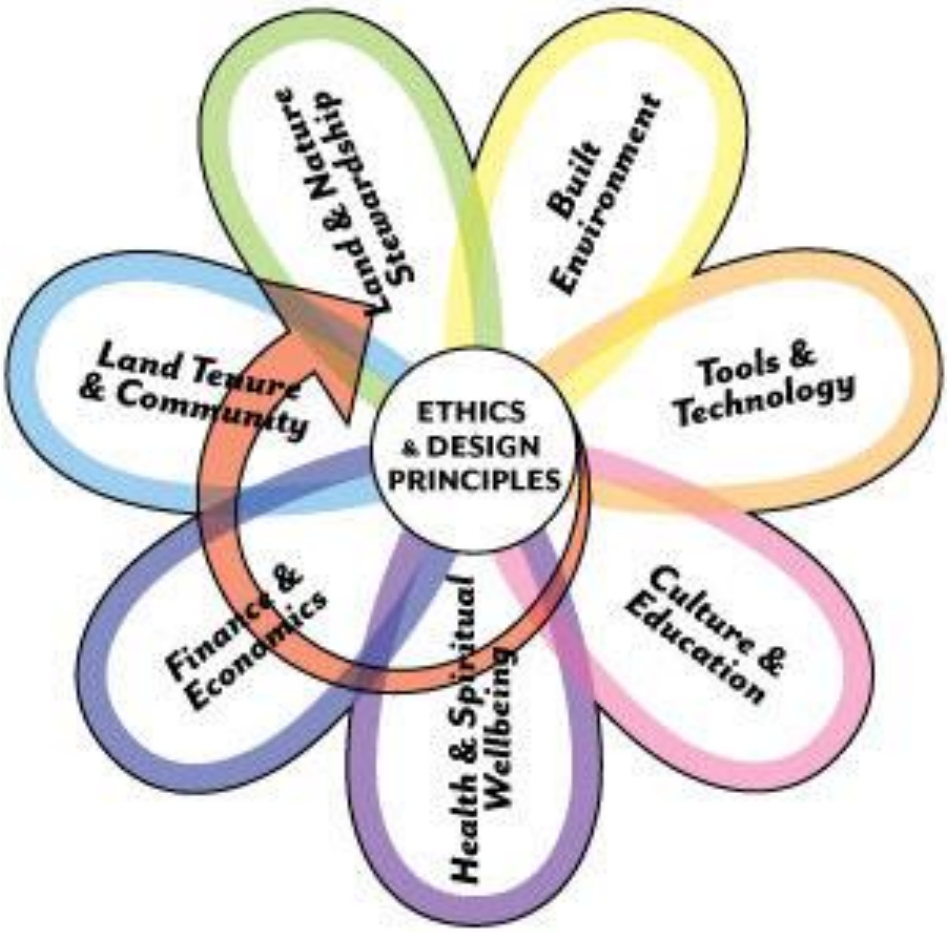
NEW BIOSPHERE AGRICULTURE

Permaculture



"Peace And Spirit Creating Alternative Solutions"

PASCAS FOUNDATION (Aust) Ltd **Em: info@pascasworldcare.com**
ABN 23 133 271 593 **Em: info@pascashealth.com**
Pascas Foundation is a not for profit organisation
Queensland, Australia **www.pascasworldcare.com www.pascashealth.com**

FOOD SECURITY for ALL!

The photography was outside a storage facility for food being provided as humanitarian aid in Sudan when he took this photo. No one knows what happened to the child. The photographer was overwhelmed to the extent that he had a mental breakdown and later suicided.

Potable water, food security and safe housing are clearly the priority needs of all humanity. Education then follows and as of a consequence of education, health services follow.

Why are we in this predicament?

Why are we so dreadfully incompetent that basic care is not being provided to all children and their carers?

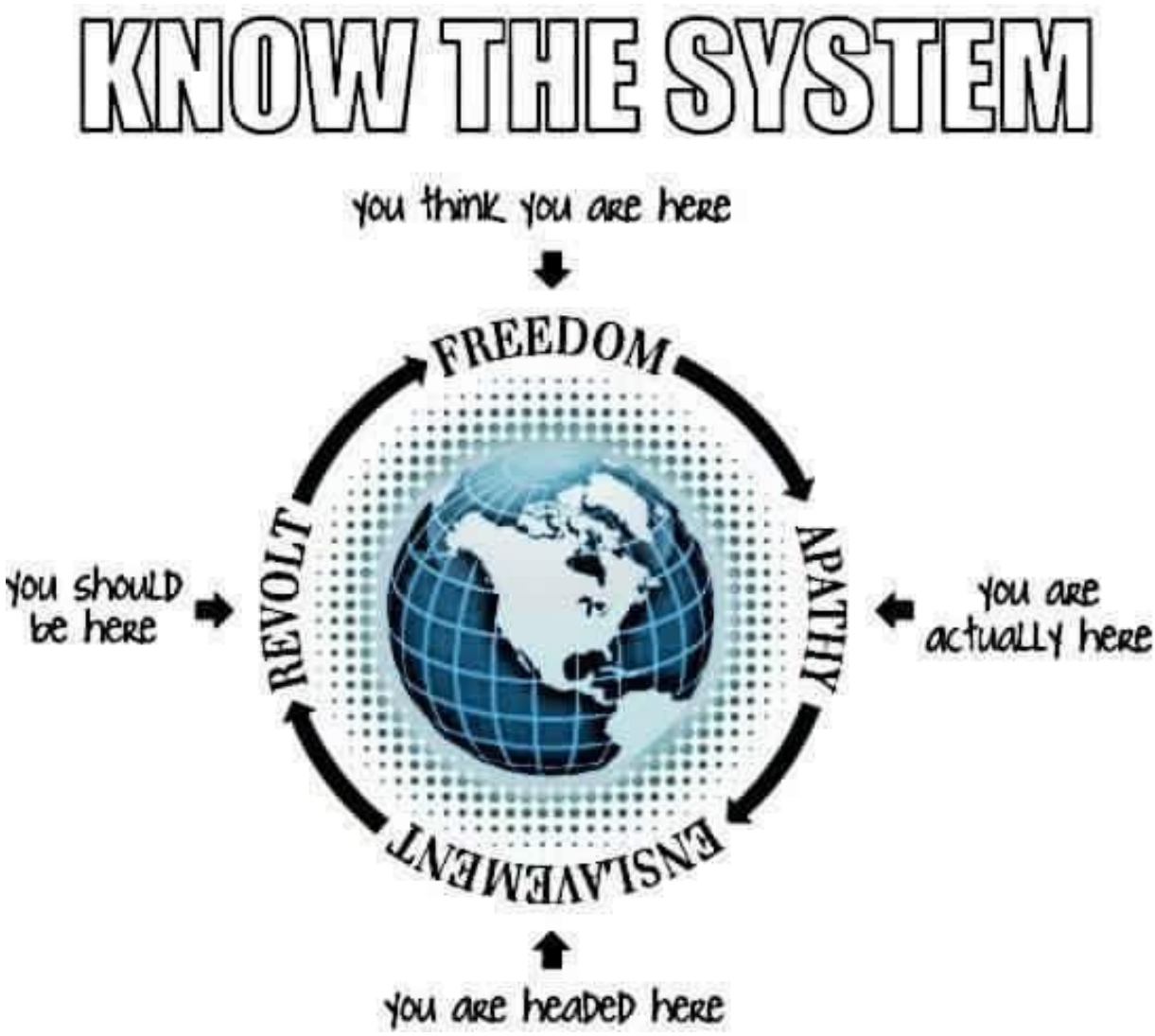
Why are any children not being provided with even the basics?

Militarisation is all wrong? Why do governments collectively spend more than US$2 trillion on military yearly yet only US$50 billion on humanitarian aid?

Why aren't children put first?

Food Incorporated Stewardship for Hunger

FISH



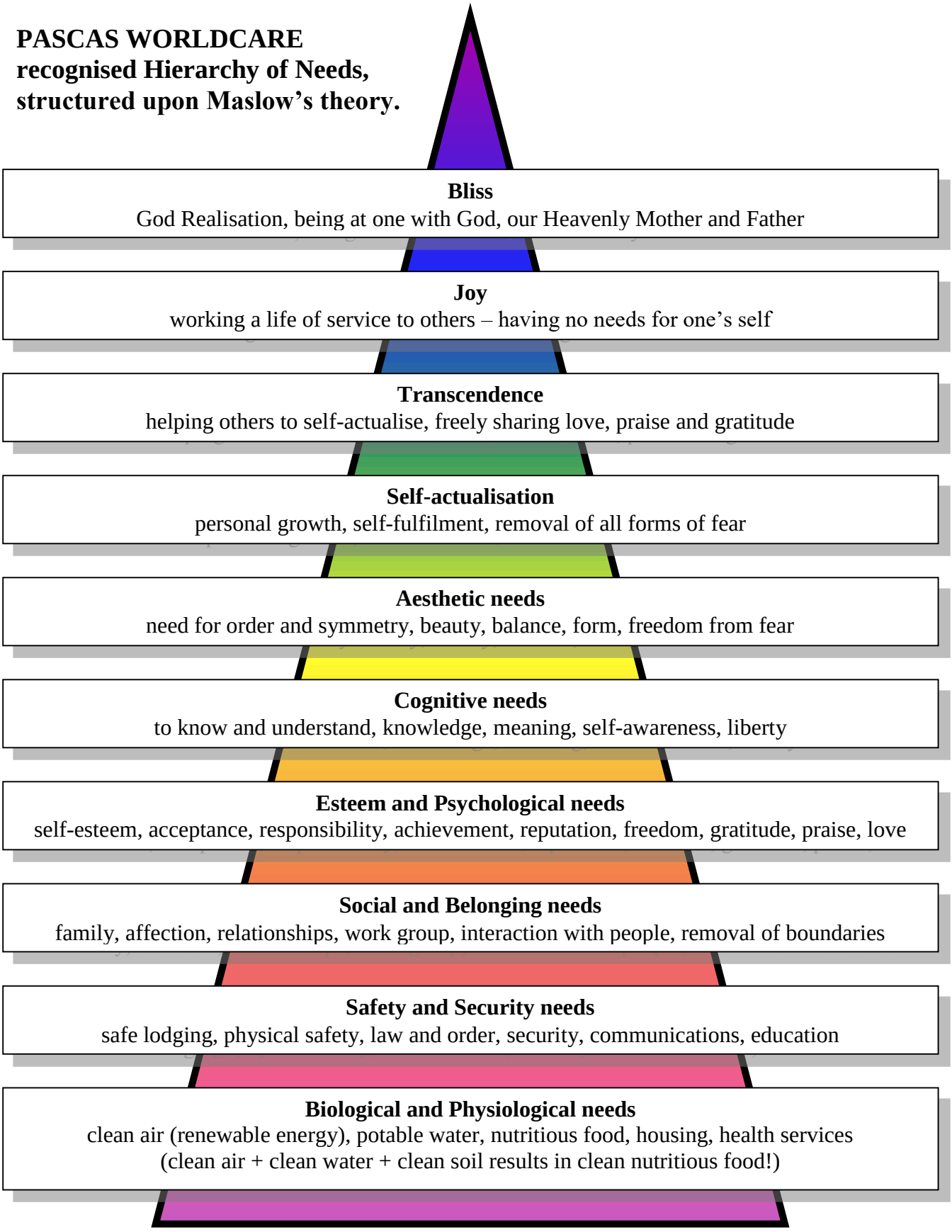
This is what awaits a baby!

The massive amount of medications and vaccines that presently awaits a newly born child are to mitigate the negative aspects of what the child absorbs from its parents and carers during its formative years, from conception to age of six years. It is the infusion of a child's parents' emotional injuries and errors of belief that disrupts the light energy flowing from the child's soul through its spirit body and into its physical body and returning distorted. This is the source and cause of all its illnesses that unfold throughout its physical life!

Then we have the educators, religious indoctrinators, our employees, our levels of government – local, state and federal and ultimately hidden controllers in the physical and in spirit, ALL imposing their suppressive control on this newly arriving personality. We each are living within a physical hell.

put Children first

PASCAS WORLDCARE
recognised Hierarchy of Needs,
structured upon Maslow's theory.



put Children first

Indonesia: how Australia's biggest and closest neighbour uses our aid

https://michaelwest.com.au/indonesia-our-biggest-and-closest-neighbour-needs-our-aid/

28 May 2023

Aid where it matters

Jacob Nulik is a retired Indonesian forage agronomist with a doctorate from Australia. He lives in Kupang, the old Portuguese trading port on the southern tip of Timor. Most days he can see the low-lying island of Semau (117 square km) to the northwest, just a 30-minute ferry trip away.

'But even I wouldn't go there,' he said. 'It was called Magic Island and full of spirits. That didn't bother Colin Barlow. He went straight in.'

The Australian scientist's impressive scramble through Semau's dense bush and ancient coral ridges to the dry plains inland was not a demo of ocker bravado, but intellectual curiosity.

