry to become more involved in the manufacture and support of electric vehicle components and the charging infrastructure.

The points made by Origin follow from similar proposals made by the Electricity Supply Council, and by a consortium of utilities, network operators, advocacy and research groups, and city councils last week.

Australia currently has no standards on its vehicle emissions, and while the Aus-

tralian government is talking about introducing such policies, it is now being urged to be highly ambitious by a number of industry groups.

Transport emissions account for around 17 per cent of Australia's total emissions, and are growing rapidly. The report by the pro-EV consortium last week suggested that Victoria is the only state where the emissions would rise with widespread uptake of EVs, because of its brown-coal generators.

Across the national electricity market, EVs would actually reduce emissions, and particularly so in South Australia, Western Australia and Tasmania.

Origin and others are now pushing the major parties to follow international examples and impose restrictions on brown-coal generators.

'Standards are currently being implemented in North America with the US basing theirs on emissions intensity and Canada on the age of its generators,' Origin said in its submission.

'Either policy could be applied in Australia. In comparison to a carbon tax or emission trading scheme,

standards are simple to communicate to the public and their results are more tangible.'

Alternatively, Origin says a proposal to fund the exit of brown-coal generators proposed by ANU academics is worth pursuing. Although it does not favour payments to generators, it would support funding for communities for structural adjustment.

Another option is morphing the coalition's Direct Action scheme into something that is actually useful. This could be done by transforming the Safeguards Mechanism from something that protects the current level of emissions by large polluters into a mechanism that can force significant reductions.

Origin says it is supportive of a shift to an 'emissions-intensive' safeguards mechanism that would effectively set a bar on emissions and require heavily polluting facilities such as brown-coal generators to buy permits from cleaner generators.

• Giles Parkinson is editor of the free online newsletter RenewEconomy.com.au.

Mullumbimby HIRE & SALES

Palm Leaf Plates

Mullumbimby Hire and Sales has an extensive range of Palm Leaf Plates in a variety of shapes and sizes. These fantastic biodegradable plates are made from naturally fallen Areca Nut Palm Leaves which are cleaned and pressed in a totally chemical free process. Not only are these plates eco-friendly and compostable, they are great for parties! They can hold hot or cold food without leaking and can even be put in the microwave!



Sugar Cane Plates

Mullumbimby Hire also has Sugar Cane plates and bowls on offer which have all the same great qualities as the palm leaf – microwavable, suitable for hot and cold food, strong and durable. These plates are made without harming even a single tree; they are recycled and will break down in your compost bin within 90 days. The best part about this is, no washing up required after an event which in turn saves water!



Cups and Cutlery

While our Bio-cups may look like they are made from plastic, rest assured that Mullumbimby Hire only stocks the best biodegradable products. These cups are made from a product called PLA which is derived from renewable resources like corn starch, roots or sugarcane! They are 100% biodegradable and will break down with all your food scraps and palm leaf plates. Our cutlery is also biodegradable, being made from plantation birch.



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Building a bamboo classroom with Byron College

Eve Jeffery

Practising what they preach and teach, Byron College is about to construct a classroom made of bamboo, the most versatile and sustainable of building materials.

Tutor Sharon Gibson is a permaculture and sustainability trainer and a project coordinator with a passion for urban farming. 'I've taught bamboo courses, growing and cooking with perennial veges. I did a great course for a while called Grow Your Own Green Curry! I really loved that,' says Sharon.

'I've taught organic gardening, keeping backyard chooks, and how to humanely kill and prepare a chook.'

Sharon is a permaculturalist who lives on a quarter-acre block in Mullumbimby township. 'We grow most of our own food, we grow veges, meat, eggs, fruit etc. Our house is a demonstration of urban permaculture, and has been part of the Sustainable Streets program, where we educate people about how to live a more sustainable lifestyle.'

Sharon, who has been teaching at the college for



Sharon Gibson with that versatile plant, bamboo. Photo Tree Faerie treefaeriephotos.com

about five years, is about to embark on a building project with the permaculture students at the college.

'I was teaching a bamboo course about maintaining a bamboo clump, different varieties that are useful for different things, like building, timber, or for food, weaving, that sort of stuff, so it was a basic bamboo course, just a beginners course, I guess.'

Sharon says that bamboo is a perennial crop, so you plant it once and it's always in the ground. 'It's not like an

annual crop, where you have to clear the soil. It's a very strong material.

'It grows way faster than timber, so you can pretty much plant bamboo, then in about six years' time you can build your own house with it.'

The Byron College-accredited permaculture class will this year build a bamboo classroom at the Mullumbimby Community Garden.

'We are building it with the help of two master bamboo builders, Julie-Ann Hartman and Rob Swain.

It's going to be an outdoor classroom for the permaculture students in the future. It will be built with 100 per cent renewable materials.'

Sharon says the great thing about building with bamboo is that anybody can do it. 'I've tried really hard to build with timber, and I'm not skilled in that sort of thing, whereas with bamboo it's so much easier.'

The classroom will take about two weeks to construct and the plan is to start in August.

'We'll be harvesting bamboo about a month before we start building, then we will use natural materials and we're going to preserve it, so we're going to need lots of bamboo.'

'We're actually asking for anybody that's got good-quality building bamboo and we're taking enrolments now for the Permaculture Cert III class, who are going to build it.'

Byron Region Community College is a not-for-profit community organisation with a strong commitment to high-quality innovative learning for adults.

Their vision is to involve and engage people through inspiring learning experi-

ences. The college also is steadily moving towards more energy-efficient and sustainable practices in campus activities and in learning content.

The Permaculture Cert III at the college is taking enrolments now for the course, which starts in May. For more information visit the college website www.byroncollege.org.au.

