OPINION

Letters

TO ALL CORRESPONDENTS...

We welcome letters of not more than 350 words but reserve the right to edit them as appropriate. Letters must include your name, phone number and address, not necessarily for publication. Please write to: The Editor, The Beacon, 32 Pyne Street, PO Box 243, Whakatane or email: news@thebeacon.co.nz

The views expressed are not those of the Beacon or its staff.

Opinions of non-experts can be dangerous

I WAS extremely perturbed to read the communication by Steve Clark in the letters section of the *Beacon* of Wednesday, December 23.

Mr Clark begins his letter by pointing out to readers that he has read the Pfizer-BioNTech Covid-19 vaccine product monograph.

The monograph states that studies of carcinogenicity and genotoxicity were not considered relevant and reproductive and developmental toxicology studies are ongoing.

I have to strenuously object to the message that Steve is giving in his communication. Calling attention to the absence of carcinogenicity, genotoxicity or reproductive and developmental toxicology testing as if they are a necessary part of the Emergency Use Authorisation (EUA) issued by the US Food & Drug Administration (FDA) is extremely disingenuous.

Has Steve considered that EUA was issued in the absence of this information because there is no prior reason to suspect that this type of vaccine should cause any of the toxicologies mentioned because this vaccine contains no adjuvants?

If there were any significant risk of these toxicologies, I am certain an expert body such as the FDA would not have issued EUA.

The other consideration that Steve appears to have either overlooked, or has been totally unaware of, is that preclinical toxicological testing of vaccines is usually performed to assess the toxicity of adjuvants.

The Pfizer-BioNTech vaccine is an mRNA vaccine and as such it contains no adjuvants and hence due to urgency these studies have been deemed unnecessary.

Following on from sounding the alarm on toxicology, and after reproducing the relevant sections of the monograph, Steve states that page 22 suggests that the vaccine alters the DNA of the recipient.

In his words:

"Because the fact that this vaccine alters the recipient's DNA and the fact that the carcinogenicity, genotoxicity and reproductive and developmental toxicology have not been monitored prior to the use of this vaccine on the New Zealand population; the above information will have to be disseminated to the population so that this vaccine's recipients are informed when they are asked to consent to receiving the Pfizer-BioNTech Covid-19 vaccine [Covid-19 mRNA] vaccination."

Nowhere in the monograph could I find any statement that the vaccine alters the recipient's DNA. And even if it were true, what would it actually mean?

I cannot be sure from where Steve has got this idea, but it certainly was not the monograph he cites. If he had got it from a scientific paper, then he should have cited it.

I rather suspect (although I can't be sure) that his idea might come from a manuscript that was recently uploaded to the bioRxiv preprint server for biology.

The manuscript by Zhang et al. entitled "SARS-CoV-2 RNA reverse-transcribed and integrated into the human genome" garnered much attention in social and in traditional media. Social media is not a forum for the dissemination of science.

Although the authors of the manuscript come from the two very prestigious institutions, Massachusetts Institute of Technology and Harvard University, the manuscript (which is not a scientific paper) invoked the ire of many scientific peers.

It is important to reiterate that this manuscript is not a scientific publication because it has not undergone scientific scrutiny by other expert scientists in the field. This is what is called peer review and is an indispensable part of conducting good science.

Many experts consider that this manuscript is seriously flawed and should be taken down from the server. The bioRxiv site states "bioRxiv preprint (which was not certified by peer review) is the author/funder".

Mr Clark might be forgiven for not understanding how the scientific process works.

Science works by being sceptical, asking the right questions, proposing hypotheses, conducting experimentation, interpreting results, and then writing them up in the form of a scientific paper.

A scientific paper must, of necessity, be peer-reviewed and published in a reputable scientific journal.

Other scientists can then attempt to reproduce, re-interpret and criticise the results and their interpretation and then publish their own paper also containing data and evidence.

Sometimes it takes many iterations of this process for the "truth" to start to reveal itself. If Mr Clark had ever done any science, he would know that this is how the system that has propelled humanity's technological advancement has worked.

Mr Clark should stick to commenting on what he knows about. The area of vaccine development is highly technical and should be left to experts with the specific technical background, training and experience.

Promulgating furphies can be downright irresponsible in the area of vaccine development and can cost lives.

The views expressed here are solely my own and do not express the views or opinions of any organisation with which I am associated.

Dr Victor Luca

Covid-free for now

ON the cusp of the New Year, we in New Zealand are in the fortunate position of being Covid free.

We got into this position by being a lifeboat in the middle of the Pacific with relatively few passengers and leadership that seems to care about us and in whom we have been prepared to place our trust.

There is, however, no room for complacency or smugness because in other parts of the world this pandemic is raging like a forest fire that is refusing to be brought under control.

And the longer the disease rages around us, the more chance there is of variation or mutation in the SARS-CoV-2 virus genome. With more people to spread among, the virus can, and undoubtedly will, change.

Any change could be for the better or for worse.

We should not be relaxed thinking that a vaccine is just around the corner and that the virus will miraculously be vanquished. In the history of humanity, we have developed relatively few effective, durable and safe vaccines and never has one been developed so quickly.

During the past quarter century, only seven successful vaccines have been developed, four of those by Merck. The fastest vaccine to have ever been developed is the mumps vaccine and this took four years. So, what has just been achieved in the field of vaccine development is nothing short of amazing.

This light-speed development of the current suite of Covid-19 vaccines has rested on rapid sequencing of the genome by Chinese scientists, early study of the SARS, MERS and other corona viruses, mostly undertaken in publicly funded laboratories, and advances in biochemistry, virology and microbiology.

I am by no means suggesting that folk do not take the vaccine when it becomes available, they absolutely must. Although the vaccines developed by Pfizer-BioNTech, Moderna, Oxford-AstraZeneca and others have been proven to provoke a strong immune response and to be safe, we don't really know how durable this immune response will be.

Early studies of the Moderna vaccine, for instance, have shown that the immune system response between 18- and 55-year-olds and the 56-70-plus may not be the same. There simply has not been time to do these long-term studies. But since the virus is raging, the longevity of the immune response has to take second place because we need to douse the flames as soon as possible.