No wailing phantoms, only the sight of Indonesians struggling to survive in a drought-prone hardscrabble landscape, the people so poor their currency was barter. Semau is a sad example of much that's wrong where corruption thrives and arbitrary administrations run vast countries.

Indonesia stretches 5,100 km west-east; Semau is only 830 km from Darwin, but more than twice as far from Jakarta. Government support goes down as the klicks from the national capital go up.

Cash crop economics

Dr Barlow, who died last December (2022) aged 90, was no casual tourist but the 'world's leading authority on smallholder cash crop economies.' His wife Dr Ria Gondowarsito is an Indonesian sociologist.

The couple had enough clout and contacts to run scholarly seminars about Semau but wanted change to be real and sustained. Back in Canberra they hustled donations from mates and NGOs like Rotary, mustered volunteers and did the unusual:

'He asked the people, and he listened', explained Deborah Kana Hau, co-founder with Barlow of the Nusa Tenggara (Southeast Islands) Association (NTA). 'We worked from the bottom up.'

https://www.nta.org.au/

So much time goes on slow talk, which annoys hustlers, but the decisions tend to stick because they're owned by the locals.

The NTA says its mission is to reduce poverty, which has a knock-on effect. In practical terms, this means having more income can lead to better access to water and sanitation, schools and kindies and health clinics.

What started as a minor project in 1988 now has 26 staff (including two Australians) and 120 volunteers; a third are locals.

ANU economics professor Stephen Howes wrote: 'If the province was a country, it would be one of the poorest in the world. Income per person is one-third of the Indonesian average' currently around US$4,600 a year.

He calls NTA 'one of the most effective NGOs in Eastern Indonesia, and perhaps in the developing world.' All this on tiny sums and big commitments.

Deborah Kana Hau, co-founder with Barlow of the Nusa Tenggara (Southeast Islands) Association (NTA)

https://www.nta.org.au/

Our mission: To reduce poverty among rural communities in East Nusa Tenggara, Indonesia

enquiries@nta.org.au

Nusatenggara Association, Inc.

PO Box 5080
Garran ACT 2605

NTA's 2022 Seaweed Farming Appeal
Water and Sanitation Appeal
Education Appeal
Ikat Weaving Appeal

put children first

HIGHER CO^2 LEVELS are CRITICAL for FOOD PRODUCTION

How long do you think Earth has before all life goes extinct, due to either humans or natural causes (asteroid, global warming)?
https://www.quora.com/How-long-do-you-think-Earth-has-before-all-life-goes-extinct-due-to-either-humans-or-natural-causes-asteroid-global-warming

11 June 2023

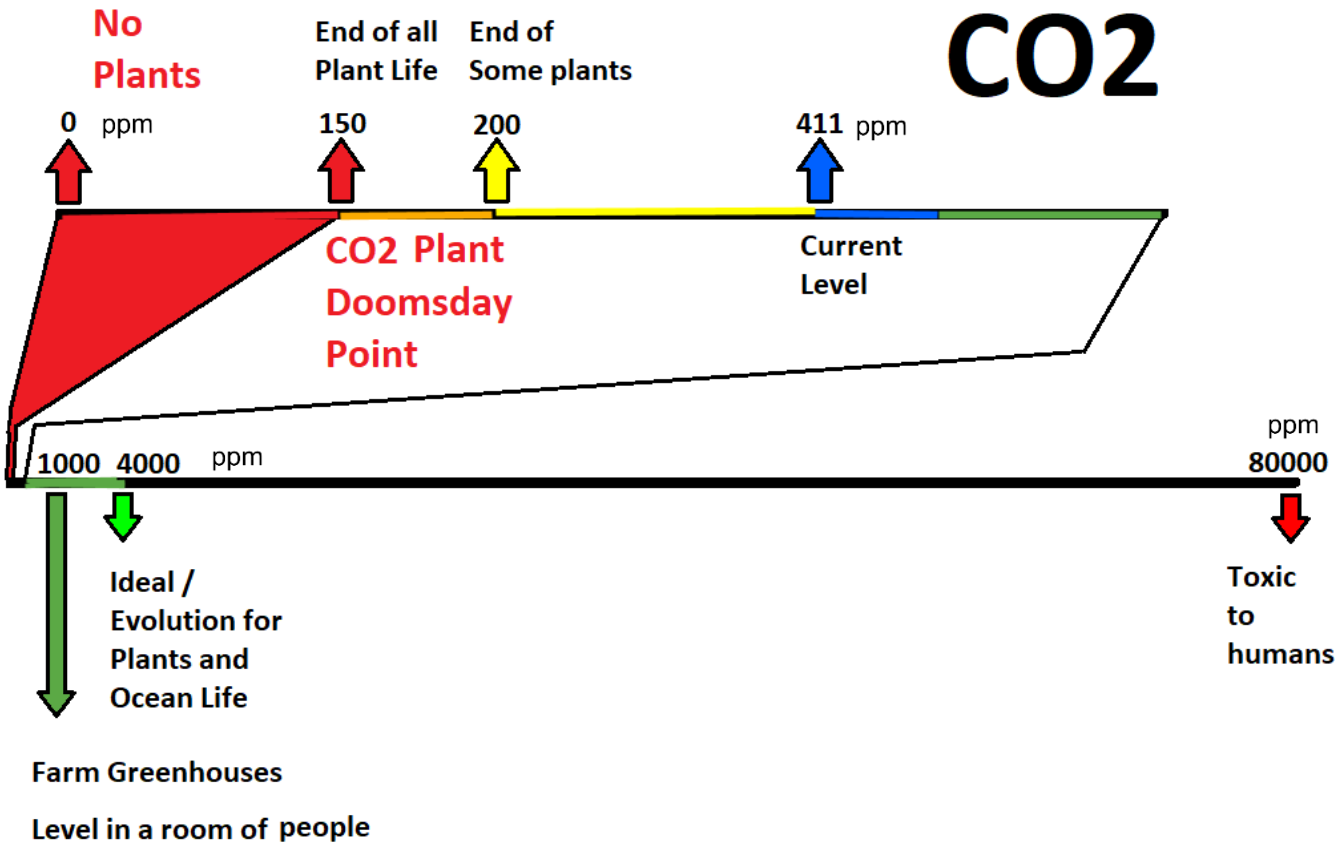
It really depends on how soon CARBON SEQUESTRATION efforts can reduce atmospheric CO^2 from 400ppm to 200ppm and cause a chain reaction of extinctions.

Long term levels of CO^2 in the atmosphere have been typically 1% (10,000 ppm).

CO^2 levels would need to increase 25 fold to reach that level – and still be low!

CO^2 levels presently are dangerously low and present worldwide famine potential!

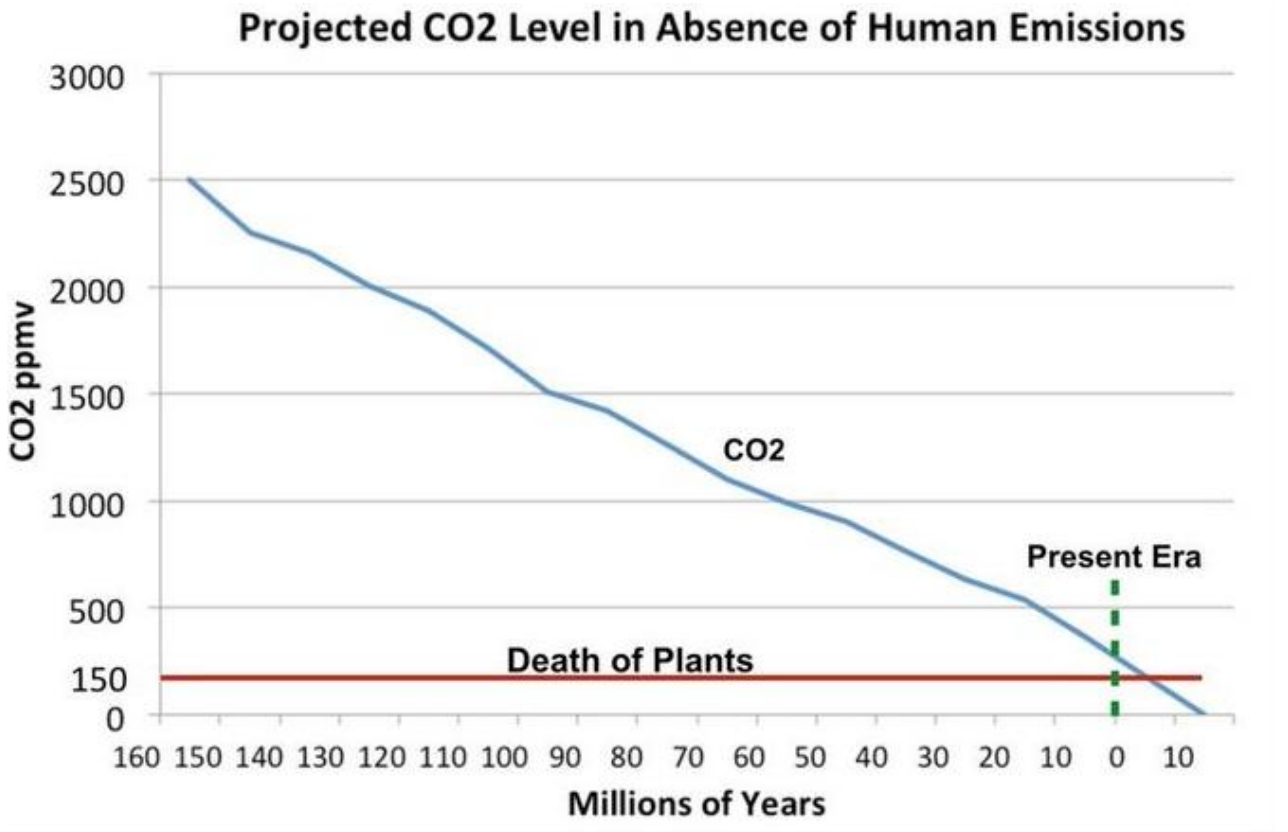
CO^2 levels approaching 0.100% appear to be optimum for global food security!



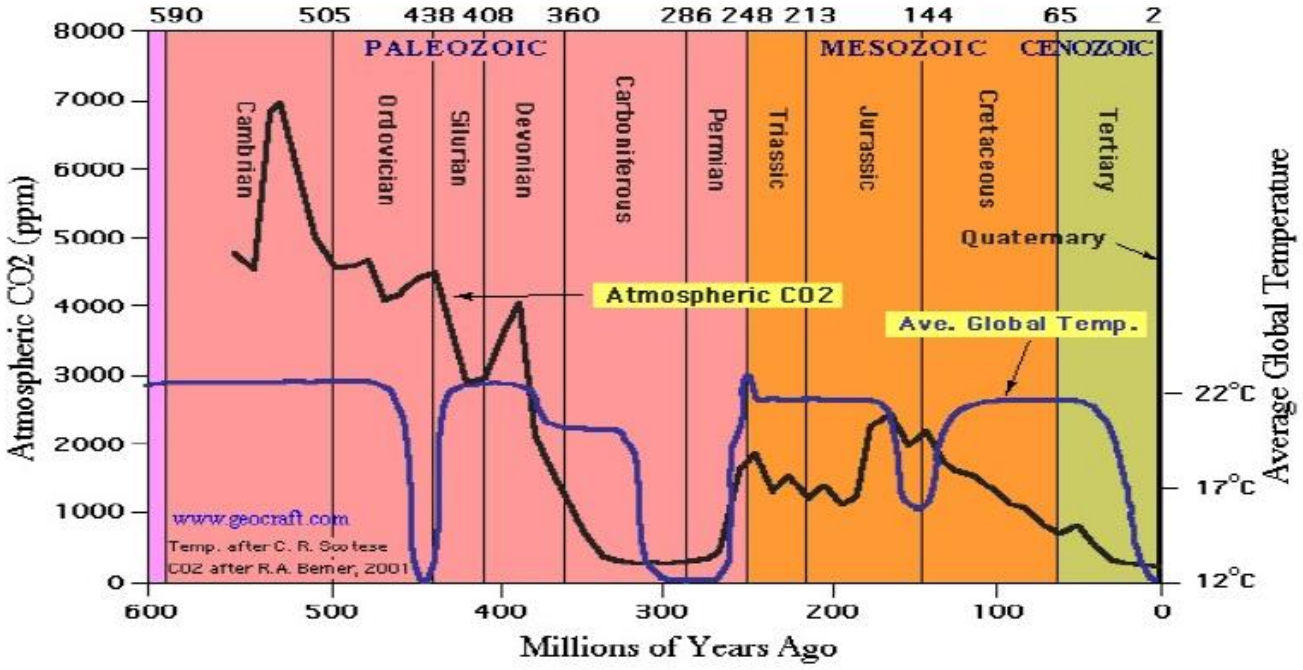
CO^2 has recently increased only from 340ppm to 420ppm, a long way off 1,000ppm!

Throughout the first quarter of the 21st century (2000 – 2025), humanity has been hell bent on its self-destruction by endeavouring to lower the atmospheric CO^2 levels, should they have fallen to the low levels as noted above, worldwide famine would have unfolded!