• Eve Jeffery is an *Echo* journalist, photographer and sports editor. She is also co-founder of the award-winning documentary-making team Cloudcatcher Media. See more at www.cloudcatchermedia.com and www.treefaeriefotos.com.



Photo Moyan Brenn moyanbrenn.com

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Life is busy, but as we go about our day-to-day tasks with a little awareness, we can make choices that lessen our footprint on the planet.

Bud: ethical baby clothing and gifts

Bud is an ethical baby and kids shop in beautiful Mullumbimby.

They stock a range of clothing, toys, gifts, baby essentials and locally made products that are all people and planet friendly.

Nathalie, Bud's owner, believes that when we buy something it is important to be conscious of how and where the product was made. 'We think that products at some larger stores are just too cheap. Although we may save some money, these products involve a human and environmental cost that is too high.'

At Bud they take great care to ensure that everything instore comes from ethical and sustainable sources. Bud is open Monday to Saturday so drop in for a browse or a chat and see for yourself how they are making a difference.

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www.earthbottles.com.au



The Silver Lining: sustainable clothing

The Silver Lining feels very blessed and proud to be a part of the sustainable business movement in Mullumbimby.

They love to rummage and get so much pleasure from sourcing and rejuvenating beautiful treasure for their customers. They focus on quality natural fibres – cotton, silk, linen and wool – vintage and 50s contemporary, but are always on the hunt for quirky and original pieces to reflect their customers' characters. With over a thousand hand-picked items on the rails, of which a third are local consignments, it is a great way to support the community through affordable recycling to benefit all.

Since opening their doors almost five years ago, they have used paper bags and recycled packaging. 'Don't we live in a beautiful and abundant area? Yes! We are grateful and aware of our responsibility. Shop locally, live by example, and help preserve the environment for future generations.'

61 Burringbar Street, Mullumbimby
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THE SILVER LINING



Organic Whispers organic dry staples

Driven by a passion for all things organic, Diamantis Hamalis was brought to the Byron Shire to study permaculture at the local Byron College. He is now growing a Mullumbimby-based dry-foods business called Organic Whispers.

The business inspires everyday people to create a safe and fun pantry in their homes with 100 per cent certified organic dry staples like rice, lentils, dried fruit, nuts and more. Organic Whispers is now stocked in local independent retailers around the northern rivers and invests in local businesses to support sustainable community growth.

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The pegs come with a nice double drawstring cotton bag and make a wonderful environmentally friendly present.

www.wirepegs.com



Fifty years after *The Lucky Country*, Australia's sustainability challenge remains urgent

In *TheConversation.com*, Professor Ian Lowe re-examines Donald Horne's warnings

More than 50 years ago Donald Horne, then working in an advertising agency, described Australia as 'a lucky country run mainly by second-rate people who share its luck'. The phrase 'the lucky country' quickly became part of the language, though its message was often misrepresented.

Horne's 1964 book sounded three loud warnings about Australia's future: the challenge of our geographical position, the need for 'a revolution in economic priorities', and the need for a discussion of what sort of country we want to become.

Those warnings are even more urgent today after 50 years of inaction by our second-rate leaders. I've revisited Donald Horne's ideas and updated them for the 21st century. An additional complication is the accumulating evidence that we are not living sustainably.

The need for change was underlined by a 2015 UN report on sustainability. Australia ranks 18th of the 34 developed countries, below the UK, New Zealand and Canada, based on indicators covering economic, social and environmental progress.

We are among the worst of the affluent countries on resource use, waste production, greenhouse gases released per unit of economic output, and our obesity rate.

We are also well below average on social indicators such as education level, gender pay gap and proportion of women in parliament, as well as economic indicators such as the poverty rate and the degree of inequality.

Interestingly, the top four countries were the Scandinavian nations of Norway, Sweden, Denmark and Finland.

The United States ranked 29th. It is a reminder that only ideologues with no concern for evidence could still be seeing the United States as a model to which we should aspire, rather than the much more successful Scandinavian approach.

The challenges of our location include how we develop relationships with our Asian neighbours beyond simple economic dealings; reconciling our history of indigenous dispossession;

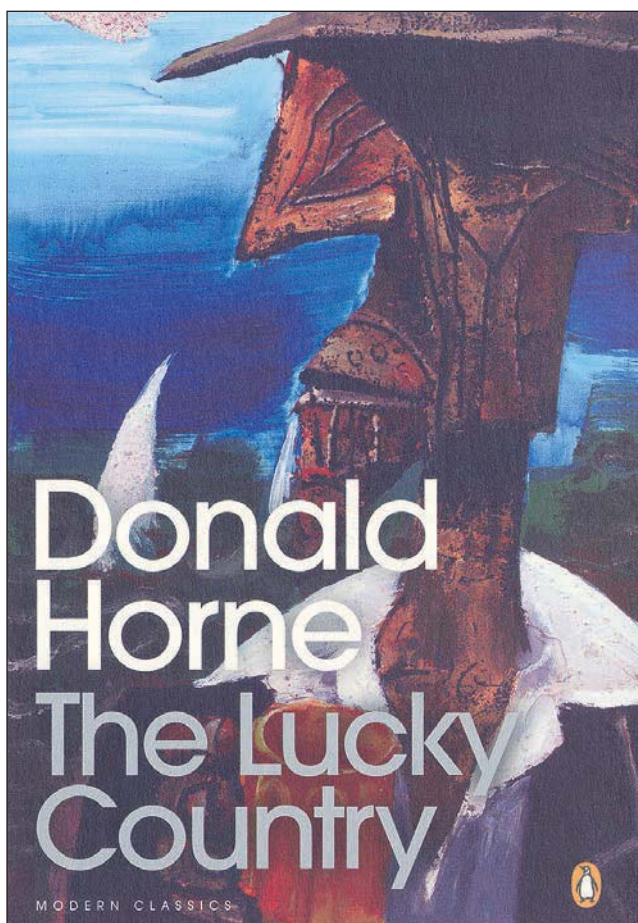


Image from penguin.com.au

and our foreign policy and defence strategies in the complex world of the Asia-Pacific.