In the meantime, I urge folk to remain prepared and stocked up with face masks that have proven to be an effective weapon against this and other viruses. Also, keep the hand sanitiser, well on hand.

The views expressed here are solely my own and do not express the views or opinions of any organisation with which I am associated.

Dr Victor Luca

OPINION

One man's trash is another man's food

■ **Whakatane scientist Dr Victor Luca takes a look at food waste disposal using the humble chicken.**

THE world produces about four billion metric tonnes of food a year. This food is not distributed evenly, with some countries experiencing food gluts while others are unable to even feed their populations.

In 2016, about one billion people were considered by the Food and Agriculture Organisation of the United Nations to be malnourished. In the United States in 1995 about 27 percent of edible food was wasted. This just doesn't seem right does it?

Food waste can be defined as the amount of food material produced and ultimately discarded during any stage of the food supply chain.

In Australia, for example, an estimated 7.5 million tonnes of food waste is generated annually and this is generally disposed of in landfills.

In these facilities, the waste is decomposed anaerobically generating methane, a greenhouse gas that is between 25 and 30 times more potent than carbon dioxide.

Food waste going to landfills therefore causes, not just an economic loss, but also a negative environmental impact.

Presently, food loss and food waste account for about 6 percent of global greenhouse gas emissions.

The diversion of food waste from landfills, increased food donations, and avoidance or reduction of food waste within the supply chain are things that we should be strongly encouraging.

In many societies, methods other than landfills are sought for dealing with food waste.

California, for instance, has 26 composting facilities for food wastes. While these facilities can anaerobically decompose food waste, significant amounts of greenhouse gases can be generated from such facilities.

Aerobic composting is superior to anaerobic composting because it does not produce methane since methane-producing microbes are not active in the presence of oxygen.

Aerobic composting is one method to reduce methane emissions from organic waste currently stockpiled or sent to landfill.

AT HOME: Jack Karetai-Barrett holding eggs from the family's back yard chooks. Dog George Woof keeps a watchful eye on proceedings. Photos supplied

Composting practices that minimise anaerobic conditions and maximize aerobic conditions will be the most effective at reducing greenhouse gas emissions. Aerobic microbes convert the inputs into stabilised carbon for the soil, with by-products of heat, carbon dioxide and water.

About 700,000 tonnes of organic waste material was composted in Western Australia in 2012. The composite that is produced can be used as a soil amendment and therefore improve the capacity of land to grow more food.

Composting on an industrial scale however, is not as simple as it sounds, as multiple steps are involved (some labour intensive) and the conditions need to be closely monitored and controlled in order to obtain the correct balance of carbon- and nitrogen-rich materials. Those that have bought a bag of composite from, say, Bunnings know that this waste product is not cheap to buy.

So, is there a more efficient and simpler means of dealing with food waste?

Enter the humble chook. The chook, like all birds, is a descendent of the dinosaurs.

Poultry is a prominent part of the livestock produced in the world.

So, although the dinosaurs are gone, we have become very dependent on their descendants for our nutritional requirements.

Chooks are in such high demand because they are hardy creatures that grow relatively fast in most areas of the world. The virtues of chooks may, however, go way beyond their nutritional value.

In fact, we can add food recycling to the list of virtues that backyard chooks can bring to their communities, by reducing the volume of unwanted food going into landfills.

Austin, Texas recognised their value when they pioneered a zero-waste programme where they pay citizens to keep backyard chickens. The goal of the programme is to reduce the food entering landfills by redirecting it to backyard chickens.

FREE TO ROAM: Backyard chickens feeding on food scraps from a composite pile.

BATTERY HENS: Single-comb white Leghorn hens housed for egg production in a multi-layered house.

Name	Content	% DV
Total lipid (fat)	4g	6%
Carbohydrate, by difference	0g	
Calcium, Ca	19.8mg	2%
Iron, Fe	0.7222mg	4%
Sodium, Na	59.8mg	3%
Vitamin C, total ascorbic acid	0mg	
Vitamin A, IU	200 IU	4%
Fatty acids, total saturated	1.5g	8%
Fatty acids, total trans	0g	
Cholesterol	165mg	55%

Nutritional content of one 44g egg. ■ Source: fcd.nal.usda.gov

Whilst unwanted food going to landfills creates methane, unwanted food fed to backyard chooks creates fresh eggs, a potent source of protein and other goodies (see table above) without significant generation of green-house gases.

Those readers concerned about the cholesterol content of eggs should fear not because according to the New Zealand Heart Foundation "while egg yolks are high in cholesterol, it is saturated fatty acids that have a greater effect on our blood cholesterol levels".

Although the relationship between cholesterol and heart disease has long been controversial, the most current scientific studies suggest that dietary cholesterol is not the villain we once thought it was and that raising dietary cholesterol levels has no influence on coronary heart disease. Therefore eating one egg a day does not have any material impact on the risk of cardiovascular disease or strokes.

Backyard chickens can live up to five years, but they can go into the pot well before that. And lest we forget, during their lifetimes chooks also produce a valuable fertiliser for the backyard garden.

A backyard chook can consume approximately 0.7 kilograms of household food scraps a week, or approximately 38kg a year. A flock of four backyard chooks would be expected to consume approximately 151kg of household food scraps a year, about as much as the average food wasted by each person in New Zealand each year.

Chooks can even be used to convert food scraps to useful food in an active community composting system.

There are some other good reasons for maintaining a small healthy flock of backyard chooks. For instance those concerned about animal cruelty should consider how much happier the average backyard chook must be compared to battery hens cooped up in small cages in factory farming systems.

But it is not just a matter of cruelty that should concern us. These intensive factory farms can be a source of disease and perhaps even the next pandemic.

To avert disease and to fatten the chickens in these cramped and stressful conditions, the poultry industry has for decades used low doses of human antibiotics.

In these cramped and stressful factory conditions, the chooks can harbor bacteria that become resistant to the antibiotics that they are fed and so potentially give rise to a public health problem.

Many countries have birds as their national symbols.

New Zealand has the kiwi, the United States has the bald eagle and the United Kingdom has the robin.

You have to hand it to the French to have a bird that can be used as both a food source and a municipal food waste disposal system.