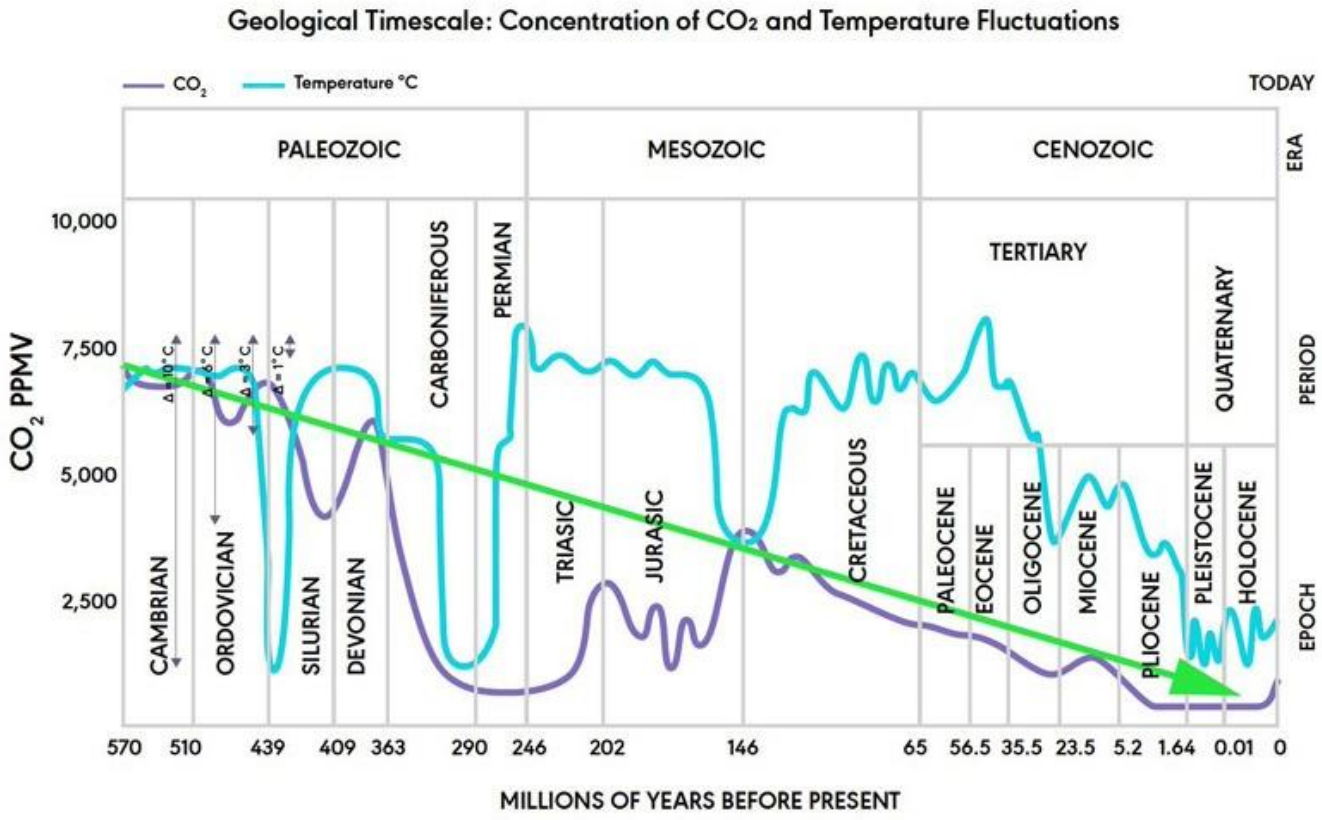
Science is confused and frequently in error due to dependence upon mind-centricity.



Global Temperature and Atmospheric CO2 over 600 Million yrs - *No Evidence* of CO2 driving temperature



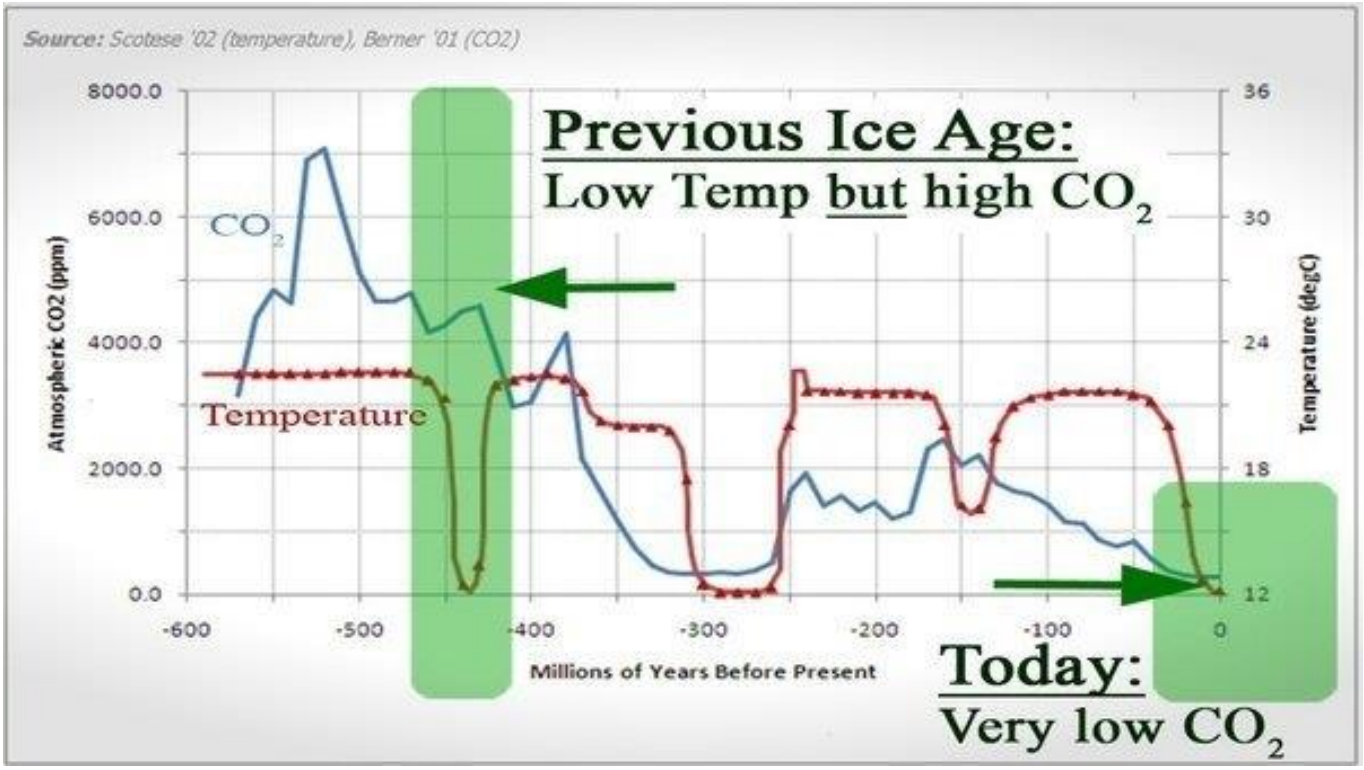
Late Carboniferous to Early Permian time (315 million years ago - 270 million years ago) is the only time period in the last 600 million years when both atmospheric CO2 and temperatures were as low as they are today (Quaternary Period). At no point do temperature and CO2 levels relate. *Temperature after C.R. Scotese http://www.scotese.com/climate.htm CO2 after R.A. Berner, 2001 (GEOCARB III)*



Carbon dioxide (CO^2) levels were as low as 0.034% and approaching critically low levels that would have brought about a worldwide famine. Fortunately, the levels have risen to 0.042% (still very low) and crops and food production has tripled!

We have Climate Change, and this will continue for some time – for ever!

There is NO correlation between atmospheric CO^2 and global temperatures!



How have atmospheric CO^2 levels varied over time, and how does this relate to the burning of fossil fuels?

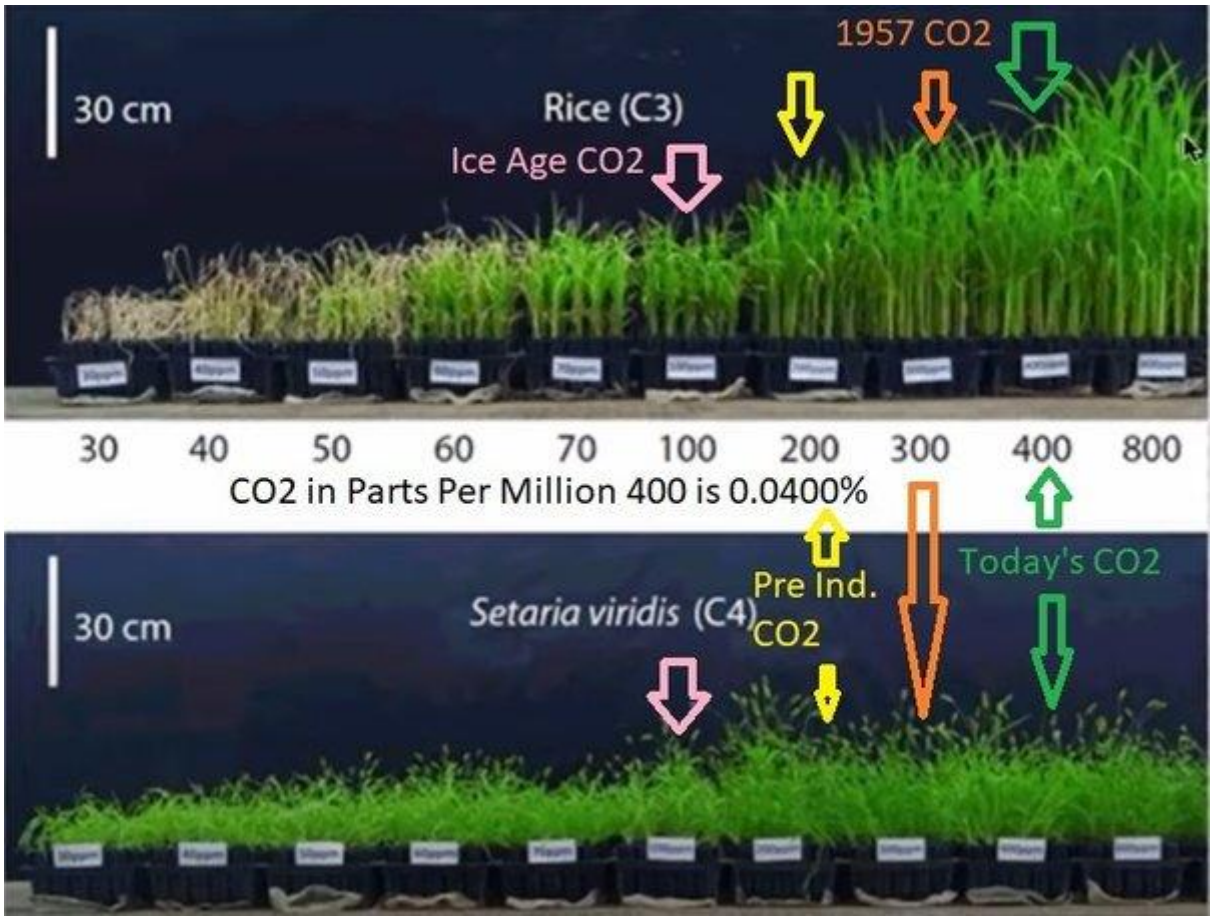
https://www.quora.com/How-have-atmospheric-CO2-levels-varied-over-time-and-how-does-this-relate-to-the-burning-of-fossil-fuels

Paul Noel, research scientist: OK, let's start with coal. Coal is fossil trees and plants from a long time ago. Any CO^2 locked up in coal is when burned merely releasing CO^2 that was in the air long ago. It clearly is no hazard no matter what coal we burn because the CO^2 already was in the air and frankly based upon the coal it was one of the best times for life on Earth ever. In short the experiment of effects of CO^2 has already been run and it doesn't run away and it doesn't have "tipping points". Best evidence is that CO^2 was up near 1% of the atmosphere. We know this from the stomata (breathing holes) in the fossil plants. Plants get fewer stomata when CO^2 is higher. So let's see what increasing CO^2 does for the life on Earth.

Just increasing the CO^2 by about 2 times the current level made the tree on the right grow nearly 8 times faster and healthier. Current (AMB sign) is 420 ppm or 0.042%. The higher level on the right is 0.087% CO^2. Hardly 1% for sure! Current CO^2 levels are just about 4% of the high level they have been in the past. This high level did not cause any ecological emergency or a climate emergency.

