



Benalla Sustainable Future Group

Newsletter 25
September 2019

Benalla Sustainable
Future Group Inc.
PO Box 642
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Next Meeting

The next General Meeting of Benalla Sustainable Future Group will be held at the Benalla Uniting Church on

Thursday the 26th of September from 7.30 pm

until about 9.30 pm.

Our Guest Speaker for this meeting is

Fiona Roberts

from DELWP who will be talking about the work she did together with Tom Brown in developing the Hume Renewable Energy Roadmap.



John Lloyd will also inform the group about recent REB activities.

**Peter Maddock,
Secretary**

President's Message

Greetings to all from Broome, and probably by the time you read this newsletter, the AWC property, Mornington, off the Gibb River road, NE of Derby. After having travelled nearly 4,000 km to get here, I am now starting to feel a bit guilty about burning all that diesel to power our trip! (Just as well we planted lots of trees before we left!)

After being (blissfully) out of mobile reception for several days, I was brought back to earth with a jolt by the plethora of emails from all the various conservation and activist organisations we subscribe to - headlines screaming at me that the 'Arctic is Burning', our Pacific neighbours are drowning as seawaters rise, large-scale solar investment is about to 'fall off the cliff' because of government policies, etc.

In the past few days, I have learned of two stories, which left me shocked and somewhat angered, by the

ignorance and greed displayed in each case. Firstly, at Geikie Gorge, near Fitzroy Crossing, we were told by the Park Ranger that cattle from the neighbouring station had been allowed to invade the National Park to drink from the river, and in the process destroyed the habitat of the critically endangered Purple-crowned Fairy-wren, virtually wiping out the entire local population. Secondly, we heard that Gina Reinhardt, and other wealthy landholders, were proposing a scheme to use water from the Fitzroy River basin for a large-scale irrigation project - this, in spite of the fact that water levels in this basin are at their lowest in living memory, having endured two very dry 'wet' seasons in a row (last year, Fitzroy Crossing had 60mm of rain over the 'wet' months instead of the average 600mm). Vast areas of this region are suffering through reduced water table levels, so schemes such as this proposal will further weaken the resilience of the local flora and fauna.

On a positive note, I read, with awe and admiration, the email relating the story of the people of the Negros Occidental province of the Philippines, and their struggles to keep their province coal-mine and coal-power free. I was also encouraged by the plan that Holley and Fin have to encourage people to plant as many trees as possible to absorb atmospheric CO₂.

There are many organisations within Australia which are devoting considerable energy to overcome political brick walls (or, more bluntly, plain stupidity and greed) in the fight to counter climate change, and if we support them, vocally and/or financially, they will succeed, because politicians will respond to public pressure. We need to all start writing letters to newspapers, expressing our frustration with the unwillingness of governments to take the necessary urgent steps to counter climate change, or telephone your local member and record your displeasure with their party's policies. We cannot continue to expect that someone else will do this on our behalf.

I live in hope that common sense will prevail over greed and stupidity!

Peter Holmes

"Earth provides enough to satisfy every man's need, but not every man's greed." - Mahatma Gandhi

Legacy

At the 2019 Swanpool environmental Film Festival we screened a series of short films.

The first film was Greta Thunberg, [The Disarming Case to Act Right Now on Global Warming](#). The last film was [Legacy](#) about a mother and children asking about What Happened, Why the old people burnt fossil fuels when the scientists warned doing so would warm the world.

Prior to Legacy the film [If](#) was screened which celebrated the 10th anniversary of the film [The Age of Stupid](#) which we screened at SEFF in 2017. The film explores a parallel universe where the UK is taking decisive action to mitigate carbon emissions.

What I take from these films is that if climate change is an existential threat what are we personally doing to alleviate the threat? What will be our legacy?

I am pleased that Greta mentions Equity and Climate Justice which means that rich countries need to get down to zero emissions in 6-12 years so that poorer countries can improve their standard of living, getting basic infrastructure like roads, electricity, schools, and hospitals.

Greta Thunberg is driven by the science of climate change which leads to the conclusion that to solve the problem we just need to stop using fossil fuels. We stop air travel, we stop or reduce car travel dramatically. "All we have to do is wake up and change".