■ The views expressed here are solely our own and do not express the views or opinions of any organisation with which I am associated.

OPINION

A lifetime of fishing

■ Whakatane scientist and keen fisherman, Dr Victor Luca, shares his views about the fish resources in New Zealand and asks are we treating this once bountiful fishery as we ought to?

SINCE the arrival of tangata whenua up to the present day, our part of the world has always depended on fishing. But when will the music stop and the party end?

Myself and my family have been fishing the coast off our town for half a century now and I have seen at first hand the dwindling of fish stocks.

The lifestyle and living of many in our area to some extent has always depended on the abundance of marine life off our coast.

So it is natural to ask if we are treating this once bountiful fishery as we ought.

According to Fisheries New Zealand, snapper (Chrysophrys auratus) mature in three to four years when they are 20 to 28-centimetres long.

To reach the current legal limit of 35cm will obviously take more than five years. Snapper can live for over 60 years and grow up to 105cm in length. They release numerous batches of eggs throughout spring and summer. Snapper is our major fishery by far with snapper accounting for more than 70 percent of all finfish harvested.

In the good old days we used to catch heaps of snapper off Ohope. It was not so unusual back in the day to come back with this much fish in a single short expedition.

There were no legal limits for recreational fishermen back then. The size of the boat imposed a hard physical limit.

You could only bring home what you could fit on the boat. In those days we didn't even have reliable depth sounders like we have now and so finding fish was a matter of pot luck.

Toward the end of the '80s I do not remember ever being able to make these types of catches any longer and I challenge anyone to argue otherwise.

The observations I have made over a half a century are obviously qualitative.

GOOD OLD DAYS: This photo is of one of our snapper catches dating back to about 1973. That's me on the left, brother Enrico with the goofy hat on the right, and Gino at the back. There are several hundred kilograms of snapper in the photo and they were caught in a short time.
Photo supplied

Many readers of this column that have been fishing our waters for as long as I have will doubtless make their own observations.

All I know is that we used to catch heaps and that we no longer catch what we used to by any stretch. It just could not be sustained.

NZ Fisheries, which is part of the Ministry of Primary Industries (MPI) together with the National Institute of Water and Atmosphere Research (Niwa) are in charge of quantifying fish stocks and monitoring the sustainability of all 642 or so fish stocks in NZ waters.

These folk undertake a huge amount of scientific work involving monitoring the fishery over time and analyzing data statistically to come up with estimates of fish numbers that they consider consistence and credible. These are not easy measurements to make and the data have significant uncertainty attached to them.

Data on the amount of snapper biomass in thousands of tons over time are shown in the graph below.

The reader can see that between about 1970 and 1985 the amount of snapper biomass (the fish stocks) fell off a cliff. To protect the fishers the Quota Management System (QMS) was introduced in 1986. Recreational fishing of snapper accounts for about 36 percent of the current quota.

The data bears out my qualitative observations that fish stocks have dwindled strongly since the 1970s.

The data show that there has possibly been something of a modest resurgence in snapper biomass since the introduction of the QMS. But the upswing in the 1990s was weak and the margins of uncertainty are generous (shaded area).

The data indicates that the snapper stock is only just above the so-called soft limit of 20 percent. This means that the stock is 20 percent of what it would be if it were not fished at all.

Currently, commercial fishermen are taking right up to the allowable quote.

Meanwhile, another favourite species, the tarakihi, is in a bit of trouble. The latest stock assessment for tarakihi indicates that the stock is at 17 percent of unfished levels. In other words it has fallen below the soft limit as determined by the Harvest Strategy Standard.

New Zealand has 98 species (or species groups) divided into 642 separate fish stocks under the QMS.

The number of fish at any given time will depend on their numbers, their reproduction rate, their death rate and the rate at which we take fish away through commercial and recreational fishing.

So far I have only looked at some of these factors and only for snapper, which is probably the most important and valuable fishery in our area (SNA1).

In recent years the total commercial catch of snapper has been around 7000 tonnes with 70 percent of this catch coming from the SNA 1 area that includes our waters.

Recreational fishing is also an important component of the total catch in SNA 1 and has been estimated to be about 30 percent of the total catch. The bag limit has been reduced and the minimum legal size has been increased for recreational fishers since the first introduction of the QMS.

Now let's focus on fishing activities starting with recreational.

NZ Marine reports a yearly compilation of the numbers of boat trailers registered in different regions of New Zealand.

In 2015 there were about 170,000 boat trailers registered in New Zealand. We are adding an average of about 8000 new boat trailer registrations throughout New Zealand per year. This suggests that we presently have 210,000 boat trailers registered in the country.

If our district is representative, then we could expect about four trailer boats for every 100 of us.

On that basis I estimate that in the Whakatane district there are well over 1000 trailer boats.

The number of new boats being registered every year has been steadily increasing from about 5000 in 2010 to just over 9000 in 2019. That is, the rate of boat addition has almost doubled in 10 years.

Given the increase in recreational boat numbers it would not surprise me if in the next few years Niwa and MPI revise their numbers and report further declines in fish stocks and especially as regards our most important fish stock, snapper.

The next thing that will happen is a reduction in the quota from the present value of seven to five as is the case in Australia.

Remember that when the QMS was first introduced in 1986 to arrest the slide, the bag limit for snapper was 30, and the minimum legal size (MLS) was 25cm.