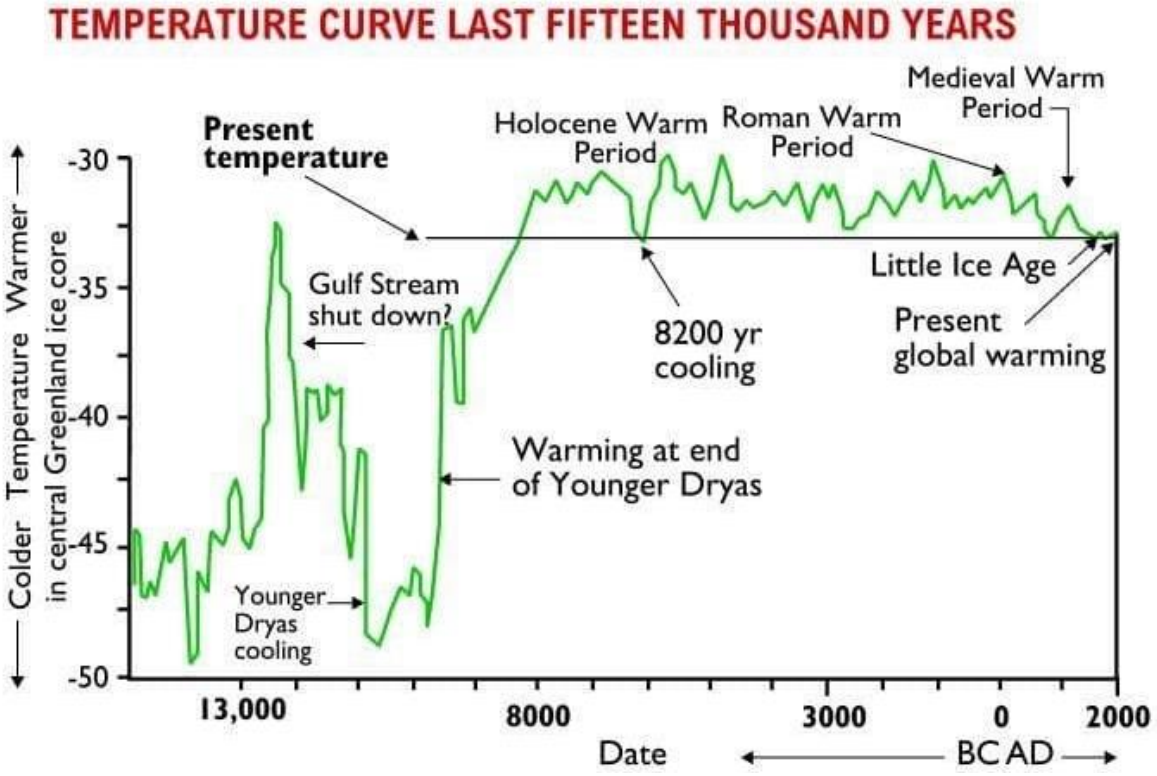
Now as to oil and natural gas. There is excellent evidence that oil and natural gas have both organic and inorganic history. The organic oil and gas is in the same place as coal. The inorganic oil and gas will come up whether or not we drill it and the choice is if we get the energy or not. I side with getting the energy. The chemical precedents methane and crude oil that are not organic are the chemical source of the atmosphere and the ocean water on Earth. So we can neither control them nor can we influence their action on this Earth. All we can do is use them.

Typical Greenhouse operators (large scale) put CO^2 generators in their greenhouses for exactly the reason you see demonstrated in the picture. It would be amazing if the truth gets out and people see what actually is going on. Those arguing that CO^2 is pollution have no idea what they are talking about. They are frankly misguided with assumption riddled indoctrination. Nobody should be in the slightest concerned of CO^2 being released as long as the location has a good wind blowing and making sure it doesn't accumulate excessively.



Reality here is that all of these plants stop function at CO^2 of 0.015% as they cannot reproduce because they will not set seeds.

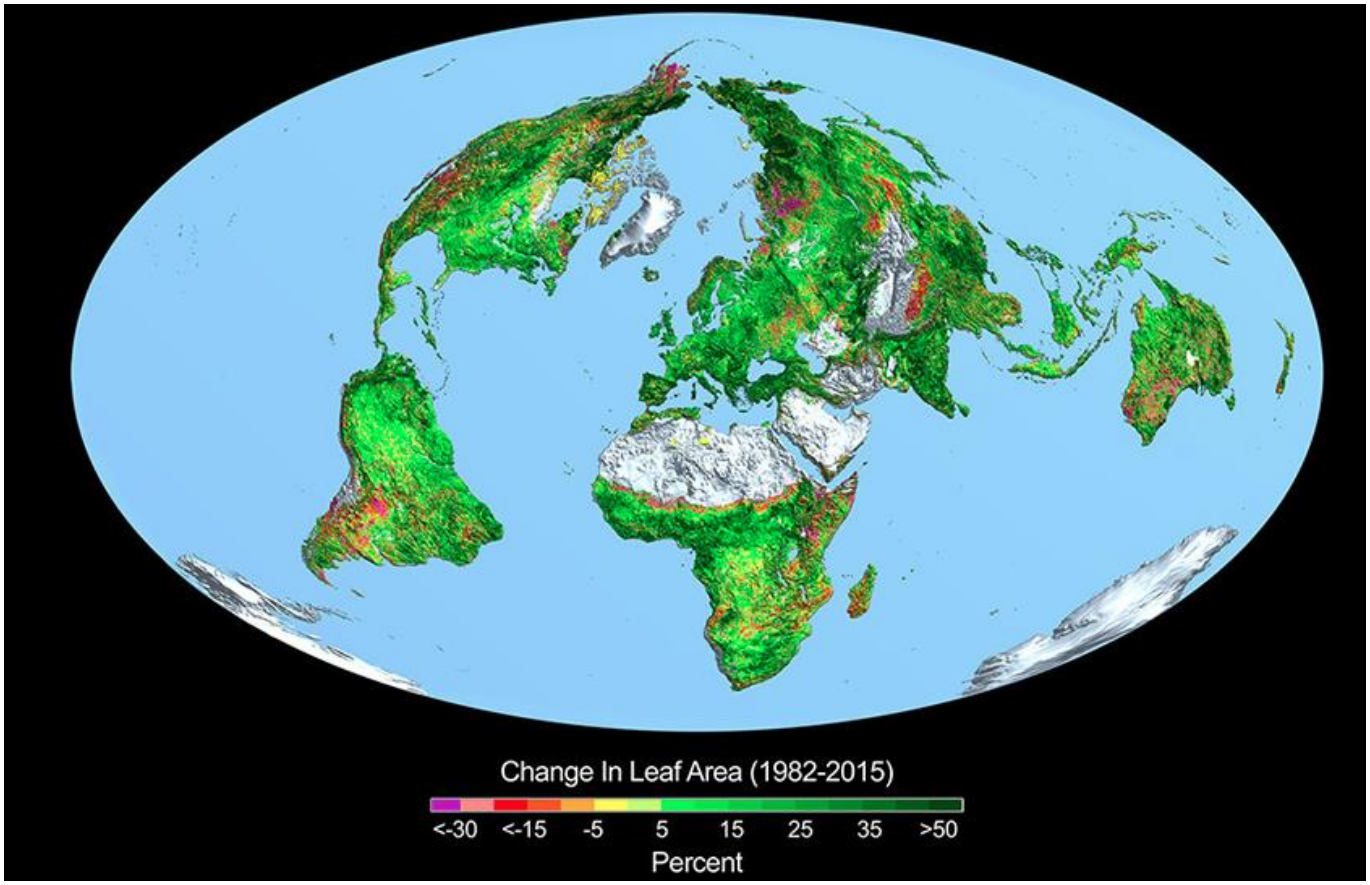
The reality of CO^2 is it is being swept from the Atmosphere slowly but there is no problem with it building up.



Why are the positive effects of global warming not being mentioned?
https://www.quora.com/
Ken Towe: former Senior Scientist at Smithsonian Institution (1964–1996) 14 June 2023

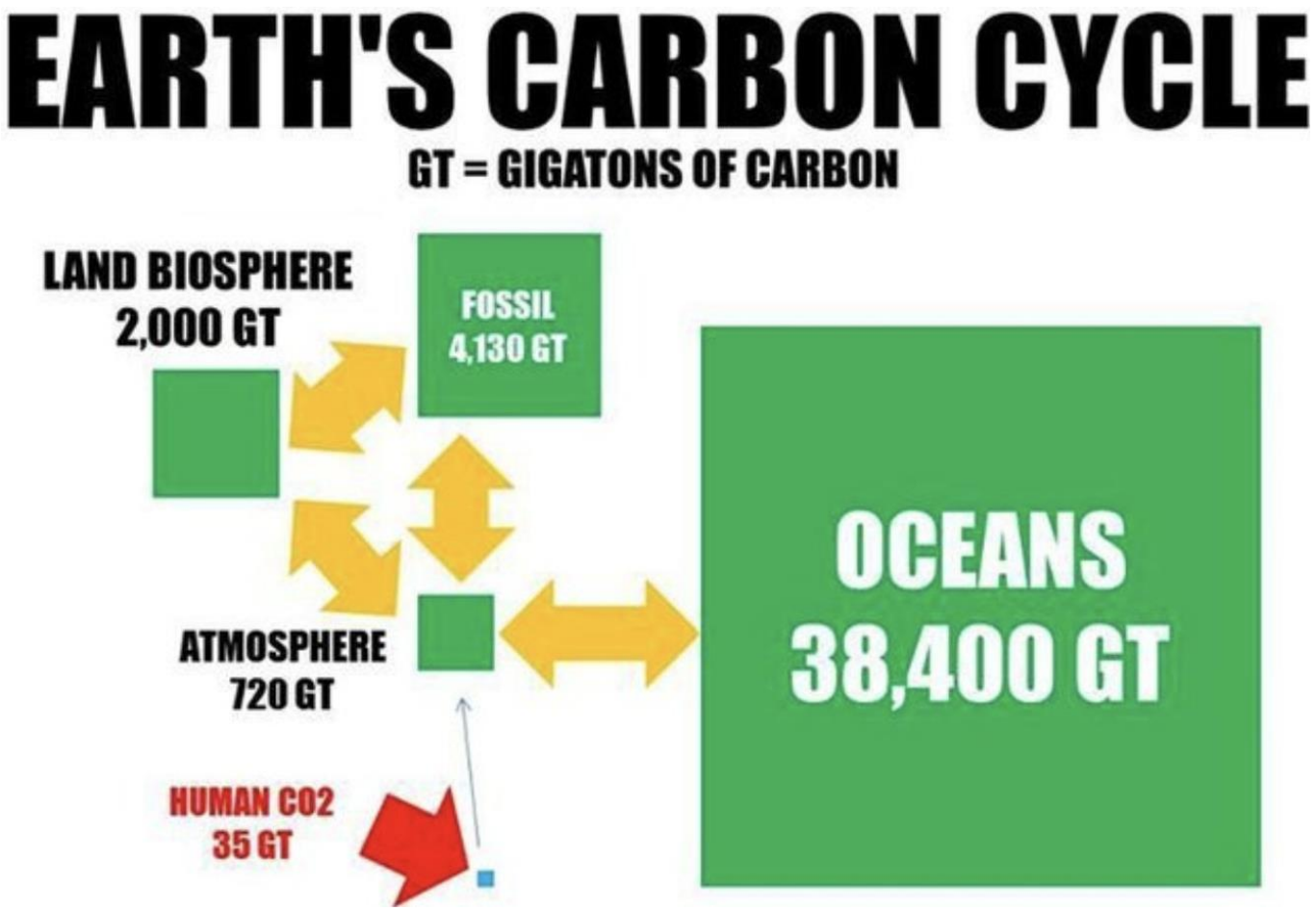
Since pre-industrial time the small amount of warming that has taken place and the release of CO^2 for our energy needs has combined to turn the Earth greener as seen from NASA satellites. That's a positive for agriculture, especially in the poorer parts of the world. It is rarely mentioned in the media because it doesn't fit the narrative of a catastrophic future unless we remove all of the energy that gets us to zero emissions by 2050.