Peter Maddock

Low Carbon and Loving It

Recently I posted this article on BSFG Facebook and twitter pages, <https://www.smh.com.au/environment/climate-change/we-ve-been-arguing-about-climate-policy-for-five-elections-how-many-more-before-we-get-it-right-20190809-p52fo6.html>.

The article is about Mark and Cathy Delaney from Brisbane who lived in the slums of India raising their two sons Tom and Oscar in a room not much bigger than a bedroom. The years the Delaney's spent living in slums left them with a deep concern about climate change, especially the way it disproportionately affects poor communities.

Last year, Mark and his son Tom published a book which draws together their reflections on slum life and the need for climate action, 'Low Carbon and Loving It: Adventures in sustainable living from the streets of India to middle class Australia' <https://lowcarbonandlovingit.wordpress.com/>

You can download the book for free which I did, but I have also purchased a hard copy. It's a relatively short book so I read it in a day.

Mark and Tom have put together a book which describes the science of climate change, how emissions of greenhouse gases from the combustion of fossil fuels are increasing global temperatures which if not mitigated will lead to severe consequences for all of us. They particularly point out that the people who will be effected the most are not be the ones responsible for putting greenhouse gasses in the atmosphere. Many people in so called underdeveloped countries are now living a lifestyle which has a carbon footprint sufficient to keep global temperature increase to under 2°C.

They highlight how Australia has one of the highest per capita emission's in the world and produce a table which puts it at 23 T CO₂e. This is a little higher than figures I have mentioned in newsletter articles I have written on our carbon footprint. The recent BBC David Attenborough program on the ABC [Climate Change: The Facts](#) pointed out that we need to halve our emissions by 2030 and be zero by 2050.

On their trips back to Australia and visiting friends they describe how they go to great lengths to reduce their carbon footprint, avoiding air travel and using public transport where possible knowing that it will cost more and take much longer.

Living in a Western culture we are responsible for climate change and for both ethical and justice reasons we should be taking strong personal actions to reduce our emissions, we don't need to wait for politicians. We can stop flying, reduce driving, and use public transport. And we don't need bigger and bigger houses with less people in them. And we don't need to wait for Politicians to reduce our carbon footprints. By changing our personal choices about travel, transport, housing and lifestyle we can reduce our emissions dramatically, immediately.

"This is a remarkable book. Very few westerners have had the experiences that the authors have embraced, and as a result very few can speak with the same credibility about the choices we must make as a society. I hope everyone reads this volume—and thinks, deeply, about what it means." – Bill McKibben.

Peter Maddock

Benalla Local Food Network Action Group

We have launched the North East Local Food Strategy 2018-2022. It is available on Beechworth Health [https://gatewayhealth.org.au/images/brochures/NE Local Food Strategy 2018 2022.pdf](https://gatewayhealth.org.au/images/brochures/NE%20Local%20Food%20Strategy%202018%202022.pdf) or Benalla Health website at <https://www.benallahealth.org.au/CommunityHealth/HealthPromotion-479/Foodsecurity-483/>.

Serenity Hill from [Open Food Network](#) will be meeting with the action group on the Sept 17th at Gateway Health. She has funding through the Open Food Network to host an event in Wangaratta before July 2020 to 'connect food producers and eaters, strengthen networks that help connect producers with consumers.' Anyone in BSFG interested in this is welcome to attend. I will be attending this meeting so if anyone is interested I can give them the details.

We are looking for more action group members particularly in agriculture or environment sector - even if they cannot attend meetings I can link with them.

Kathryn McQualter

Dietitian Benalla Health

Coordinator [Benalla Local Food Network Action Group](#).



Fifty Years of Playing with Pipes

Where did my interest in hydrology come from?

Maybe it was having a dad who took me down near some of the biggest pipes in a 120 Megawatt hydro power station at full throttle. Maybe it was having a mum that encouraged me to play in the garden with a garden hose, sprinkler and plastic bottles.

The result was a noisy foaming and frothing mass in a 4 litre orange juice bottle inverted on a sprinkler head bulb that suddenly went quiet and then exploded with an eruption that burst out across the yard. It ruined my bottle with a big split and we didn't drink much bought orange juice - preferring to make it fresh.