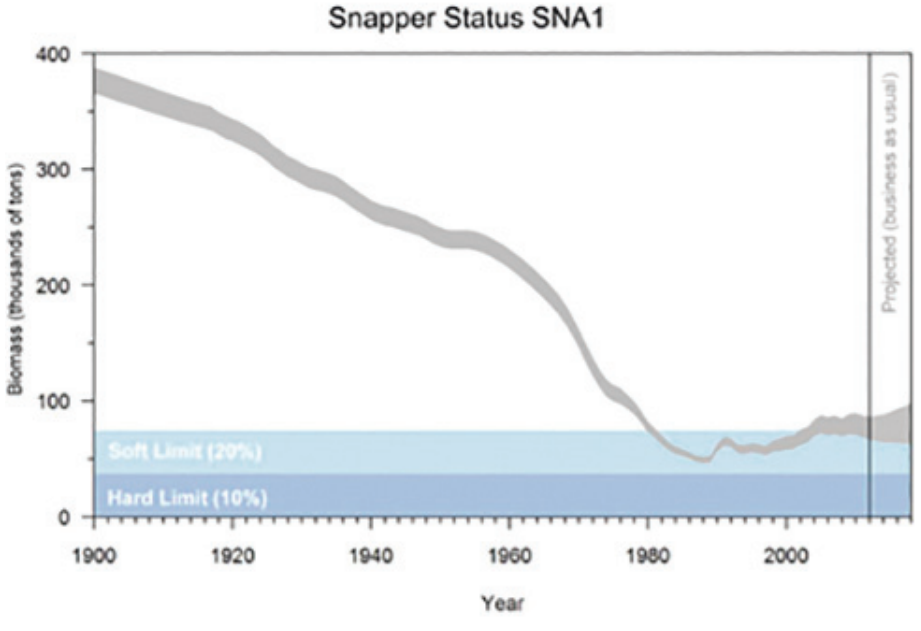
Today, the bag limit is seven and MLS 35cm respectively.

So far, scientific assessment of fish stocks by Niwa and MPI suggests that only 27 fish stocks of the 169 that are monitored have "sustainability concerns".

I believe that given the uncertainties inherent in the methodology used to assess the stocks, and the dominance of optimism, we will find more of these stocks in trouble sometime soon, especially the most important.

Given that our society is obsessed with growth – population growth and economic growth – and that the Earth's resources are finite, I simply do not believe that this situation can be sustained. We can't keep exploiting resources faster than nature can replenish them.

■ The views I have expressed here are solely my own and do not express the views or opinions of any organisation I am associated with.

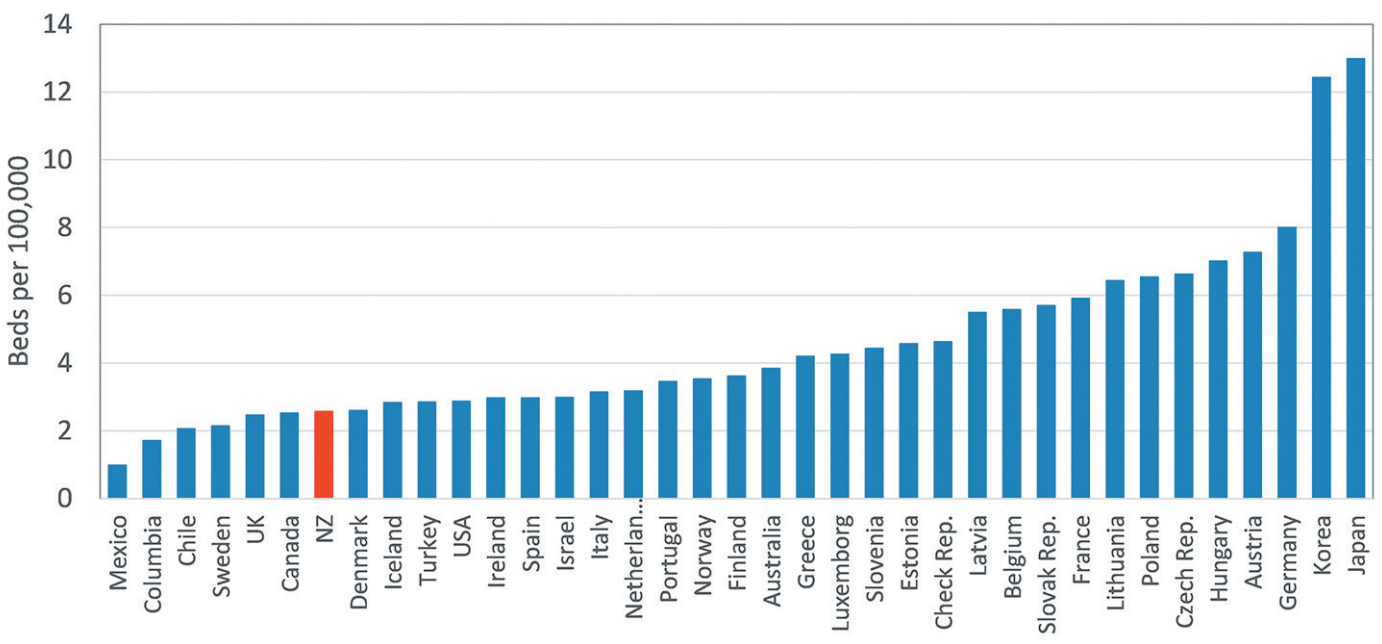


FISH STOCKS: Niwa data on fish stocks over time. The SNA 1 stock extends over a large area of the north-eastern coast from North Cape to Cape Runaway in the Bay of Plenty. ■ https://niwa.co.nz/fisheries/snapper-stock-status

OPINION

Our health system in the age of the Covid-19 pandemic

■ Whakatane scientist Dr Victor Luca, says we were caught woefully unprepared and we should now ensure we are properly prepared for the next pandemic that undoubtedly will come.



WORLDWIDE: Hospital beds per 100,000 people for OECD countries in 2019.

■ Source: https://data.oecd.org/healtheqt/hospital-beds.htm#indicator-chart

I HAVE always been exceedingly grateful that we have in our country an ostensibly public health system that we initially modelled on that of England. The system purports to cater for everyone irrespective of means, race, ethnicity or religion. But does it really?

If Covid-19 had been a one-off, black-swan event, then we could be forgiven for being caught with our pants down. However, it was not. Human society has experienced pandemics of infectious diseases since we first started to domesticate animals more than 10,000 years ago and these pandemics have been coming with increasing frequency as the human population increases.

Health science experts and institutions have been clamouring over the appearance of a major pandemic for decades.

The Spanish flu of 1918 should have taught us a lesson, while in recent times, we have had many practice runs with Ebola, SARS, MERS and other infectious diseases.

The signs simply could not have been clearer. And still, we were caught woefully unprepared.

So unprepared were we that in the first four months of the Covid-19 pandemic our Ministry of Health was vigorously telling the population that the virus was not spread via airborne transmission and face masks could do more harm than good.