From a quarter to half of Earth's vegetated lands has shown significant greening over the last 35 years largely due to rising levels of atmospheric carbon dioxide, according to a new study published in the journal *Nature Climate Change* on 25 April 2016. The greening represents an increase in leaves on plants and trees equivalent in area to two times the continental United States. Research results showed that carbon dioxide fertilisation explains 70% of the greening effect

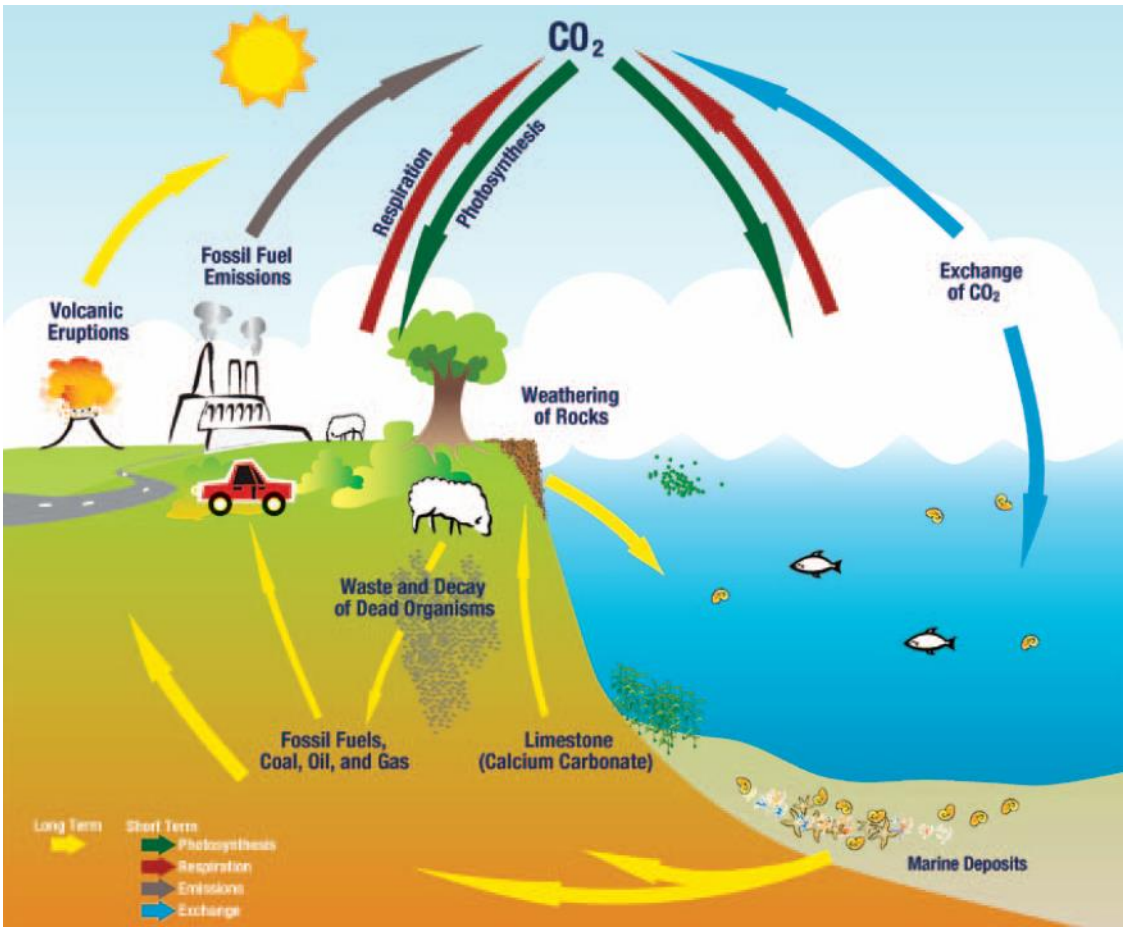


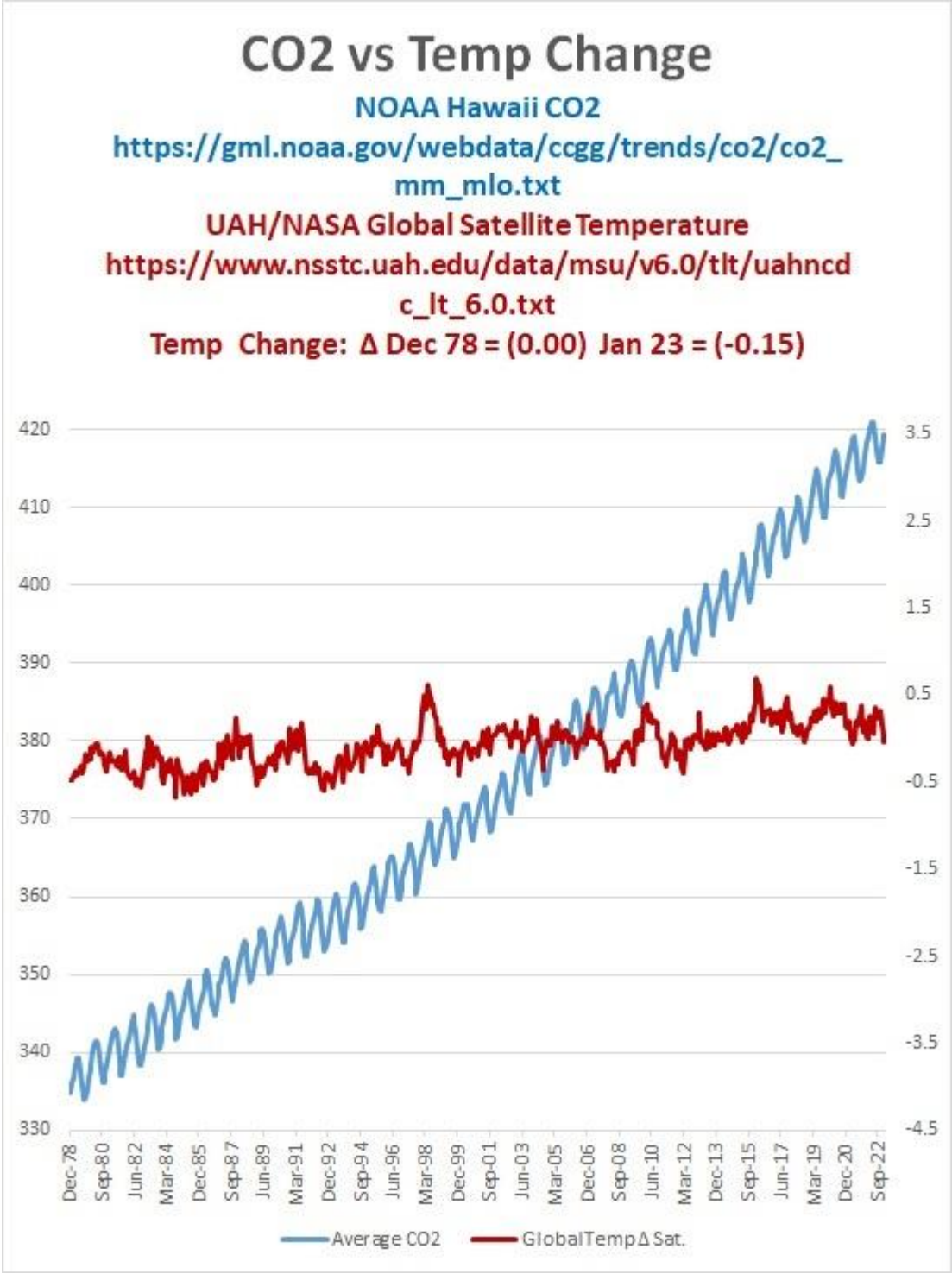
The increase of CO^2 in the atmosphere from about 320 ppm (0.032%) to 420 ppm (0.042%) has raised the efficiency of our crops and trees by about 300%. Worldwide famine is avoided! Further, CO^2 does not warm up the Earth, it cools it slightly (increased vegetation). CO^2 is beneficial to life! It is the basis of life. CO^2 is not a contributing to global warming. CO^2 is no danger. Life on Earth has recovered greatly because of our releasing CO^2 into the atmosphere (even if it is only a tiny fraction!).

Note: The farming region around West Wyalong, central New South Wales, Australia, was reporting regularly wheat crop yields at 10 bags per acre in the 1960s whereas now in the 2020s the yields are regularly 28 bags per acre! This being equivalent to a very substantial increase. I, John, grew up in this farming district.



To consider that humanity's carbon footprint is driving climate change is absurd.





Kindly go to www.pascashealth.com then Library Download page, scroll down to Corporate Foundation Documents, click on to open:

Pascas WorldCare Earth Changes Environmental Changes.pdf

http://www.pascashealth.com/index.php/library.html

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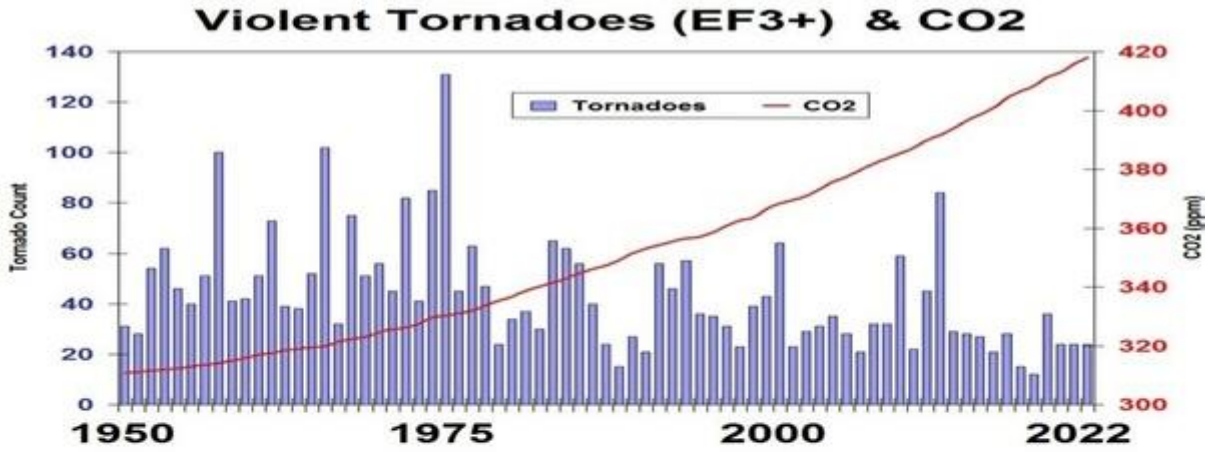
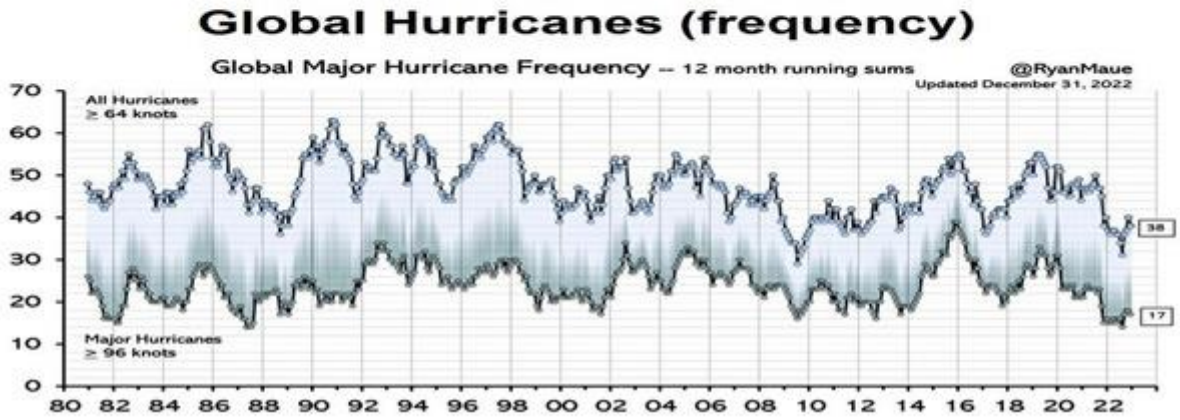
How do you think climate change will affect coastal storm flooding in the future?

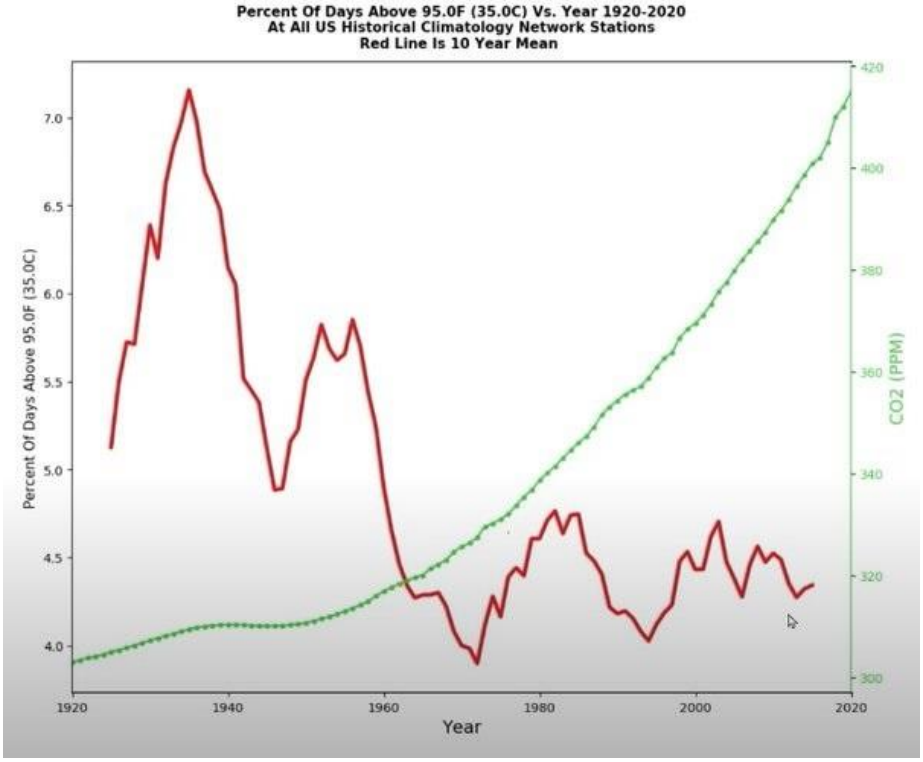
https://www.quora.com/

Paul Noel, research scientist: 16 June 2023

Climate Change is a delusional mythology. Now let's be clear the climate of Earth has always been changing for a very long time. I mean eons upon eons! It is entirely natural and there have always been storms and coastal flooding. So seeing a flood or a storm proves absolutely nothing.