Strong bias

Our education system still has a strong bias toward our European past, with few young people studying any Asian language and even fewer having any real understanding of the complex social history of China, Japan, Indonesia or India.

Most of our leaders know something about the complex history of Europe and the essential differences between France and Germany, between Spain and Italy, between the Scandinavian countries and those further south.

By contrast, general assertions are still made about the region we live in from a position of ignorance. It remains true, as Horne said half a century ago, that we see the region simply as an economic machine from which we can make money.

Horne called for a revolution in economic priorities, moving away from being 'a stupid country' that exported minerals and farm produce, 'investing in education and science' so that we would be better equipped for the world of the twenty-first century.

Instead we have further run down our manufacturing base, mainly by opening up our markets to cheaper imports. We have failed to invest in science and education to become competitive in emerging industries.

CSIRO has been steadily run down and recent changes seem aimed at turning it into a second-rate consulting organisation, rather than a model of public-sector applied science for the public good.

Education reform

The Gonski reforms would go some way to redress our failure to invest in the education of our young people, but the coalition's political agenda looks like reinforcing the past trend of slipping further behind other countries in the region.

The best possible investment in our future is educating all our young people to the limit of their ability, rather than the limit of their parents' income or political clout.

Australia has changed fundamentally from the Anglo-Celtic enclave of the 1950s. We need to have a serious public discussion about societal values, population growth and what kind of country we'd like to become, including our relationship with the British monarchy.

As one extreme example

of the issues we should be discussing, politicians almost all believe that it is good to have a rate of population growth higher than any other advanced country, ignoring the evidence of the social costs of this approach. I discussed these issues in a previous book, *Bigger or Better? Australia's Population Debate*.

Urban infrastructure is failing to keep pace with the unsustainable rate of population growth, which is also causing social tensions.

A few sectors benefit from population growth – retail, housing, land speculation – but there is little evidence the community as whole is better off.

Our governments claim to be in control of our borders because they prevent relatively small numbers arriving by boat, while ignoring the impacts of a total legal arrival of 250,000 or more, or even cheekily claiming it to be evidence of

their superior approach to economic development.

Of course, the huge level of migration creates jobs, but is also brings in a proportionate number of people looking for those jobs. We should recognise that migration has costs as well as benefits.

Extreme weather

Horne's three warnings must now all be filtered through the lens of our precarious environmental situation. The extreme weather patterns that come with climate change, the loss of biodiversity, the breakdown of the Earth's ecosystems and our unsustainable use of finite resources, all affect our future prospects.

A recent Academy of Science project found strong consensus for 'a future Australia that is more caring, community-focused and fair than present-day Australia'. That would be a truly lucky country, a wonderful legacy to future generations.

It is still possible for us to live sustainably and make Australia both a model for the developed world and a beacon of hope for the developing nations in our region. That will require conscious policy choices involving the community rather than the present obsession with markets, the mindless pursuit of endless growth and integration into a globalised economy that puts our wellbeing in other hands.

In that sense, our future is in our hands. Our actions will determine whether we really become a lucky country.

• *The Lucky Country? Reinventing Australia* by Professor Ian Lowe was published by UQP in March 2016. Professor Ian Lowe (BSc, NSW; DPhil, York, UK) is an emeritus professor in the School of Natural Sciences at Griffith University and an adjunct professor at two other Australian universities.

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The best apps for the conscious eater

Danya Bilinsky at youthfoodmovement.org.au

Today there are apps for everything. They can help you learn a new language, plan your next holiday and even restrain you from drunk dialing on a Saturday night. They can also improve the way you eat – inspiring you to make better decisions for your health, your taste buds and the environment.

Here are some of the best apps for the conscious eater in Australia, whether you're trying to eat more healthily for you or our environment.

Love your Leftovers

Available free on iOS only. This handy little app will help you act on food waste by transforming your leftovers rather than trashing them. Recipes are easily searched by ingredient and there are some great tips on how to store food to keep it fresher for longer. If you're already an expert on reinventing leftovers, contribute your recipe and help be part of the change. A new version due in three months will include a meal planner



and shopping list feature.

Wild Food Map

Available free on Android only.

A few years back Diego Bonetto started creating foraging maps of his Chippendale neighbourhood. Wild Food Map pulls this knowledge together, now from all corners of the globe, making it accessible and free. 'The motivation was to allow for a place where you can discover useful plants in your neighbourhood and connect with fellow plant enthusiasts, to share knowledge,' Diego explains.

Learn about useful, edible and medicinal plants that are (literally) growing in your own backyard. Weeding the garden may now be collecting food for dinner!

ABC Veggie Guide

Available free on iOS only. Whether you're a novice or an experienced gardener trying to grow some of your own, the ABC Veggie Guide is an essential tool. You'll get recommendations on what's best to plant, and when – all depending on where you live. Even if your thumb is more brown than green, this

app will help you produce healthy crops year round – arming you with growing tips and the best ways to control pests and disease.

FoodSwitch

Free on Android and iOS. Find out what's really in the food you're eating and get suggestions for healthier choices you can switch to. It's as simple as scanning the barcode to get easy-to-understand nutritional info with data on energy, saturated fat, sugar and salt levels. Filters can be used to suit different health needs.

Sustainable Seafood Guide

Available free on Android and iOS. Developed by the Australian Marine Conservation Society, this app was created in response to public demand to better understand the sustainability of their seafood. Using a traffic-light ranking system, more than 90 seafood species are grouped into Green 'Better Choice', Amber 'Eat Less', and Red 'Say No'.