Maybe it was dad's biodegradable musical instrument, a set of bagpipes, hand made by my great grandfather out of wood, reeds, string, kangaroo hide and a woollen tartan cover, wearing a big rock, horse hair and leather. It needed lots of maintenance and tested the tuning of my musical ear. Maybe it was mums encouragement at the piano. Maybe it was both that hooked me towards playing the trombone when I was introduced.

While cleaning the trombone slide it is possible to feel the atmospheric pressure. While giving my kids a bath, I wondered if I could harness the water hammer of a bath plug hole using some technical LEGO and some Swinburne science and engineering expertise. Sure enough an inverted cup piston engine with self governing peaked at 2.5 revs a second in a world first that made engineers heads spin. Very inefficient but hugely educational using 6 different energy systems in a strangely balanced cycle.

Wow it really was possible to have original thought and I was hooked.

The kids grew out of their little trampoline and I found myself laying on it in my backyard under a tree reminiscent of many childhood hours but in a world climate that was collapsing. Climate change, or global warming as I first heard about it, took over from my teenage worry about nuclear war. To some people making biogas comes naturally and after learning the guts the microbiology literally at university, and how much of a problem unburned biogas was, I set about making the nuclear equivalent of backyard power - a biogas generator. We called it 'reactor 4' after Chernobyl!

Several sings and explosion experiences later, I decided to park this project until my old age.... By then I hope society realises the importance of not releasing even more greenhouse gas emissions after you die. Maybe one day reusable biogas barrel production funerals will be available as a discounted after death option for some enlightened people's wills.

This gas production option should be available next door to a crematorium where the biogas of departed eco-minded people supply supplements or off-sets to minimises the use of precious fossil fuel or fracked town gas used by departed climate abusers.

It is such a waste burning gas by those departing bent on trying to place much of themselves along with even more emissions into our already struggling atmosphere.

Conventional cremation will become very expensive in a climate sensitive future when factoring in the true

costs. Even when discounted with gas from other departed individuals is utilised to fuel the process it will still be expensive. All gas would be far better utilised doing better things like cooking or heating. Even burying people in the ground eventually puts them back up in the atmosphere along with the fuel used to dig the hole

It's time we worked out a better way to depart and create more heaven down on earth to grow beneficial soil and plants with our lifetime of accumulated precious nutrients and trace elements. This is in contrast to the current methods that just create more hell up in our already suffering atmosphere.

So one day on the trampoline looking for patterns in the clouds and watching the local thermal riding glider planes and their tow planes, I thought maybe I could fix my climate comfort and impact problems all at once using some Australian assembled permaculture principles.

I noticed the dog harnessing various microclimates around the yard to get warm or stay cool.

Instead of a 'too hot' or 'too cold' shed (that every bloke needs!), I decided to build, what eventually came after several years thought, to be my 'telescopic microclimate amplifier'.

It was not just about science and I wanted to enjoy my surroundings to the max so it was all about the psychology and health benefits as well as stretching the dollar because there would always be more things to spend the money on as part of this live in research facility.

Part of this involved construction of a vine covered shade tunnel that would need watering from a water tank to sustain plants and keep me cool.



How was I going to do this without a pump and just a pocket money budget? Well I set about making the problems smaller and reversing my professional knowledge of how to disperse household wastewater. I gave up on the conventional pump, solenoid, computer and timer options very early on. I revisited the ancient bamboo tipping structures common in Asia. My plastic bottle versions were very entertaining but problematic.

Flexing siphons seems so simple now but on a micro scale they can sometimes need some tweaking. I knew I was onto something when Perrin's tree frogs that I had never seen before, with a distinctive cross on their eyes, turned up in one of my self watering buckets. They did a marvellous night pest control job in my vegetable garden shade tunnel it was watering.

My prototype 'Octopus IV' was about my fourth prototype but also perfected the intravenous drip type arrangement that hopefully slowly waters plants just like hospital patients. This dribbles into a plastic lined soil filled trough made of half a buried bottle on its side covered in topsoil. Watering is via a sort of micro wicking process and the four plants around it send roots across to suck the water out. All this is a fraction of the cost of a wicking bed.