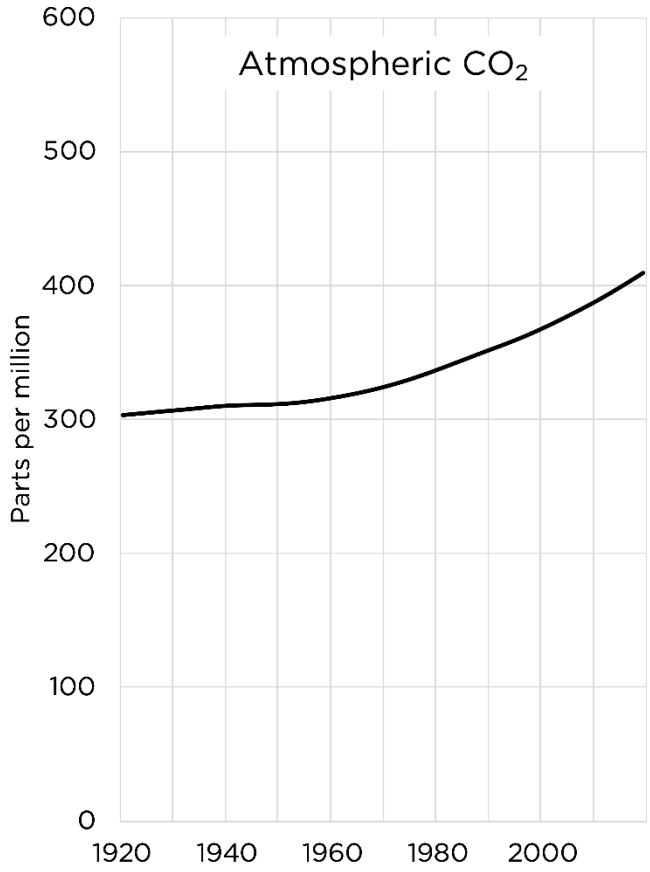


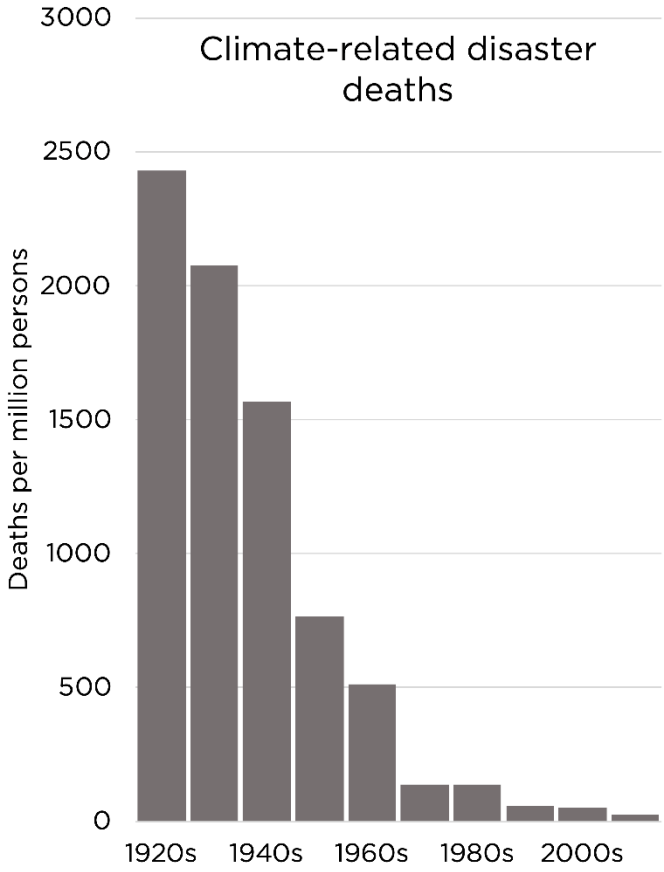
New Real Climate Science

https://www.quora.com/ 8 June 2023

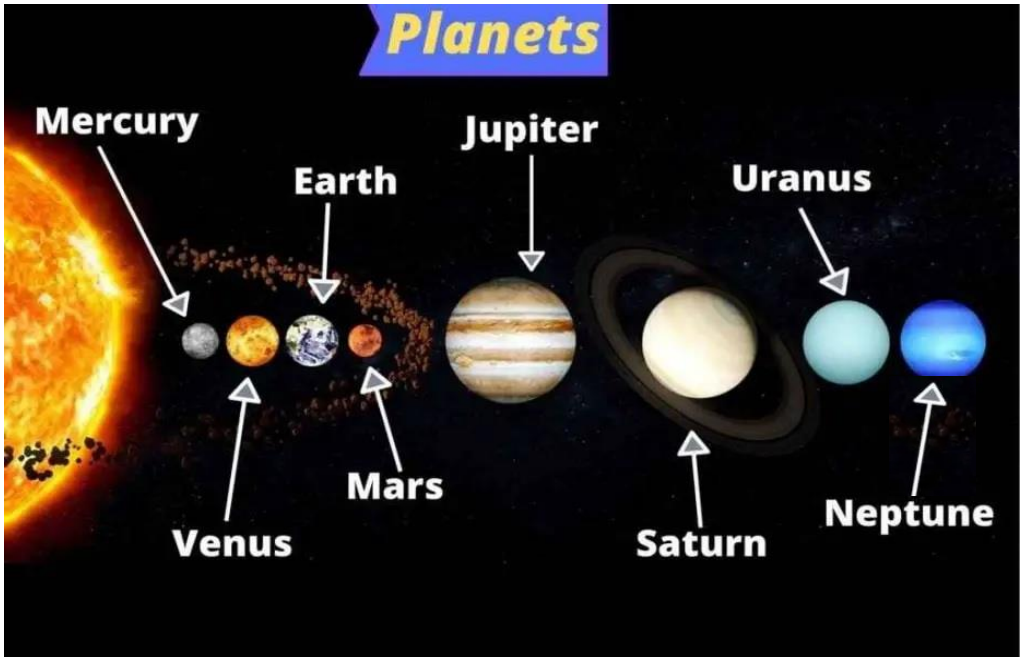
How do you think climate change will impact natural disasters and extreme weather conditions, and what can we do to prepare for it?

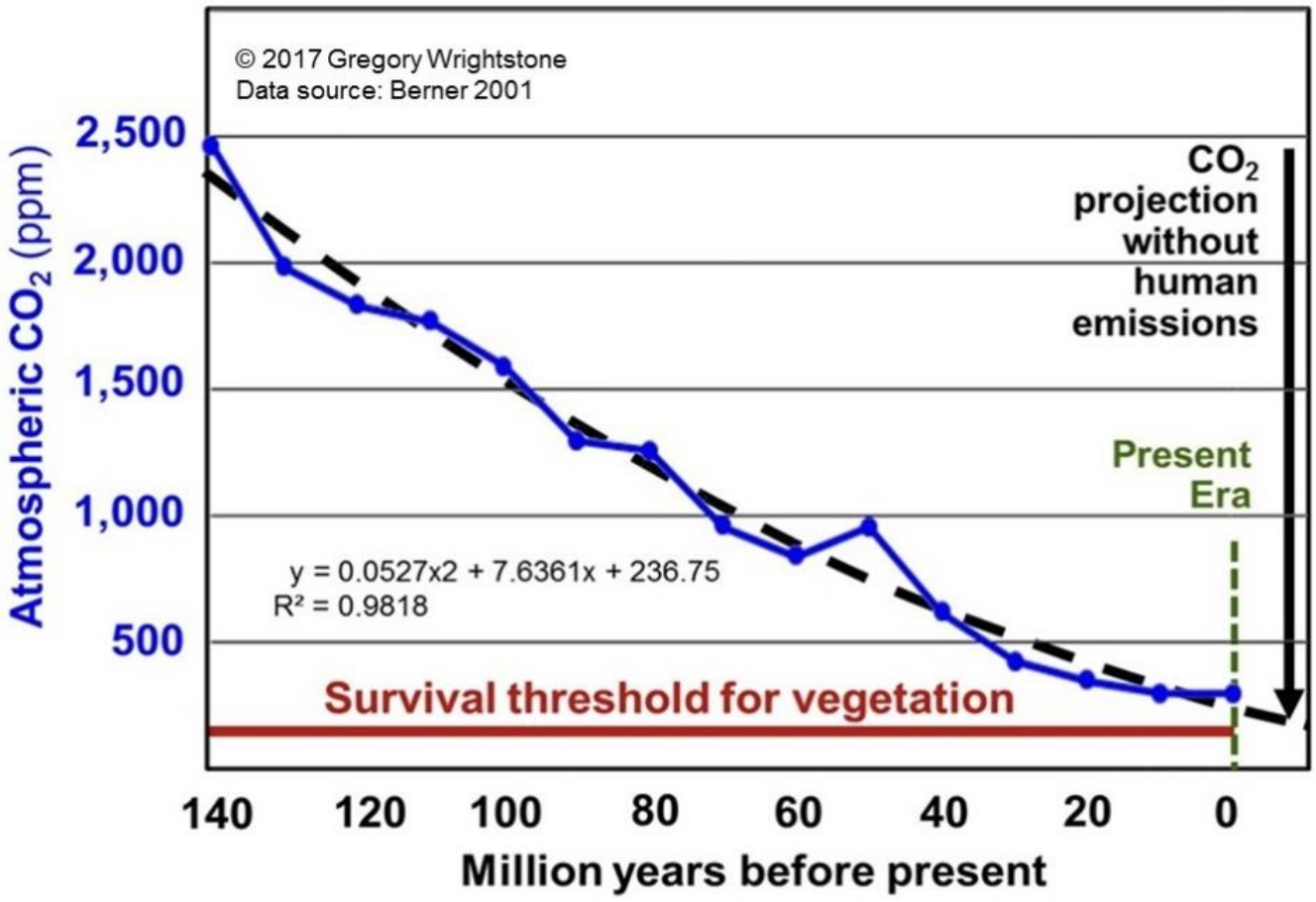
So far increases in CO^2 seem to have resulted in dramatic decreases in climate-related deaths. If only we can keep increasing CO^2 perhaps we can get such deaths down to zero.