The app covers wild-caught, farmed, local and imported seafood and links to Greenpeace's canned tuna guide. Ocean-lovers now know exactly what they ought to be throwing on the barbie.

Chemical Maze

Available on Android (\$7.49) and iOS (\$10.99). It all started with a road trip. After snacking on a packet of chips and having an adverse reaction to a food additive, co-founder Jon realised there needed to be an app to provide some answers. He teamed up with

Bill Statham, the author of the book of the same name, and Chemical Maze was born. Chemical Maze is the ultimate decoder, identifying up to 1,200 food additives and cosmetic ingredients. Filter by symptom, ailment or dietary requirement. Additives are rated with smiley, neutral and sad faces. Avoid those with a double sad face – they may be hazardous to your health.

Shop Ethical!

Available on Android (\$4.94), and iOS (\$5.99). When next doing the grocery shopping, simply scan a product's barcode to get its 'ethical rating'. It's all based on the environmental and social track record of the companies behind more than 4,000 products. As Clint Healy from Shop Ethical explains, it's 'designed to provide consumers with the tools to make informed choices when shopping in the supermarket and beyond, so they can match their shopping habits with their values.'

Photo Danya Bilinsky

LOCAL ENERGY. LOCALLY INSTALLED.

Hi, my name is Gerry and I run Denby Energy, a local business providing residents and businesses with affordable renewable energy solutions throughout the Northern Rivers. Unlike other solar companies we are **owned and run by electricians**. From quote to install you work with one team so communication isn't lost through the process. I may have already installed solar on your roof or perhaps you are thinking about solar for the future. Either way Denby Energy can help:

- If you already have a gross meter that feeds solar into the grid for 60 or 20 cents per kilowatt hour that's great, but the Solar Bonus Scheme ceases at the end of this year. This means you will need to change your meter and consider how to store that excess solar. As a **Level 2 Service Provider** I am able to install all metering options, including **gross to net changeovers**.
- If you already have solar and want to become more independent by utilising new battery storage technology I am up to date on all the latest options available. Over the past few years I have installed **new battery storage systems** into homes and local businesses, making these spaces **completely energy independent** by utilising their daily excess solar production and consuming it at night.
- If you haven't yet looked into solar but are interested, I can design a system that will suit your need and budget. Let's get you using renewable energy! Unlike other solar companies, being a **Level 2 Service Provider** we are authorised to do the final connection and meter changeover, which is included in our service during installation, **saving clients up to \$700**, providing a significant point of difference.

I would like to help to remove the confusion out of your renewable energy journey and equip you with the best options for your solar investment. Please check out my website for more info at www.denbyenergy.com.au or call 0432 767 764 for a chat.

Speak soon,

Gerry



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Waste less food, save money and our environment

This project was supported by the Environmental Trust as part of the NSW EPA's Waste Less, Recycle More initiative, funded from the waste levy.

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This project is a NSW EPA Waste Less, Recycle
More initiative funded from the waste levy.



Go to > **www.wastewarriors.com.au** to request your **FREE** waste assessment.

CSIRO goes electric with 'green' fleet

With the introduction of 100 per cent electric cars to its national fleet, CSIRO is taking further steps to reduce its carbon footprint.

The first two of ten petrol-free electric cars, and two additional electric bikes, have been delivered to staff at CSIRO's Discovery Centre at Black Mountain, Canberra.

'We are rolling out these new electric cars across seven of our sites to enable

petrol-free motoring within CSIRO's pool of fleet vehicles,' CSIRO general manager, building and infrastructure services, Mark Wallis said.

'With the addition of solar PV panels at our sites, we aim to generate more than enough renewable energy to charge and run the cars, making them emission free.

'This is certainly a greener alternative when you consider that the

manufacturers say: "parts of the interior and bodywork are made from recycled water bottles, plastic bags, old car parts and home appliances"'.

Other CSIRO locations which will shortly take delivery of the new electric cars include Melbourne, Brisbane, Hobart, Perth, Townsville and Newcastle.

'The cars and electric bikes are the latest in a

raft of initiatives to lower emissions, reduce waste and improve the sustainability of operations across CSIRO,' Mr Wallis said.

'As our scientists continue to lead the way in many aspects of alternative energy, emissions and waste reduction, and water and energy efficiency technology – we also want to be an organisation that puts those same things into action across our

sites and operations. The money saved or earned can be reinvested into national science priorities.'

Some of CSIRO's other recent sustainability initiatives and benefits include 36 electric/petrol hybrid cars introduced to the CSIRO Fleet in 2015 to replace petrol-only vehicles, and 900 tCO₂e emissions reduction and \$114,400 saving from lighting upgrades.

Food books

Among the food books American group Foodtank.com suggests are worth reading this year are:

Adventures in Urban Bike Farming by Kolibri Terre Sonnenblume, which chronicles experience as an urban farmer in Portland, Oregon through the early 2000s.

Bread, Wine, Chocolate: The Slow Loss of Foods We Love by Simran Sethi, who explores the historical and cultural importance of food and the growing threat of homogenisation in the food system.

Emerging Technologies for Promoting Food Security: Overcoming the World Food Crisis (Woodhead Publishing Series in Food Science, Technology and Nutrition) by Chandra Madramootoo. This book provides a thorough assessment of the factors that influence global food insecurity, including rising energy prices, water scarcity, increased biofuel use, and expanding populations. Additionally, it assesses emerging and traditional food production techniques that promote global food security, as well as genetic and aquaculture technologies.

Local councils take on sustainability issues

► continued from page 5

Tweed also has an Agriculture Strategy paving the way for a sustainable future. The recent release of the draft Tweed Sustainable Agriculture Strategy for public exhibition has been welcomed by local farming representatives, who say they eagerly look forward to the implementation of the strategy's actions.