The garden watering control micro tap sets the total amount of water going to the part of the garden it services in a 24 hour period day and night.. It is turned off or back when rain is expected and increased on really hot or hot and windy days. Consider running a second line and tap if you are worried about it blocking.

Light grows algae and wind blown items can block pipes so keep covered and shaded if possible.

The size of the bucket has to be large enough for the tube flexing and bigger buckets can fit more outlet tubes - I have one with 16. Sometimes it might be better to have more separate buckets operating in different parts of the garden at different rates rather than one big one and it might save on tube. So smaller buckets just bob more often to deliver the same amount of water but in smaller doses each time. Think of it as a drip allocator a bit like a card dealer or an underground highly controlled sprinkler trained directly at the roots of plants and not weeds with minimal loss to evaporation. It could also be thought of as a water powered robot to do watering anywhere on flat ground in a 10 metre radius.

The Octopus is a repurposed yogurt container with a hand full of rocks in it to help it sink once it floods and fills enough at the top of the bucket. Internal siphon/s empty the water out of the bucket above the yogurt

container and the the container as well causing it to refloat. 'Bob' as the octopus is affectionately known, then starts the hour or so trek up to the top of the bucket untwisting it's arms. Bob has a few variations in the pipeline being born soon with one being called 'Spike' in which the tubes form a bundle of hair terminating at different levels to vary the proportion of bucket contents they take. 'Crab' might have siphons also on the inside and outside to almost empty the whole bucket in each cycle to freshen up the water changeover.

Imagine if you could water your garden at regular hourly intervals knowing exactly how many drops of water go to each plant just using gravity. The drops are saved up and delivered every hour or so down a tube to a soil near the plants where they collect their water and let any excess seep away. At night some excess may escape into surrounding soil to help sustain moisture levels through the day and help leach away salts.

It's been two years now and some of the vegetables have been huge and prolific but my mind turned recently to the long term breakdown of the medical, food grade and garden grade plastics used in the system.

In the hierarchy of waste minimisation there is reduce, reuse, repurpose and recycle. Most of the plastic and silicon products I have been using in my energy and water conserving system are being repurposed after their design use or design use time has expired.

In talking to some representatives of the plastics industry it appears they are very reluctant to have their products repurposed because of possible longer term toxicity issues.

I do need to protect the plastic as much as I can from heat and light. It may be that I need to keep replacing some of my components or move to plastics specifically designed for garden watering environments. It has raised for me though the question of how safe the hoses and other plastics used for watering and growing food in and around hydroponic environments might be and if there are issues with many cheap and imported plastics in watering systems.

Besides the plastics there are also possible algal toxins and water based parasites and even mosquitoes if a system is poorly maintained.

So take care and anything you do or consume is at your own risk. I and the Benalla Sustainable Future Group take no responsibility for any loss or injury from this space age re-entry into your garden but we do claim all credit for the good that flows!

Callum Morrison



Resident Perrin's Tree Frog enjoying the new habitat

Carbon Footprint

Have you determined your carbon footprint? There are a range of online carbon footprint calculators. This one seems to take in quite a lot of data so it should be fairly accurate <https://www.carbonfootprint.com/calculator.aspx>. I have put this on the BSFG website, <https://www.bsfg.org.au/energy-overview.html>.

I found this carbon footprint calculator at Australian Ethical <https://www.australianethical.com.au/carbon-footprint-calculator/>. My footprint is 9.96 Tonnes CO₂e per year which is about what I get using other calculators.

However the most interesting thing about this calculator is that it allows the inclusion of financial investments which have a very large effect on my carbon footprint. Assuming I had \$200,000 in mainstream investments my footprint increases to 37.67 tonnes of CO₂ emissions (CO₂e) and accounts for around 26.7 tonnes CO₂e or 70.9% of my carbon footprint. If I invest in low carbon funds I would reduce my overall annual carbon footprint by approximately 43% to around 21.47 tonnes CO₂e. Is investment environmentally sustainable?

Carbon Footprint Calculators generally give a report showing total annual carbon emissions, but may also include a breakdown on where emissions are coming from such as transport, including air travel, housing, food and consumption expenditure, highlighting areas where reductions can be made.