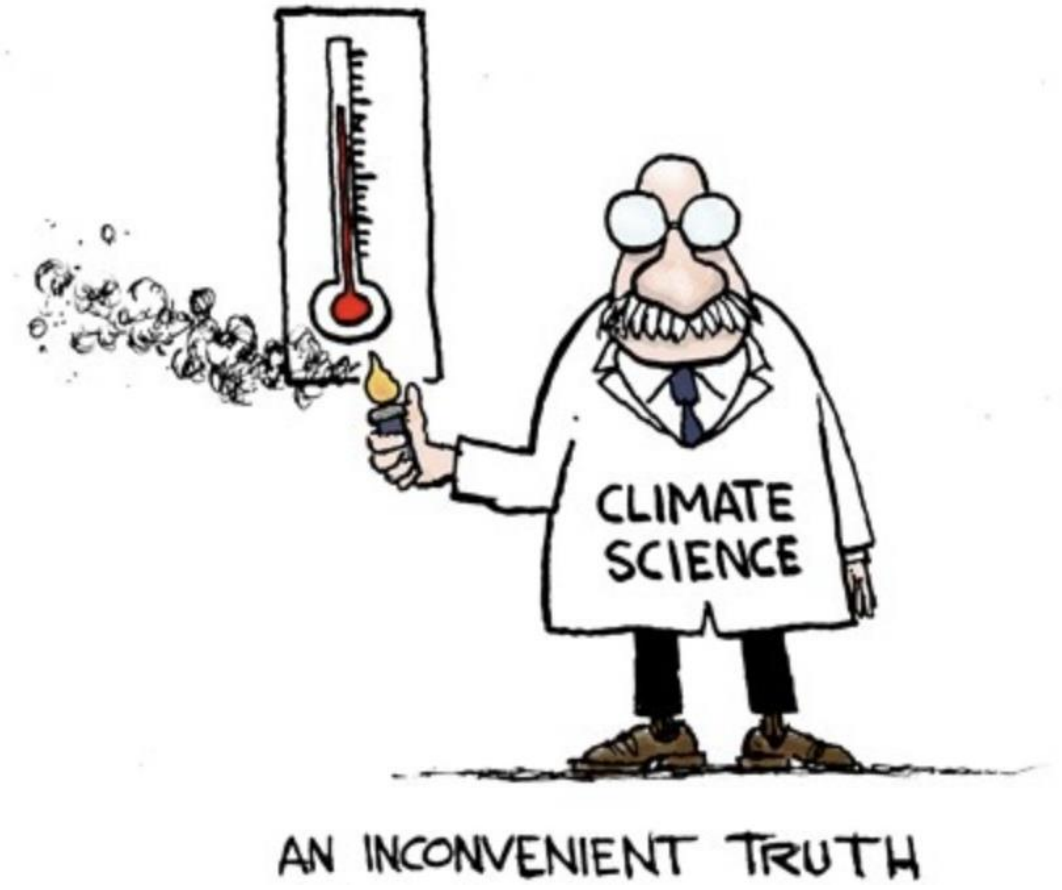




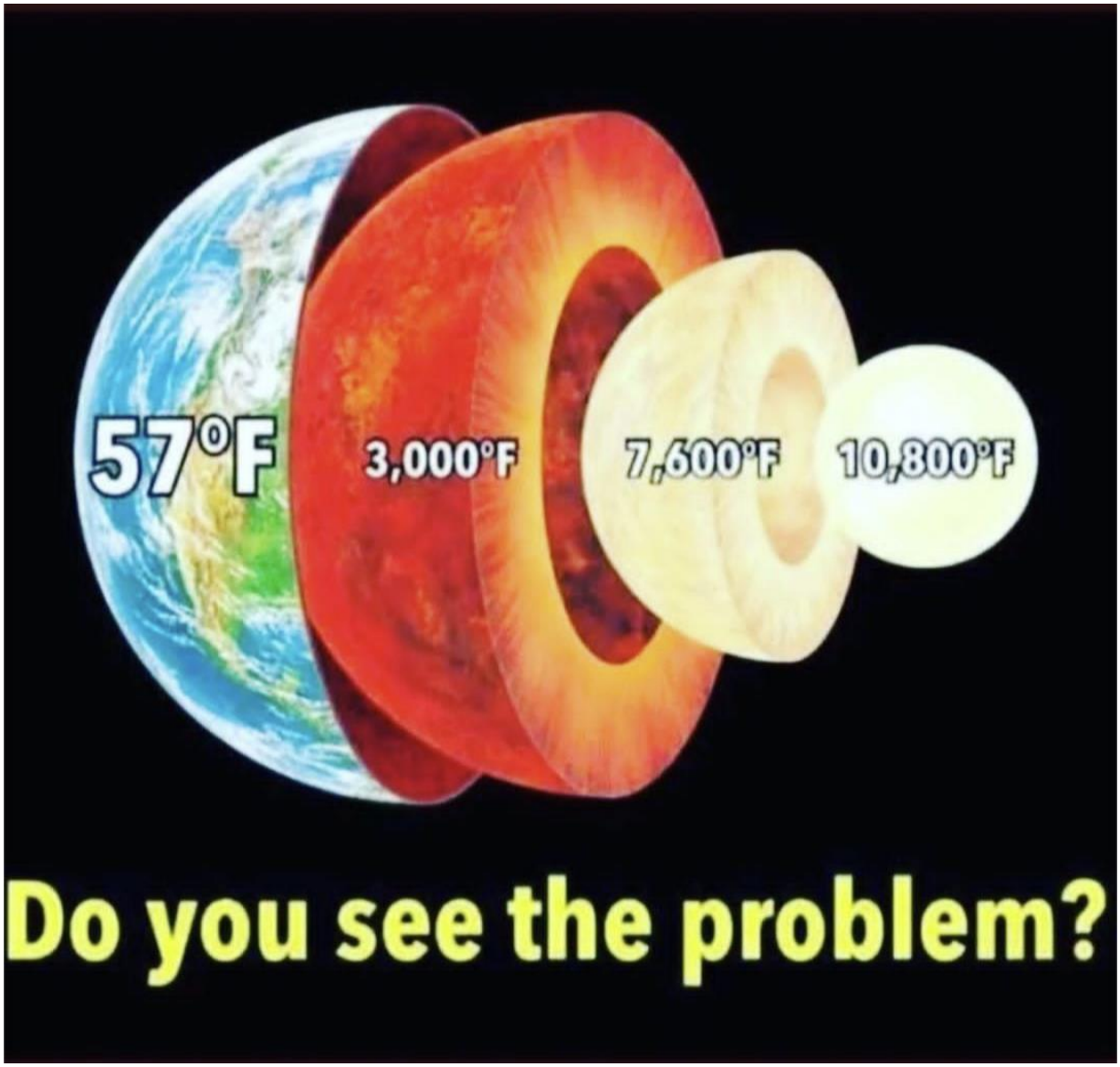
Further, surface temperatures and conditions are continually change on all planets! The planets have one thing in common – the Sun – the Sun does it all!




© 2017 Gregory Wrightstone
Data source: Berner 2001
Atmospheric CO_2 (ppm)
2,500
2,000
1,500
1,000
500
CO_2 projection without human emissions
Present Era
y = 0.0527x2 + 7.6361x + 236.75
R² = 0.9818
Survival threshold for vegetation
140
120
100
80
60
40
20
0
Million years before present


CLIMATE SCIENCE
AN INCONVENIENT TRUTH

PASCAS



Extreme Earth Events

Global Warming: 28 September 2011

James: Verna, is there really global warming, or is it something that seems to be happening but is being made up by certain people. I think I've asked you this question before –

That doesn't matter James, I'm happy to answer it again.

Verna, a Nature Spirit: Yes, global warming is real, but it's not happening solely because of humanity's impact on the world. Humanity is only minimally affecting it, the world for the most part being able to absorb all you do that results in global warming, however it's the Earth itself that is heating up, internally and because of external influences. And these will continue as I've told you. But all humanity does in regards to global warming will be of no account because of the overall changes that are going to take place.

Monday, 17 December 2018

James: Hi Nanna Beth, I feel like a chat, is that all right with you?

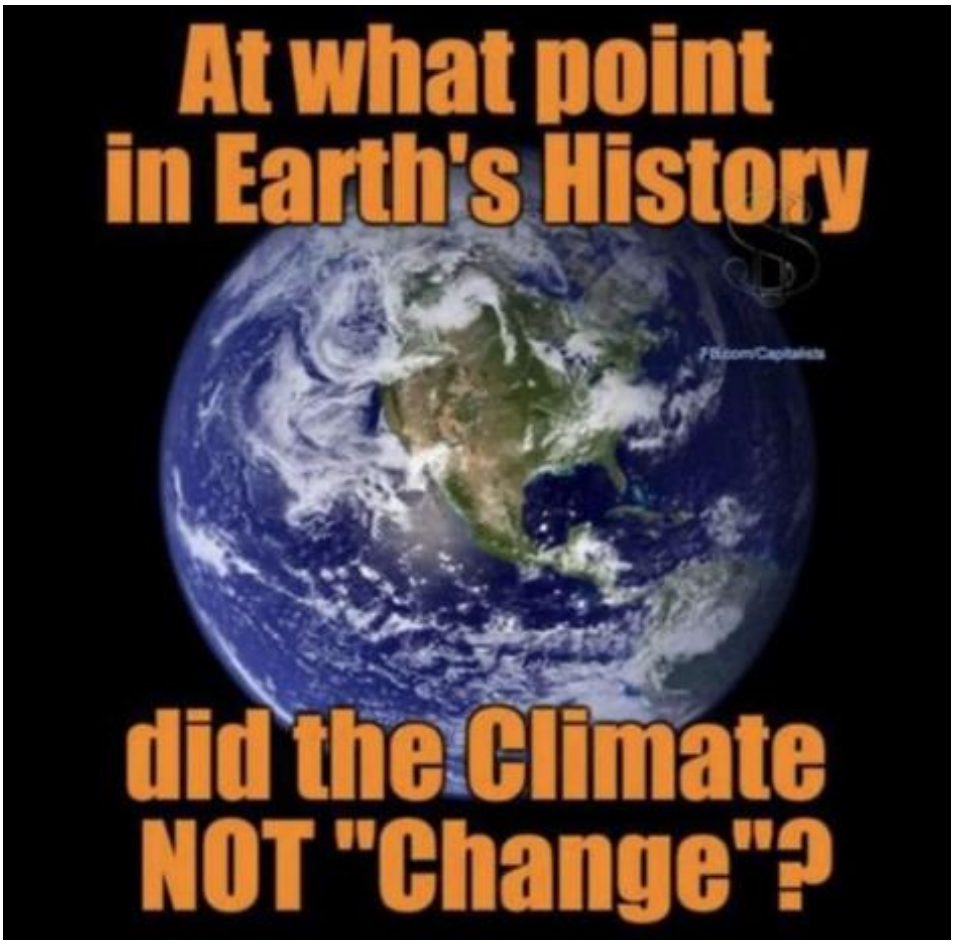
Nanna Beth – 3rd Celestial Heaven: Also you might like to know, the Earth itself is starting to change its rotation speed and is slightly moving on its axis, thereby causing shifts in surface weather patterns as warming and cooling takes effect, just happening in different places than how it has been. And these changes are coming from the core that's being affected by greater space changes. There is always massive pressures and forces affecting every part of natural creation, so the world and all space and all that's within it. And as David (Montaigne) points out, observers have observed that things remain the same, at least seem to be the same, although with minute incremental changes, all of which culminate to periodic, large swift changes. And so humanity is coming into a time of rapid change, and on all levels, not just the physical or spiritual. Of which I still can't say more.

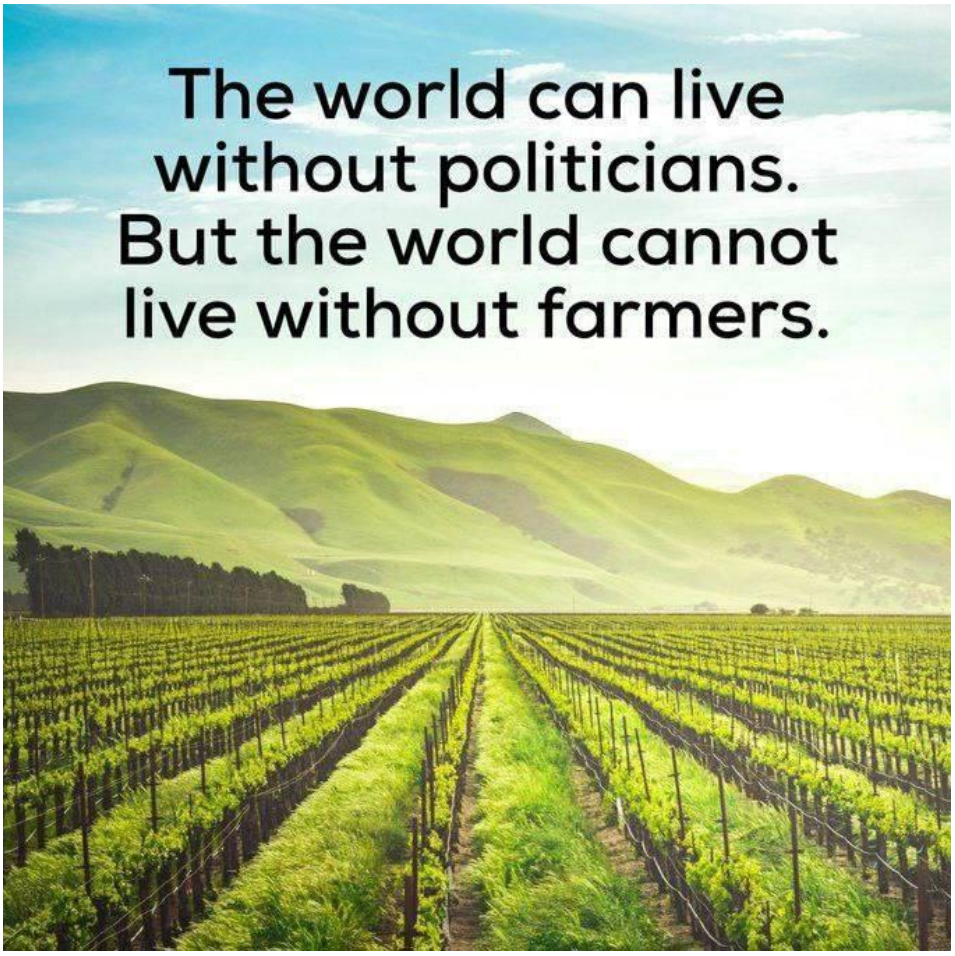
So the debate about global warming or cooling will continue with both being right, as both are occurring. And in some areas they are affecting each other, in other areas they are happening independent of each other.

James: Thank you Nanna Beth, you've covered all I was wanting you to update.