Council is also implementing an innovative solution to the serious Condong riverbank erosion as 150 metres of riverbank adjacent to the Condong boat ramp will be strengthened by works using

a combination of geotextile bags and a rock wall. The design and materials chosen for the works would encourage mangrove establishment on some parts of the riverbank, while providing improved amenity for boat users and other visitors to the parkland.

BALLINA

Fostering community sustainability underlies Ballina Council's *Our Community: Our Culture Ballina Shire Cultural Plan 2014–2020* planned vision and objectives. The plan emphasises strengthening

the visibility of local cultural attributes and the opportunities for both Council and the community to develop and hold cultural activity across our Shire.

In line with community sustainability *Our Community: Our Culture's* objectives foremost seek to maximise the use of our existing cultural resources and programs. These objectives also highlight the opportunity to improve, and initiate new community partnerships to develop and deliver cultural activity throughout the Shire.

Encouraging cultural activity that is shaped by various community interests is also considered important to its accessibility across the community – including children, young people, older people, families and the various cultural backgrounds represented in the Shire.

Accessibility of cultural activity to people with disability needs is also seen as important. *Our Community: Our Culture* sits under Council's overarching Community Strategic Plan. *Our Future* identifies 'connected

community' as one of its four key planning directions. Fostering cultural activity is one way to achieve this and other broader community planning goals.

Council recognises that having access to cultural activity results in important social and economic outcomes. These benefits include a more vibrant community life and increased community pride and wellbeing, to the greater opportunities and employment for community residents working in cultural and creative industries.



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Tracking the plastic pollution in our oceans

Eve Jeffery

Professor Steve Smith is the acting director at Southern Cross University's National Marine Science Centre in Coffs Harbour. Steve's main research focus is on the measurement, monitoring and management of marine biodiversity, which includes assessment of human impacts.

Steve has devoted much of his research effort to documenting the impacts of marine debris, delivering most of his programs through close collaboration with citizen scientists. Steve uses the information generated by his research to inform management decisions, providing an advisory role from local to national levels of government.

Despite being raised in a land-locked area of the UK, from a very early age Smith had a fascination with marine life.

'Following my passion, I completed a Bachelor of Biological Sciences in the UK before travelling to visit my recently emigrated family in Newcastle', he says. 'I was immediately taken with the



Professor Steve Smith with some of the bottles collected. Photo Kelsey Banister

stunning Australian environment and therefore applied to stay on to learn more.'

Steve completed a PhD in the field of marine pollution in 1994 and, over the intervening years, as well as documenting their amazing and unique biodiversity, saw the gradual degradation of many marine and estuarine habitats through urbanisation and a growing human population.

'I also realised that while documenting diversity and

impacts through academic studies is important, the best way to reverse these impacts is through public education and participation.'

For this reason, many of Smith's research activities involve community engagement with a view to making environmental stewardship normal, grassroots practice.

Last year Professor Smith collected plastic water bottles from beaches from Coffs Harbour to Tweed Heads in a bid to find out where

they come from – he found they come from all over the world. The project was run in conjunction with Live Ideas, a University initiative pairing community organisations and researchers.

The community chipped in as well, with the Ballina 4WD Club handing over almost 200 bottles collected during a clean-up of the restricted Evans Head Air Weapons Range and Bundjalung National Park, near Ballina.

Karl Sprogis of the 4WD club said caring for the environment was central to the club's constitution. 'Fortuitously, in the days preceding the beach clean-up, a couple of our members became aware of the university's request to the public to help collect plastic bottles', said Sprogis.

'The bottles were handed over to Professor Smith, who found that more than 50 per cent of beach rubbish is foreign, with bottles from ten countries collected.

'We hope that the study will both raise awareness about the impacts of marine debris and provide information to help manage the problem locally, regionally and globally.'

In another study a total of 38,000 items of marine debris were found on just 1,100 metres of beaches in the Whitsunday Islands, putting them amongst the dirtiest in Australia.

In a joint research project between Southern Cross University, Amcor, Eco Barge and the Earthwatch institution, 15 volunteers from Amcor and scientists from SCU, Earthwatch and

Eco Barge planned to assess the extent of marine debris in the Whitsunday Islands.

The team spent ten days aboard the tall ship, *Solway Lass*, collecting marine debris from 12 beaches.

'It was a real eye-opener and it was very challenging', said Steve. 'From the marine debris we collected, these are among the dirtiest beaches I have seen in Australia and are equivalent to some of the beaches in southeast Asia. We had one 10-metre section of a beach where we found 3,900 items of debris which were mostly bits of plastic.'

Professor Steve will continue with his struggle to highlight the damage being done by pollution to our oceans and seas. He hopes that by involving the community humankind will understand the direct result their actions have on the planet.

'The diversity in our marine and estuarine environments is under threat from a wide range of human impacts and I am dedicated to understanding these impacts with a view to fostering long-term sustainability.'



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Jan Barham MP
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Sunlight can be used to produce chemicals and energy

Researchers at the University of Copenhagen have discovered a natural process they describe as reverse photosynthesis.

In the process, the energy in solar rays breaks down, rather than builds, plant material, as is the case with photosynthesis. The sunlight is collected by chlorophyll, the same molecule as used in photosynthesis.

Combined with a specific enzyme the energy of sunlight now breaks down plant biomass, with possible uses as chemicals, biofuels or other products, that might otherwise take a long time to produce.

By increasing production speed while reducing pollution, the discovery has the potential to revolutionise industrial production. The research results have now been published in *Nature Communications*.

'This is a game changer, one that could transform the industrial production of fuels and chemicals, thus serving to reduce pollution significantly,' says University of Copenhagen professor Claus Felby, who heads the research.