This was despite the preponderance of scientific evidence to the contrary. In reference to face mask use our health people claimed that "they might do more harm than good".

Presumably, we weren't told the truth in an attempt to avoid a run on face masks and proper public safety measures being put in place.

So far, we have managed by a combination of good luck and good management to somehow scrape through Covid-19 relatively unscathed.

Being the most geographically isolated developed nation on earth was a major advantage. Having largely achieved Covid-19 elimination, we should now ensure we are properly prepared for the next pandemic that undoubtedly will come.

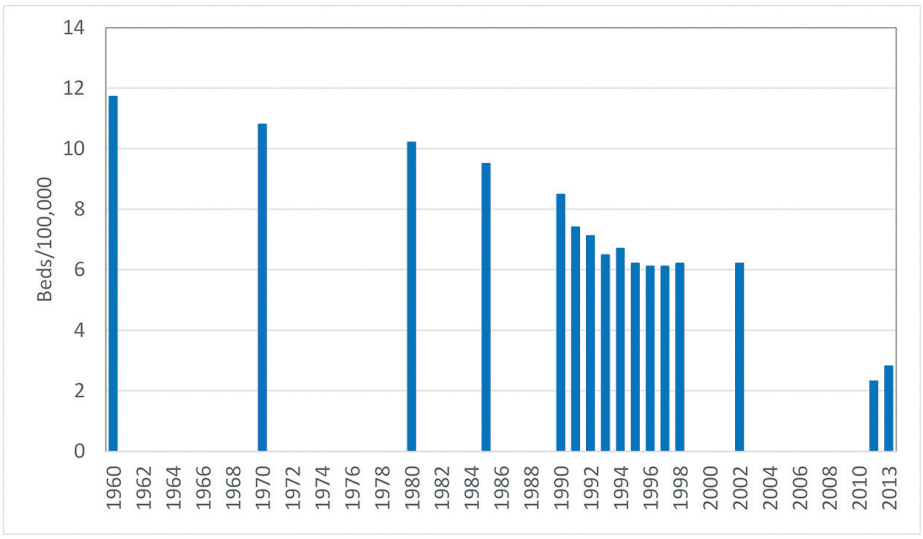
What we should have learned a long time ago is that pandemics are not just costly in terms of human lives lost prematurely, but also in terms of the destruction of livelihoods.

We should also have learned that a dose of prevention is better than cure, but we did not.

We need to be better prepared, and if it costs a little more to do this, then we should spend the money proactively.

Unfortunately, it seems to me that our health system is falling prey to the ravenous and wanton modus operandi of the medical-industrial complex and neoliberal economics that has taken hold of our society in the past 40 years, and from which our health system has not been spared.

One measure of the health of a health system is the number of available beds in hospitals per 100,000 of population. It turns out that in terms of this metric we are one of the worst performers in the OECD.



AVAILABILITY: Number of beds per 100,000 of population over time.

■ Source: https://tradingeconomics.com/new-zealand/hospital-beds-per-1-000-people-wb-data.html

In 2019 we had only 2.8 hospital beds available for every 100,000 population, see graph above.

However, pressure on the availability of hospital beds was not always like this.

Below is a graph of the evolution of hospital bed numbers over time in New Zealand. One can see that back in the 1960s we used to have nearly 12 beds per 100,000 people. This is more than four times the number of beds per 100,000 of population as we have today, or about where Japan is in 2019. You can see that the numbers started their first step decline after the implementation of the Rogernomics programme of economic reforms back in the late '80s.

It was reported in the ***Whakatane Beacon*** as recently as Wednesday, August 12, in an article entitled "Hospitals 'Full to Capacity'", that there were no hospital beds available in either Whakatane or Tauranga.

Imagine what would have happened had there been demand from Covid-19 patients.

Other measures of the health of our healthcare system would be the number of doctors and other medical staff per unit of population, the availability of medical diagnostic (pathology and radiology) and therapeutic medical services and the stocks of equipment.

Regarding equipment, and having many years ago been a practitioner of magnetic resonance for chemical applications, I have a particular interest in Magnetic Resonance Imaging (MRI).

This is a tremendously powerful diagnostic technique whose scope and applications keep growing.

I have discovered to my surprise that MRI and other radiology services in New Zealand are essentially completely privatised.

Some of these companies are in the hands of private equity interests.

The data suggests that New Zealand's medical system is now estimated to be about 23 percent privatised.

You have to ask yourself who benefits most from this move from the public to the private sector. It is most certainly not those citizens with limited capacity to pay.

And despite this push to privatise, waiting times for the uninsured are increasing.

The bottom line is that this privatisation by stealth results in an increasingly inequitable system where those with the money to pay get the premium service, and the rest get the waiting list.

The reforms of the '80s unleashed the monster and now there is no stopping it from devouring our health system.

It would be devastating for the majority of New Zealanders if our currently hybrid (public-private) system slowly became more like that of the United States, which has the poorest outcomes and highest costs in the OECD as shown in the graph.

Our copy-cat, brainless and selfish progression toward a private and elitist healthcare system is now well on its way after four decades of neoliberalism. Already in New Zealand 30 percent of the privileged in our society have private health insurance.

If we copy the United States then we should not be surprised if we end up where they are; with one of the crappiest and costliest healthcare systems in the developed world.

We will end up with a system that discriminates against those at the bottom of the socio-economic ladder.

In America, it is the African-Americans and Hispanics. Here it will be Maori.

What has happened is that we are boiling the frog slowly so that it doesn't notice that it is being cooked to death.

We wax lyrical in our country about the four wellbeings including economic, environmental, social and cultural that we talk so much about and are included in the local government act.

How is it, that health and education, being fundamental to wellbeing, are not included? They are both part of the United Nation's 12 development goals.

■ *The views expressed here are solely my own and do not express the views or opinions of any organisation with which I am associated.*

OPINION

Attacking climate change in New Zealand

■ Whakatane scientist Dr Victor Luca shares his views on climate change at that agriculture is our biggest source of emissions.