Peter Maddock

2040, Mini Grids and RedGrid

The film 2040 was screened at the 2019 Swanpool Environmental Film Festival. Produced by Australian Damon Gameau here is a Guardian review, <https://www.theguardian.com/film/2019/apr/04/2040-review-an-idealists-vision-of-a-healthy-earth>.

In the film Damon took us to Bangladesh to see mini grid technology enabling people to buy and sell power using a local grid to connect solar panels and batteries to provide power to the community.

After the festival I looked up the company setting up the mini grid technology and found SOLshare:

<https://www.me-solshare.com/> describing themselves as the Pioneer of Renewable Energy-based Peer-to-Peer Trading Platforms.

Recently I noticed [this video](#) with Damon and Adam Bumpus from Australian start up RedGrid talking about the Internet of Energy based on using mini grids and smart appliances to create a distributed energy system, <https://redgrid.io/media/>.

RedGrid is now looking for investors in the company. It is an Aussie tech company building a smart energy grid platform. More information here, <https://redgrid.io/faq/>.

Please note I have no connections with RedGrid. But I am enthused by the technology which appears to be able to connect older appliances to the grid to make them smart and improve the stability of the grid.

Australian Financial Review, July 1st 2019, "[The tech firm using AI to stop blackouts](#)".

Peter Maddock

Emission Levels

Readers would have been shaking their heads in disbelief when they read our minister's response to the latest published Australian emission figures.

Angus Taylor, Minister for Energy and Emissions Reduction, said, "in the last year there is a 0.6 per cent increase but it was more than accounted for by the very strong growth in LNG exports that are reducing global emissions."

"We're seeing a reduction in emissions as a result of Australia's gas exports, but we have to wear a small increase as a result of that."

"While that is not great for carbon accounting it is a good outcome for the world."

I think it's well beyond time that this minister took his job title seriously and focussed on reductions, not trying to justify increases.

What he is trying to say is that LNG is a good substitute for coal but we all know it is a fossil fuel - and we urgently need to phase out ALL fossil fuels.

And it is not as good a substitute as the government would have you believe. The problem is **fugitive emissions** which are poorly accounted for.

Fugitive emissions are losses, leaks and other releases of methane to the atmosphere that are associated with industries producing natural gas, oil and coal. They also include CO₂ emissions associated with flaring of excess gas to the atmosphere.

First though, let's take a look at how gas compares to coal with no fugitive emissions:

Brown Coal (Yallourn) 1.4
Brown Coal (Loy Yang) 1.2
Black Coal 0.8 to 1.1
Gas 0.4 to 0.55

The figures are in tonnes of CO₂e per MWh. Hazelwood was operating at around 1.6 before being closed down!

So the usual quoted statement 'half as much as coal' applies to black coal. Our old brown coal power stations are highly polluting and the use of gas right now as an alternative might be a good interim move.

The main content of natural gas is methane and as a greenhouse gas it is about 28 times as potent as CO₂. (The quoted factor varies because methane has a much shorter life in the atmosphere. If we were just looking at the next 20 critical years we'd use a much higher factor).

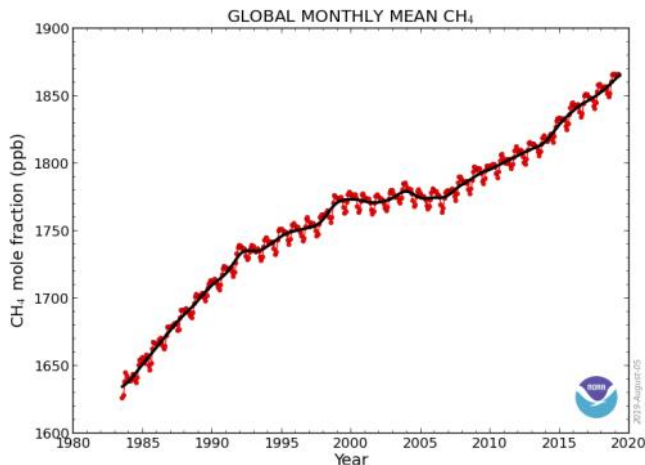
So if you were using gas instead of coal and just 4% of the gas escaped you would be no better off.