Photo by Sagisen flickr.com/photos/sagisen

'It has always been right beneath our noses, and yet no-one has ever taken note: photosynthesis by way of the sun doesn't just allow things to grow; the same principles can be applied to break plant matter down, allowing the release of chemical substances.

'In other words, direct sunlight drives chemical processes. The immense energy in solar light can be

used so that processes can take place without additional energy inputs.'

Postdoc David Cannella, a fellow researcher and discoverer, explains that 'the discovery means that by using the sun we can produce biofuels and biochemicals for things like plastics – faster, at lower temperatures and with enhanced energy-efficiency. Some of the reactions, which currently take 24 hours, can

be achieved in just ten minutes by using the sun.'

Researchers have discovered that monooxygenases, natural enzymes also used in industrial biofuel production, multiply their effectiveness when exposed to sunlight:

'We use the term "reverse photosynthesis" because the enzymes use atmospheric oxygen and the sun's rays to break down and transform carbon bonds, in plants

among other things, instead of building plants and producing oxygen as is typically understood with photosynthesis,' says Postdoc Klaus Benedikt Møllers.

Researchers do not yet know how widespread 'reverse photosynthesis', using light, chlorophyll and monooxygenases, is in nature, but there are many indications that fungi and bacteria use reverse

photosynthesis as a 'Thor's hammer' to access sugars and nutrients in plants.

The breakthrough is the result of collaborative, multidisciplinary research at the Copenhagen Plant Science Centre that spans the disciplines of plant science, biotechnology and chemistry. The research is mainly funded by the Danish Council for Independent Research.

'Reverse photosynthesis' has the potential to break down chemical bonds between carbon and hydrogen, a quality that may be developed to convert biogas-plant-sourced methane into methanol, a liquid fuel, under ambient conditions. As a raw material, methanol is very attractive, because it can be used by the petrochemicals industry and processed into fuels, materials and chemicals.

Additional research and development is required before the discovery can directly benefit society, but its potential is 'one of the greatest we have seen in years', according to Professor Claus Felby.

See the research paper at <http://bit.ly/biotechBT>.



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| 8 Nov | "Waste Deep" film screening & discussion |

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Little bits make a big contribution to sustainability

Eve Jeffery

Sometimes it's the littlest things that have the biggest effect and you don't have to look far to find awesome planet-saving products.

My three most recent sustainable must-haves are fantastic. I use them every day and I keep coming back for more as they are great gifts and I get to push my not-so-hidden agenda at the same time.

The first order of the day, which happens to be my last thing at night, is water from my Earth Bottle. I just love this thing and it has pretty much become my constant companion.

I take it everywhere I go in the way I used to cling to those icky yicky ciggies. I use it for water and to keep tea hot.

In a bid to discourage the use of one-use plastics, the original Earth Bottle team have created a brand that raises awareness and makes doing your little bit a breeze.

The range includes a 500mL and a 750mL bottle and a great 'coffee nut' travel cup with a silicone lid.

The original bottle has



a timber finish and keeps water cold for 24 hours and liquids warm for 12 hours. The bottles are made from high-grade 18/8 stainless steel and as well as the wood grain bottles they come in colours that generate donations to charities which support sustaining life – \$2 from every Dusty Pink bottle is donated to The Breast Cancer Network Australia, \$2 from the Sunrise Orange bottle is donated to Water Aid Australia and \$2 from the Turquoise bottle is donated to BeyondBlue.

Take the plunge from disposable to reusable and do your little bit in style.

Another thing I love is The Wrap by Homestead & Co. The Wrap is a natural and reusable alternative to plastic cling-wrap, which has been a worry for me ever since ever.

Made with hemp/organic cotton, Australian beeswax, tree resin, organic jojoba and lemon myrtle, The Wrap is a sustainable and natural waxed food cover which, by using the pressure and the warmth of your hands, shapes, wraps and seals. The Wrap can be moulded around a range of foods and dishes. It is malleable and adhesive at room temperature. When cool it will hold its shape.



I use The Wrap as a lid to cover bowls and plates or around any food item – a sandwich or snack, cheese, to seal the end of a cucumber, half an avocado, tomato, onion, fresh herbs or any other fruit or vegetable. You can even wrap dough, or cover sour dough starter for fermenting.

The Wrap is such a great idea that I use every day and it's so simple I wonder why didn't I think of it.

The best idea in laundry since the Hills Hoist comes from WirePegs.com. Made in three sizes and gauges, Wire Pegs are made of stainless-steel wire and under normal



conditions don't rust, break or fall apart, because the whole peg is made up out of just one single piece of wire.

The nickel content in these pegs is twice as high as in the normal stainless-steel wire pegs so they have a much higher corrosion resistance, and because of the lower carbon and manganese content they are more durable and less prone to rust.

For those who live close to the ocean there is a thicker grade of wire peg. You can rest assured that they will still be there when all the wooden and plastic ones are gone.

I use them for everything from holding down tarps in the backyard to holding documents together.

I leave all sorts of things pegged to the front door to remind me to take them when I leave and I even use them to hang up the clothes.

Imagine never having to buy pegs again – toot! toot!

Learn more:

Earth Bottles
– www.earthbottles.com.au

The Wrap
– www.homesteadandco.com

Wire pegs
– www.wirepegs.com

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Soils could aid climate fight

The world's soils could store an extra eight billion tonnes of greenhouse gases, helping to limit the impacts of climate change, a study suggests.

Adopting the latest technologies and sustainable land-use practices on a global scale could allow more emissions to be stored in farmland and natural wild spaces, the study shows.

Growing crops with deeper root systems, using charcoal-based composts and applying sustainable agriculture practices could help soils retain the equivalent of around four-fifths of annual emissions released by the burning of fossil fuels, the team says.