THIS will be the forth column I write in this paper on climate change since I returned home to Whakatane in early 2019. In the one dated September 20, 2019 I pointed out that we in little old New Zealand represent only a tiny fraction of global emissions; less than about 0.2 percent to put a number on it. My answer to the question of what we can do to avert an impending global climate disaster was to set an example in the hope of inducing major emitters such as China, the United States and Europe to follow suit. This is not a moral argument as some National politicians have cynically suggested in the past. Rather, it is a purely self-serving one. Having said that, our per-capita emissions do rank quite high and so morals are not totally irrelevant either.

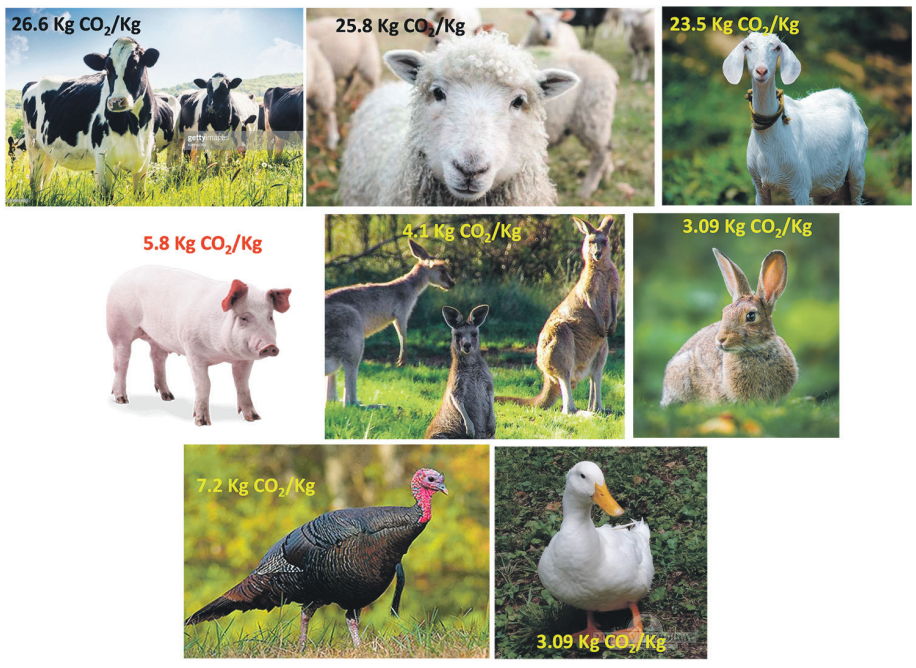
The crux of my argument was that if we in New Zealand can't get our own house in order, and in so doing induce major emitters to reduce emissions by setting an example, we are all done for.

Our Government seems to want to do the right thing, or at least be seen to be doing the right thing. In that regard, in November of last year Parliament passed the so-call Zero Carbon bill.

Conveniently left out of the bill, however, were methane (CH4) emissions. Methane is a potent greenhouse gas (GHG) that is usually considered to be somewhere between 22 and 30 times more potent than CO2, although it doesn't last as long in the atmosphere.

Now it is time to take a close look at what we can actually do about this impending crisis/catastrophe that goes beyond posturing and platitudes.

If saving the planet boils down to reducing emissions, then we need to take a closer objective look at these emissions. Pictured below is a pie graph of New Zealand's GHG emissions and it shows what most of us already probably know, that agriculture is our biggest source of emissions.



SOURCE: GWP values in these figures are taken from the paper by Clunes et al (2017).

Image supplied

accounting for about 49 percent of the pie. Energy production is the next largest slice of the pie at 39 percent. About 44 percent of this 39 percent is due to the transport sector.

We could relatively easily cut transport sector emissions in half through all-out adoption of battery electric vehicles (BEV), a technology that I can confidently say has come of age. Everyone has heard of Tesla's impressive BEVs but how about the Lucid Air that is expected to be available in early 2021. It can do 0-100kmh in less than 2.8 seconds and has a maximum range of 855km in mild weather.

I reckon that with the way the technology is advancing the days of the internal combustion engine are numbered.

Despite the impressive specs of such "green" vehicles we can never totally eliminate all GHG from the transport sector because the very process of building BEV's generates GHGs and those emissions have to be taken into account. Comprehensive Life Cycle Analysis (LCA) studies have consistently shown that at best we can reduce transport emissions 50 percent if we fully embrace BEV technology. It would be better to reduce transport-related emissions to zero, but we should take whatever we can get for now.

If we are truly wanting to reduce emissions, we can't simply ignore the biggest slice of the pie, which in our country, is due to intensive agriculture. We are not just feeding ourselves but much of Asia and other places.

A large proportion of agricultural emissions come from livestock. Livestock emissions are from cow burps, and to a lesser extent, farts. There are about two cows for every person in New Zealand and five times more sheep than people. Despite the jokes Australians make about us Kiwis, they are not far behind in the sheep-per-capita numbers.

Cows and sheep are called ruminant animals because they digest grass (carbohydrates) in the first chamber of their stomachs known as the rumen. In the rumen, carbohydrates (sugars) are broken down by fermentation with the main by-product being methane which is produced in a process called methanogenesis. But not all livestock use this digestive process that emits large quantities of methane. Next to each animal in the figure above I provide the Global Warming Potential (GWP) in Kg of CO2-eq emitted per kilogram of meat produced (kg CO2-eq/kg). You can see that our steadfast friends, the cow and the sheep, have the highest GWP of all animals, followed closely by the underrated, drought-tolerant goat.

On the next tier of the diagram appears first our friend the pig with a lower GWP by almost a factor of 10 compared to cows. Not far behind are kangaroos and wallabies. These animals are much despised in New Zealand but more loved in Australia. In fact, together with rabbits, kangaroos and wallabies are considered serious pests here (see ***Beacon*** article August 7, 2020). Then come the flightless birds including turkeys, ducks and chickens, which are highly favoured sources of protein in countries such as the United States and France respectively. We, of course, eat our fair share of chicken in this country but not so much turkey and duck.

Aside from GHG emissions, we should also consider the water requirements of these animals. Water is a precious resource and that needs to be taken into account. Again, cows and sheep rank worst of all. It takes more than 15,400 litres of water to produce one kilogram of beef. Since the average cow weighs about 450kg and contains about 275kg of meat, that makes 4.2 million litres of water per cow. Sheep meat requires 30 percent less water and chicken meat about 60 percent less.