So what is the level of fugitive emissions? A recent study by the CSIRO of fugitive emissions from a coal seam gas / liquid natural gas company in Queensland up to the point of export measured the level at 1.4%. To that figure you need to add losses during shipping and regasification in Asia. The CSIRO measures the upstream processing in Australia at about 0.5% so lets use that figure for further processing in Asia. We're now up to about 2%.

But I think that's the very best case! We're talking about measurements of a well established company, ignoring exploration, initial production losses and leaks from non-productive old wells.

In summary, gas is not the answer and is not even a good interim substitute.

The level of methane in the atmosphere at this time is scary. It has been rising even faster than CO₂ levels:



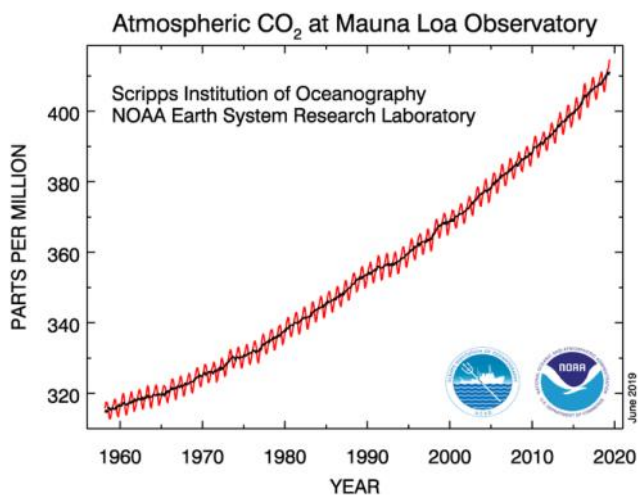
The reason it's so scary is that, as mentioned before, methane is relatively short-lived in the atmosphere. It breaks down (to CO₂ in fact).

So the graph above is an indicator of the increasing rate of production as well as the total fraction in the atmosphere which is causing today's heating.

So where is all that extra methane coming from?

[Wikipedia](#) provides a good technical summary. It points the finger at multiple sources including wildfires and melting permafrost as well as fugitive emissions from mining and oil and gas extraction.

We should complete the picture here by taking a look at the most recent levels for CO₂:



The level is now above 415 ppm and not showing any signs of flattening out. In fact the rate appears to me to be increasing.

We need to act locally and we need to act as a nation. There is a rising mood of discontent in our society with the lack of action. People are now seeing the evidence with their own eyes.

We are now approaching another summer and we can expect more heat records to be broken, more wildfires and more fish kills. Will that mood of discontent grow even stronger?

Ian Herbert

Another Extremely Long Walk for Climate Action

Over the weekend of August 31 2019 Holly and Fin visited Benalla to assist the Regent Honeyeater tree planting at Winton Wetlands. They also interviewed a number of people about climate change and forests for their future podcast [In With The Woods](#).

These young ladies are on a mission to draw attention to the need to plant more trees to draw down climate changing carbon emissions. From Sep 3rd until Sep 27th Holly and Fin are walking from Canberra to Sydney. Follow Holly and Fin on [Facebook](#) and [twitter](#).

I have taken this from one of their Facebook posts:

"Since 1788 so much land in this country has been cleared and land management has been based largely on European methods that don't always yield the best results on this continent. We have changed the face of Australia. But it's not over yet!

The #regeneration of our land is about being smart and flexible. It's time for regenerative agriculture! We can plant FSC trees, halt native logging, and grow back our forests! And it will create jobs.

Soil health, higher productivity, natural pest control and better water + food security. What's not to like?

As we walk and learn we will showcase the science, listen to landowners and rural communities as we make our podcast In With The Woods - all about climate resilience and forests."

Holly and Fin have linked in with Shannon Loughane who called in to Benalla on his [Extremely Long Walk for Climate Action](#) from Melbourne to Canberra on April 27th this year. It was Shannon who suggested they do the walk to bring attention to the need to protect forests, plant trees and take action on climate.

Peter Maddock

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