The role that soils could play in efforts to combat climate change has until now been largely overlooked, owing to a lack of effective monitoring tools, say a team of scientists including researchers at Edinburgh.

Recent advances in technology have enabled researchers to work out their full potential. Coordinated efforts involving scientists, policymakers and land users are key to achieving any



Photo Ron Nichols nracs.usda.gov

meaningful increase in soil storage, researchers say.

Resources should be provided to help reduce the environmental impact of farms, they add.

Community-based initiatives would help to overcome cultural barriers, funding issues and monitoring challenges to achieve a global increase in soil uptake, the team says.

Schemes such as the Cool Farm Tool, a free online greenhouse-gas calculator for crop growers, help farmers measure, manage and reduce emissions from their land.

Previous research shows that soils currently lock away around 2.4 trillion tonnes of greenhouse gases, which are stored underground as stable organic matter.

The study, published in the journal *Nature*, received funding from the Natural Environment Research Council. The research was carried out in collaboration with Colorado State University, Cornell University, Michigan State University and the University of Aberdeen.

– From the University of Edinburgh ed.ac.uk.

See the Cool Farm Tool at www.coolfarmtool.org.

Wellbeing an essential link

Global efforts to protect the planet will fail unless we take concepts like equality and wellbeing into account, according to a new paper published in the journal *Science*.

'Our quest to achieve a healthy and sustainable environment utterly depends on understanding how human wellbeing is linked to the environment and impacted on by our management of it,' said Dr Phil Levin of the US National Oceanic and Atmospheric Administration, who is the principal investigator on the project.

The paper, led by Dr Christina Hicks of Lancaster University, argues that we need concrete engagement with key social concepts as well as science if we are to make fair and lasting changes to the environment.

The authors, who also include social scientists from the University of Northumbria and the University of Washington, identify seven key social concepts, which are often marginalised in efforts to meet sustainability goals.

The concepts identified are wellbeing, culture, values, inequality, justice, power and



agency (a sense of self-determination).

The authors argue that these concepts are critical to informing decision making and shaping policy to make it more fit for purpose.

They suggest that, while these concepts are harder to quantify than GDP or carbon emissions, they can be measured. The paper highlights methods already being developed by academics and policy makers to quantify some of them, including wellbeing, self-determination, values and inequality.

Without these perspectives we risk going down a road which protects the planet but is incompatible with human wellbeing.

Dr Hicks said, 'Human wellbeing is dependent on healthy ecosystems but short-term pursuit of wellbeing may negatively affect those same ecosystems.'

'For me it all comes down to creating a fairer world – we can act to protect our

environment but sometimes those actions can increase inequality and that approach is not going to be sustainable in the long term. For example we have created marine parks and terrestrial parks to protect nature and biodiversity, and quite rightly so, but in doing that we have sometimes taken away people's livelihoods, moved people off their own land. People have suffered.

'Lasting sustainability will hinge on fair and just solutions.'

The paper highlights the importance of social scientists working alongside environmental scientists and policy makers.

Co-author Dr Sarah Coulthard from Northumbria University said, 'Social science is fundamental to unpacking how people interact with their environment, but often the complexities of that relationship and the languages in which it is expressed can become a barrier to how it is used by other sciences and policy.'

See more at lancaster.ac.uk/news/articles/2016/crafting-a-sustainable-future-for-humanity.

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Walking the talk: sustaining the wellbeing of our health providers

Mandy Nolan

Last year nearly 50 per cent of doctors and nurses considered leaving their jobs. In the last three years, at least 30,000 have done just that.

The average age of general practitioners, nurses and most allied health clinicians is nearly 55 years. The health care workforce is not only an ageing workforce but it is also reported to be the most at risk of stress and burnout.

The productivity commission shows looming shortages in most health professions. Without a sustainable health workforce we don't have a sustainable health system.

At the heart of this workforce crisis is an apparent lack of self-care. That is, your clinicians are generally very good and devoted to caring for others but lack the same skills and care for themselves.

A small team of mostly local healthcare professionals from the Australasian Society of Lifestyle Medicine (ASLM) and the Australian Musculo-Skeletal Network (AMSN) have identified this problem and are developing strategies to keep clinicians healthy.

One of the innovative programs they have developed is Eduventure – a program that combines education with an adventure in nature. In May, doctors, nurses, physiotherapists and other allied health professionals will participate in this innovative self-care program for clinicians, walking three days along the

beach from Tweed Heads to Byron Bay Lighthouse.

The Heal-Thy-Self Eduventure will be presented by Dr Caroline West, a GP and a director of East Sydney Doctors. Caroline has a special interest in lifestyle medicine.

Her areas of expertise include nutrition, healthy lifestyle behavioural changes, weight management, shared care for pregnancy, sleep, exercise, mental health, sexual health, hypnosis and preventive medicine. She is one of only a few presenters in the country who has a focus on clinician wellness.

Dr West's passion for wellness was seeded in her early career when she started out working in Darlinghurst with HIV/AIDS patients.

'It was a most chaotic and disturbing time for people living with HIV [1988]. There was little around in the way of treatment and there were a lot of young men suffering and dying and a community divided by politics and bigotry. It was very stressful work,' says Dr West.

'I developed an interest in communications and undertook a course in journalism as a strategy for dealing with the stress of the clinical work I was doing. This also helped me give voice to other areas of interest, especially the role of wellness and lifestyle and the potential of prevention in healthcare.'

Initially Caroline found very little information around clinician self-care.



Lifestyle medicine GP Caroline West.

'There was no formal training back then so I mostly self-educated. One day I met Professor Garry Egger, who was pitching an idea about illness prevention and chronic-disease management.

'He was attempting to create a new discipline called lifestyle medicine, which captured a lot of my thinking.'