The conclusions here are inescapable. If we are really serious about the environment and reducing emissions, then we simply cannot ignore the contribution livestock make to emissions. Perhaps it is time the planet started a gradual transition toward more climate friendly foods.

I have been aware of the risks posed by anthropogenic climate change for the better part of three decades and so far, I have seen scant action – in fact, we have been all talk and no action. In the past decade science has moved beyond talk of preventing climate change and more toward talk of adaption. This is clearly very bad news indeed.

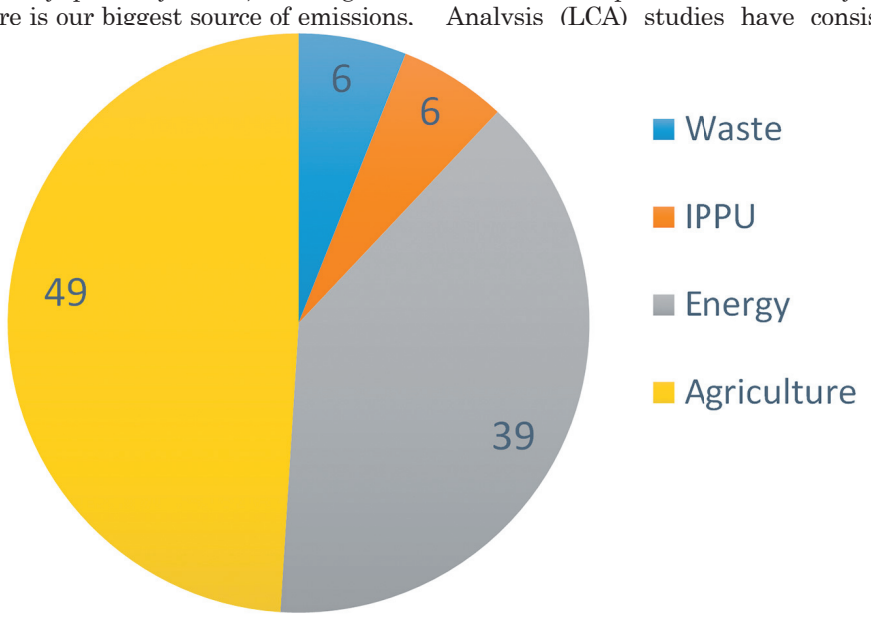
More recently, I take heart from the fact that one of the main recent emitters, China, appears to be grabbing the bull by the horns. Aside from concerted efforts to electrify their entire transport sector, in 2016 Chinese authorities released new dietary guidelines recommending a 50 percent reduction in personal meat consumption by 2030. Incidentally, China is a country ruled by technocrats, not bullshit artists, and I suspect that whatever they do is in the interests of self-preservation.

Efforts are under way to reduce the amount of methane cows emit by genetic engineering and dietary manipulation and these are good avenues to pursue no matter what. However, at best, reductions by these methods will be relatively marginal.

Also, there is a limit on how much we can genetically engineer a cow. We have already done enough to this once formidable beast. To be realistic, we will always want to drink cow's milk and eat cheese so I guess we will never totally get rid of our friend the cow that has contributed to our country's prosperity over decades.

But we could reduce our reliance on them and move to eating animals (if we are to eat animals at all) that are more consistent with the wellbeing of the planet and humanity. We could place more emphasis on other sectors such as technology. So, let's put aside the bullshit and start adapting or risk perishing.

■ *The views expressed here are solely my own and do not express the views or opinions of any organisation with which I am associated.*



SOURCE: Mason, Transitioning New Zealand to Renewable Energy. EEA Conference & Exhibition 2017. IPPU is industrial emissions from product manufacture and use.

OPINION

Time to level the playing field

■ Scientist Doctor Victor Luca responds to Sandy Milne's letter on house rentals.

I THANK Sandy Milne for his recent letter to the editor (*Beacon*, August 7) regarding the unaffordability of rentals and the greed of landlords.

Mr Milne is indeed correct in asserting that I totally omitted from my earlier article entitled "Unaffordability of Housing – Revisited" (*Beacon*, July 29) any mention of the problem of the sky-rocketing cost of rental accommodation.

The reason I omitted this from my original article was that I thought it obvious enough that if in our market-driven economy, the price of houses goes up due to the shortage of supply and an excess in demand, then so too would rentals. However, I thank Mr Milne for challenging me to suggest a solution to the problem.

Mr Milne has correctly pointed out that most landlords charge the "market rate". Although he has resisted the urge to hike rents in the interests of being humane to his tenants, I would guess that there are relatively few people like Mr Milne around these days.

Folk who put a premium on the wellbeing of their fellow man must be rare and I applaud him for his kind disposition.

The answer to Mr Milne's question of how we can remedy the situation comes down to understanding the rotten dynamic that determines the market rate for rentals and how to change it?

The answer must surely be, to a first approximation, the same things that determine the price of housing.

My articles were aimed at addressing the determinants of housing supply and demand for rental or freehold properties and I laid the blame squarely at the feet of central governments past and present.

Governments have fuelled demand through generous immigration policies, and prior to August of 2018, allowing foreign buyers, who don't even live here, to soak up properties in our market. This drives up demand and hence prices.

(SOURCE: State Housing. https://www.nzgeo.com/stories/state-housing/)

But it is not just foreigners that buy up houses they don't live in. Locals with an excess of cash, or an ability to get the money from banks by using equity in other houses they have managed to buy using mostly bank money also drives demand.

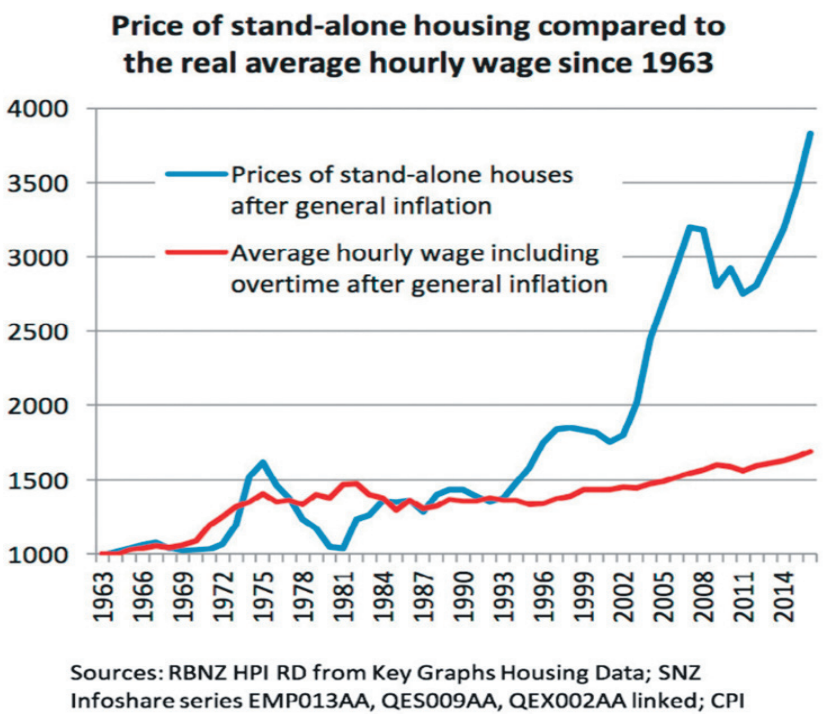
Since there is inadequate supply, these folk can simply charge renters the market rate for houses they don't actually even own outright.

I referred to this as a Ponzi scheme. In our country this scheme is fuelled by commercial banks who operate under the aegis of the Reserve Bank of New Zealand.

Commercial banks create money from thin air and their preference is to loan it to those with equity rather than first-home buyers whose deposits and salaries are increasingly inadequate as prices are driven up. The result is that house prices go up and that the first home is increasingly out of reach for many New Zealanders who then fall prey to unscrupulous landlords who charge the "market rate".

The graph below shows how house prices have risen exponentially since the 1960s while wages have risen only about 50 percent over half a century.

Clearly, handing over housing to the market has proven to be an abject failure if the goal is to house people. We have now had decades of the scourge of neoliberal economics that came into existence in the 70s.



Sources: RBNZ HPI RD from Key Graphs Housing Data; SNZ Infoshare series EMP013AA, QES009AA, QEX002AA linked; CPI

As a result, what we now have is a low-wage economy and a serious housing crisis and increasing wealth inequality. All this has been facilitated by commercial banks who are given a licence by the sovereign state to essentially print money and loan it out as they see fit.

In so doing, central governments have essentially abrogated their responsibilities to their citizens. One component of the cure to the housing problem could be for government – the sovereign state, ultimate creator of money and the lender of last resort – to take back control of money creation and take a lesson from the history that preceded this housing debacle.

Clearly, the money system needs to be reformed as is advocated by an organisation known as PositiveMoney that I think is on the right track.

In the 1960s, prior to the neoliberal assault, there were things called State Advances Loans. All families needed to do to own a home in those days was scrape together a 5 percent deposit and then governments both National and Labour lent them the rest of the money at 3 percent interest over 40 years.

In fact, governments, who have the biggest balance sheets in the land, borrowed on their own assets to house their own citizens from 1930 to the late 1960s. These governments of old were driven by the belief that home ownership was the key to a healthy society and a stable democracy. Were they wrong?

Sorry to be repetitive, but whatever we did starting from the 1970s clearly hasn't worked. Paradoxically, in global terms, while millions of people lack suitable homes, the stock of vacant houses is gradually increasing.

Stuff reports that in 2013, 33,360 private dwellings in the city of Auckland were unoccupied and that by 2018 that figure had increased by 6000 to 39,393. The data was from the latest census. The situation is not so dissimilar to what happens in another city I have lived in for a decade, the city of Buenos Aires in Argentina. In that city of 16 million people there are about 139,000 empty dwellings.

Most of this excess housing is owned by the wealthy who buy dwellings up as a hedge against inflation and a store of real value. To this problem of excess, one proposed solution has been to tax empty dwellings more than those that are occupied.

According to United Nations sustainable development goals, everyone should have access to housing. More specifically, it is sustainable development goal 11 (sustainable cities and communities) that aims to make cities and human settlements inclusive, safe, resilient and sustainable.

I am sure you have heard all these nice sounding words before. However, the absurdity of it all, is that we are applying the medicine that caused the problem to try to fix it by increasing the dose.

One of the key targets of the sustainable development goals is to ensure that folk have access to adequate, safe and affordable housing and basic services.

According to the UN, affordable housing is key for development and social equality. We seemed to know this in the 1960s and somewhere along the way we forgot it all.

The inability for a family to own a home consigns them to a vicious circle of poverty from which it is difficult to escape.

Since they can't raise a deposit, they can't get the ever-increasing loan and so they pay exorbitant rentals and so they can't raise a deposit and so forth. You get the idea.

At this point we should start asking ourselves the question, if we really want to end up in this country like the United States where 45 percent of the population doesn't have $400 (USD) of savings, where the minimum wage is $7.25 and where there has been an explosion of human faeces on the streets of cities such as San Francisco.

In the richest country in the history of the world Covid-19 is out of control and the inequities of the health system is showing itself to be a disgrace. Is this really what we want here?

We would do well to remind ourselves that the word "landlord" harks back to medieval England in which only the king and certain nobility had the right to own lands. The peasantry had to show fealty to the king in exchange for protection. The life of the rural peasant was one of restrictions, poverty, great discontent, unrest, stress and insecurity. Is the term "landlord" really such an anachronism these days?

So, the short of it Mr Milne, is that if government used the four levers it has in its control in a responsible manner to put downward pressure on house prices, then perhaps we would go some way to resolving the tragedy of poverty and homelessness that is starting to grip our country.

The present government clearly deserves brownie points for trying to address the issue by using the conventional neoliberal medicine of growth although they have so far not succeeded. Perhaps it is time to consider changing the medicine and levelling the playing field.

■ The views expressed here are solely my own and do not express the views or opinions of any organisation with which I am associated.