Dr West is an advocate of preventive medicine, encouraging patients and colleagues to avoid illness by making changes before health problems become chronic conditions.

'If you think about it, lifestyle medicine, preventing lifestyle-related illness, has to be the way forward for a

sustainable health system.'

Ironically while many clinicians have great skills and compassion in caring for others, very often they invest the same care very poorly in themselves. Doctors in particular are exposed to very high levels of stress on a daily basis.

'In my profession as a GP I have personal experience

with work-related stress, especially when I was focused on HIV medicine,' says Dr West. 'I found I needed to develop other facets of my life to compensate and this included getting involved with the media and a focus on wellness and lifestyle medicine.'

'The life of the modern GP is quite relentless and I am sure it is the same for most primary healthcare clinicians. Constantly improving, and the never ending learning of, new technologies, increasing compliance and regulation, increased expectation of patients and an expectation to get more done in less time is making us all time pressured and stressed.

'And while there is a lot of investment, information and professional development on caring for patients and specific illness, there is virtually nothing on caring for self. Clinicians need skills and frameworks to prevent compassion fatigue and burnout.'

Dr West believes that for clinicians to be as effective as they can be, it's about walking the talk. Literally.

'The Eduventure concept is about combining professional

development with having an adventure. The Border to Bay walk combines a 6-8-hour accredited, self-care professional development program for clinicians with a stunning three-day walk from the border of NSW to Byron Bay Lighthouse. It is about 60km and we will do it over three days while being based at the Mantra on Salt at Kingscliff.

'The education program will provide a framework and skills for self-care – ways of re-prioritising nutrition, activity, sleep and relationships, for example – and the walk along some of the world's best coastline provides that space needed for deeper learning and reflection that can't happen online or in a classroom.'

If you would like to know more about the Border to Bay walk on May 12-15 – you don't have to be a GP to come along – go to www.amsn.com.au.

A four-minute clip of a previous eduventure is at <http://bit.ly/eduvclip>.

• Mandy Nolan is *The Echo's* entertainment editor, a standup comedian and author of three books. See more at www.mandynolan.com.au.

The Polyfaces perception of farming

Zo Zhou at youthfoodmovement.org.au

Our Brisbane chapter was lucky enough to catch the Queensland premiere of *Polyfaces*, a must-see doco that delves into the unique people and farming practices behind Joel Salatin's Polyface Farm. *Polyfaces* was created by Bendigo filmmakers Darren Doherty and Lisa Heenan, and is set amid the picturesque Shenandoah Valley in Northern Virginia.

Over four years, the Aussie couple documented their visits to Joel Salatin's farm, beautifully presenting daily life on the farm and the family's unorthodox farming methods. What we loved about *Polyfaces* is that it didn't just cover how the farm transformed the land, but also the lives of those on and around it.

The Salatin family began www.echo.net.au/sustainability

their journey on spoilt, over-used land and soil, which had been stripped of the nutrients essential to producing nourishing food.

To revive the land, they planted trees and produced compost. They raised their livestock on grass rather than feed shipped in from afar, which ensured movement and regrowth.

And they changed the way they sold their food, only ever offering seasonal products to a community who were in reach of their 'foodshed'.

Over time they proved that environmentally restorative farming (and distribution) practices can offer truly sustainable alternatives to conventional farming.

The decade-long family-run business now serves as a challenge to certain agricultural norms. The farm uses no synthetic pesticides or her-

bicides for example, instead favouring sustainable rotation and grazing methods to feed more than 6,000 people in the surrounding area.

Polyface Farm also use animals and their er... natural bodily functions (we're gonna say it... poop) to produce high-quality, nutrient-dense food.

In intensive ag, those bodily functions are so concentrated they become a 'waste' problem and burden to the land. At Polyface, they're managed so that they become a resource.

The filmmakers and the Salatin family left us optimistic about a farming future that didn't have to be exploitive, in a beautiful and concrete way. And that alone is a great reason to watch the *Polyfaces* story unfold.

• Find out more at www.polyfaces.com.

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TAMBURLAINE
ORGANIC WINES



Tamburlaine Wild Mountain Organic Sauvignon Blanc Semillon & Cabernet Merlot

Cabernet Merlot:
Bouquet: Ripe red berries, blackcurrant and forest floor aromas. Palate: This classically blended wine has rich plum and dark berry flavours with black pepper spice and a smooth cedary oak tannin finish. An excellent accompaniment to savoury red meat dishes or wood fired pizza.

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TAMBURLAINE
ORGANIC WINES

Temple Bruer Preservative-Free Cabernet Merlot

Temple Bruer are a pioneer and leader in preservative-free wine making. Langhorne Creek, Eden Valley and Loxton. Langhorne Creek's David Bruer has been a pioneer of organic winegrowing in Australia and his wines have usually been competitive within the mainstream market. His wines are based on organically grown fruit, but are also free of preservatives, in particular sulphur dioxide. The red blends are most enjoyable wine featuring oodles of sweet, ripe red and black berry flavours and fine, gentle tannins.



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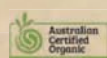
Angove Organic Cuvee Brut

Made from 100% Chardonnay, the grapes were picked early to ensure we retained the vital acidity needed in sparkling wine. The grapes were pressed and cold settled prior to racking and inoculation with a carefully selected yeast strain. The wine was left 'sur lie' for an extended period to develop a subtle yeasty toastiness prior to bottling. Have it with sustainably farmed, freshly shucked oysters. This wine is vegan friendly!

The Angove range of Organic wines are certified by COFCC – no synthetic chemicals, pesticides or herbicides were used in the production of this wine.



Organic



Wild Olive Shiraz

West Australian 'Top 100 Reds' – Ray Jordan – 23.07.15 – 92/100

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WILD OLIVE



Rosnay Organic Freedom Red

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