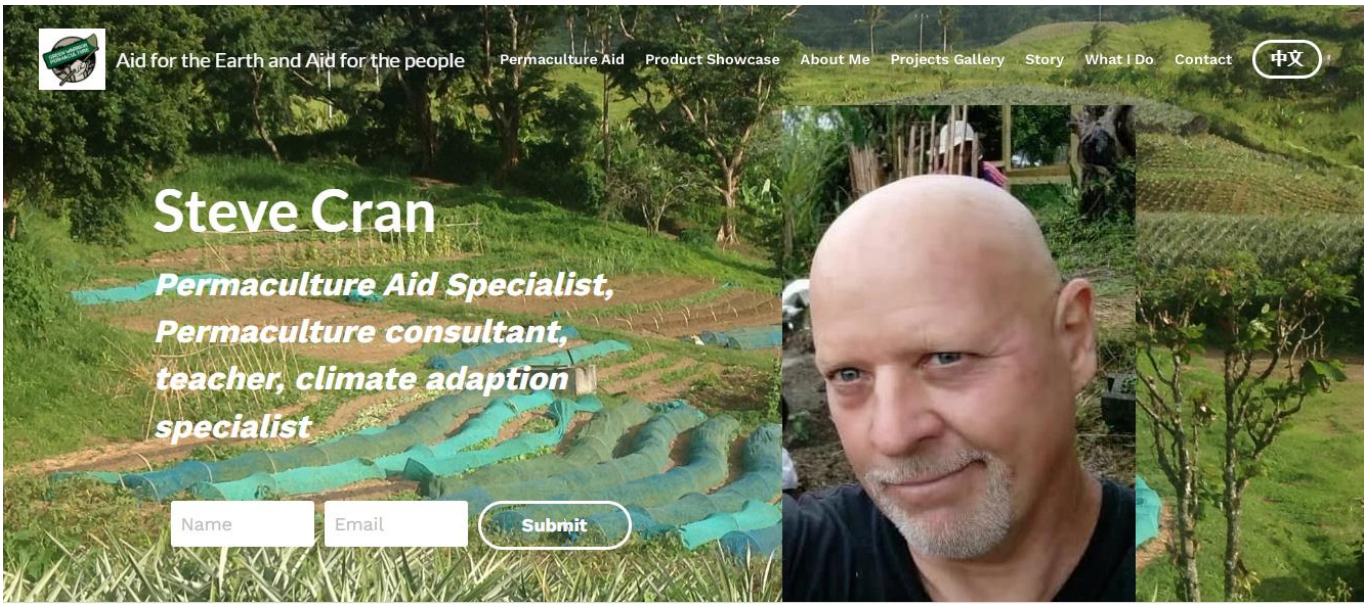
NOTE: Since the beginning of the ending of the Rebellion and Default commenced on 31 January 2018, communications with our invisible friends from much higher levels than previously allowed will progressively increase with those who open themselves to aspiring to live Feelings First!

Here is a thought! Should those who are immersing themselves in research of historical significance AND are also embracing Living Feelings First, longing for the truth and understanding of what they are feeling, then could they be assisted with access to the museum at Jerusem?


At what point
in Earth's History
did the Climate
NOT "Change"?


The world can live
without politicians.
But the world cannot
live without farmers.

Green Warrior Permaculture



https://www.greenwarriorpermaculture.com/

About Steve Cran

"The only future the human race is a sustainable one. In other futures we don't exist"

Steve Cran is a Permaculture Aid veteran, teacher, social activist, climate change resilience specialist and a very handy guy to have around after a natural disaster. With a 30-year career in Permaculture, Steve has developed effective, sustainable, recovery solutions for communities affected by natural disasters, war, or long-term poverty. (Matt Rissman consults with Steve Cran)

Steve takes on the challenge of assisting people living on the edge of survival, to rebuild their communities. Steve has developed projects in war zones, post disaster zones, poverty zones and in many difficult areas on this troubled planet where most people would not dare go.

“There is a lot written about so called community development but in the field, most of it doesn’t work or it doesn’t last,” says Steve. “Permaculture Aid gets real results by helping the people restore their own community using local resources. They grow their way out of poverty. Conventional aid creates aid-dependency. Permaculture Aid creates self-sufficiency and earth-repair simultaneously”.

Steve focuses on building productive working models and training the trainer from whatever community he’s working with. The best results come from local people training local people to motivate the rest of the community. “The world’s problems grow at an exponential rate so I design projects that solve problems at an exponential rate”.

“Most poverty is brought about when a county, city, or community’s ecosystem is depleted or destroyed. True sustainability can only be achieved with a fully intact, productive ecosystem. Repairing the ecosystem, as well as the people’s lives, has to be the main aim of a sustainable aid project,” says Steve.

Steve’s first Permaculture Aid work began in 1993 in Wilcannia, NSW, a troubled Aboriginal community in the outback drylands of Australia. Written off as a basket case by the press, Wilcannia had the highest crime rate per capita in 1993 in Australia. Bill Mollison the father of Permaculture, and the NSW

government worked together to create the world's first "Permaculture Project Officer", Steve Cran, to train the community to solve its own problems.

Engaging the unemployed people of Wilcannia and with virtually no external funding, Steve helped the people repair their town. The town got a facelift including a Permaculture Park, the schools gained organic garden plots, and the people began to create sustainable livelihoods. Hundreds of small projects added up to the wave of change that transformed Wilcannia. In 1996 the crime rate had dropped 90% due to that permaculture project. Permaculture Aid had proven its worth.

In 1999 Steve went to war-torn, impoverished Timor Leste to train Timorese in how to adapt permaculture to their culture and solve their poverty and environmental degradation problems. The Timorese has lost 75% of their infrastructure to the conflict there and the country was in a desperate shape. Building Permaculture Field Schools and training trainers Steve formed an effective Permaculture training network, which he co-developed with the Timorese over 5 years. This network continues to grow today.

Steve returned home to Maleny, Queensland, Australia in November 2004 for a well-earned rest. A month later the great Asian tsunami wiped out over 200,000 people in several countries. The world's largest recorded disaster couldn't be ignored. Steve's holiday was over.

Steve's field experience was called upon to set up a project in Aceh, Indonesia, the epicenter of the earthquake that triggered the tsunami. Working with a Balinese NGO funded by international expats, Steve's mission was again to bring permaculture education to one of the most difficult places on earth. "This is a tricky project as we have earthquakes every week, possible further tsunamis as well as a protracted guerrilla war in our area, not to mention the poverty that was here before the tsunami. The deck is really stacked against these poor people here", says Steve from Lamsujin, 45 klms Southwest of Banda Ache.

Steve joined IDEP to build the "Greenhand Field School" in Ache, in of the worst affected areas hit by the tsunami. The Greenhand Field School was a training centre to train trainers in sustainable community development best-practice. The Greenhand Field School focused on food security, organic farming, community agro-forestry, appropriate technology, and local solutions for the tsunami survivors. The trainers being trained were mainly Acehnese and the Greenhand Field School was designed so the best trainers run their own facility after 12 months.

In January 2010 Steve was engaged to go to northern Uganda and work with the Karamajong people to restore food security and assist in ending violence and conflict in an area plagued by war and poverty for over 40 years. Aid dependency had robbed the people of the ability to grow their own food and the youth were sucked into a cycle of violence in cattle raiding with the abundant supply of automatic weapons available in East Africa. These youth were known as "the Warriors".

Working with IOM, International Organization of Migration (UN), Steve trained 75 of the Warriors to become "Green Warriors" and return to their communities and introduce self-sufficiency through permaculture. Steve was able to prove that the Karamajong people were more than capable of growing their own food and the "food-aid" was having a negative impact on their culture and health. Many communities that were written off by the government and the UN produced crops and converted barren land into farmland using basic hand tools and non-hybrid seed. The "Green Warriors" of Karamoja provided previously unheard of new role models for the people of Karamoja. The projects effects continue to this day.

Steve has also conducted projects in Ethiopia, Philippines, the USA, Malaysia and Hong Kong. In each country he teaches and in each country he learns. "I'm always the teacher and the student combined," Steve says. "Every culture has its best-practices and I share what I learn with all cultures I work with."

Based in Australia, Steve Cran is now consulting and conducting training throughout Southeast Asia on Permaculture-Aid field skills as well as training the trainer.

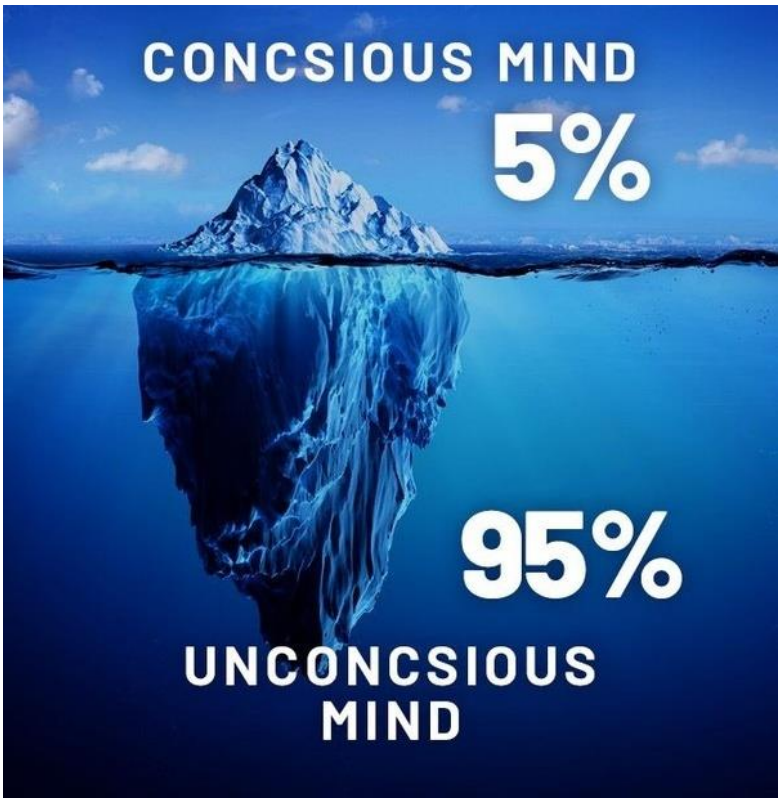
Steve is also working as an advisor to create resilience strategies for communities in the face of climate change. Currently Steve is developing a system to combat the damage from climate events. Climate-Change Adaption Technology or C-CAT, trains people and communities how to build resilience into their homes, farms and communities. Apart from training people, Steve has a creative intellect for solving problems and designing sustainable systems that can handle the challenges of climate change events in our current world. Steve believes he can stimulate that same creativity in people through his training.

Transferring his hard won skills to young people wanting to make a difference in this world, Steve's courses are challenging and instructive. "These are the skills in the field you can't learn from books", says Steve. "Getting your hands in the soil and working in real live situations drives home the training to create the kind of people that can make a real impact in the field of aid". In the world as it is at present we are seeing disasters and climate change events of a magnitude never before seen in recorded history. Every country is going to need Permaculture Aid at this rate"

He adds, "The aid industry is starving for good field technicians and we aim to fill that void. From building a base camp to planting a community food security garden this training will give anybody entering the aid industry a head start."

"My current aim is to train the trainer and work with the youth. Our youth have been weakened by poor nutrition, low quality education and the oversupply of artificial information. Addicted to technology our youth have become useless and weak as well as dim witted. It's not the old people that will save our world. Given the right skills, it will be the youth who regenerate our planet. World governments are failing the youth in regards to education. It's a bad recipe for the future generations. Our hands-on training methods restore the youth's mind, body and soul and gives them a toolbox to fix the world's problems."

What are the potential effects of AI on personal autonomy and decision-making processes?
https://www.quora.com/ 15 June 2023

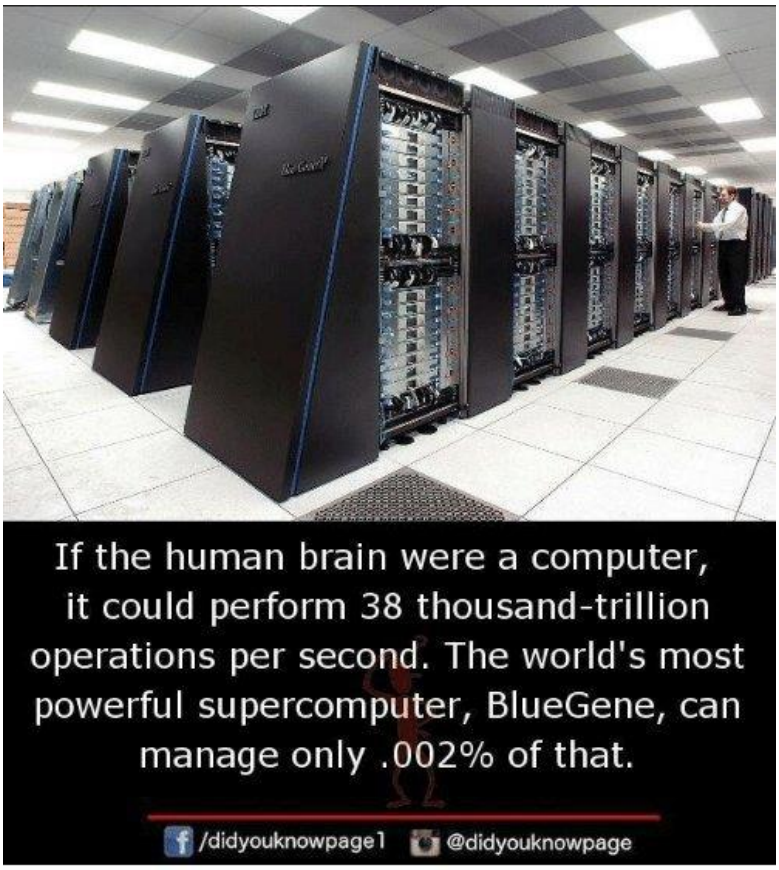


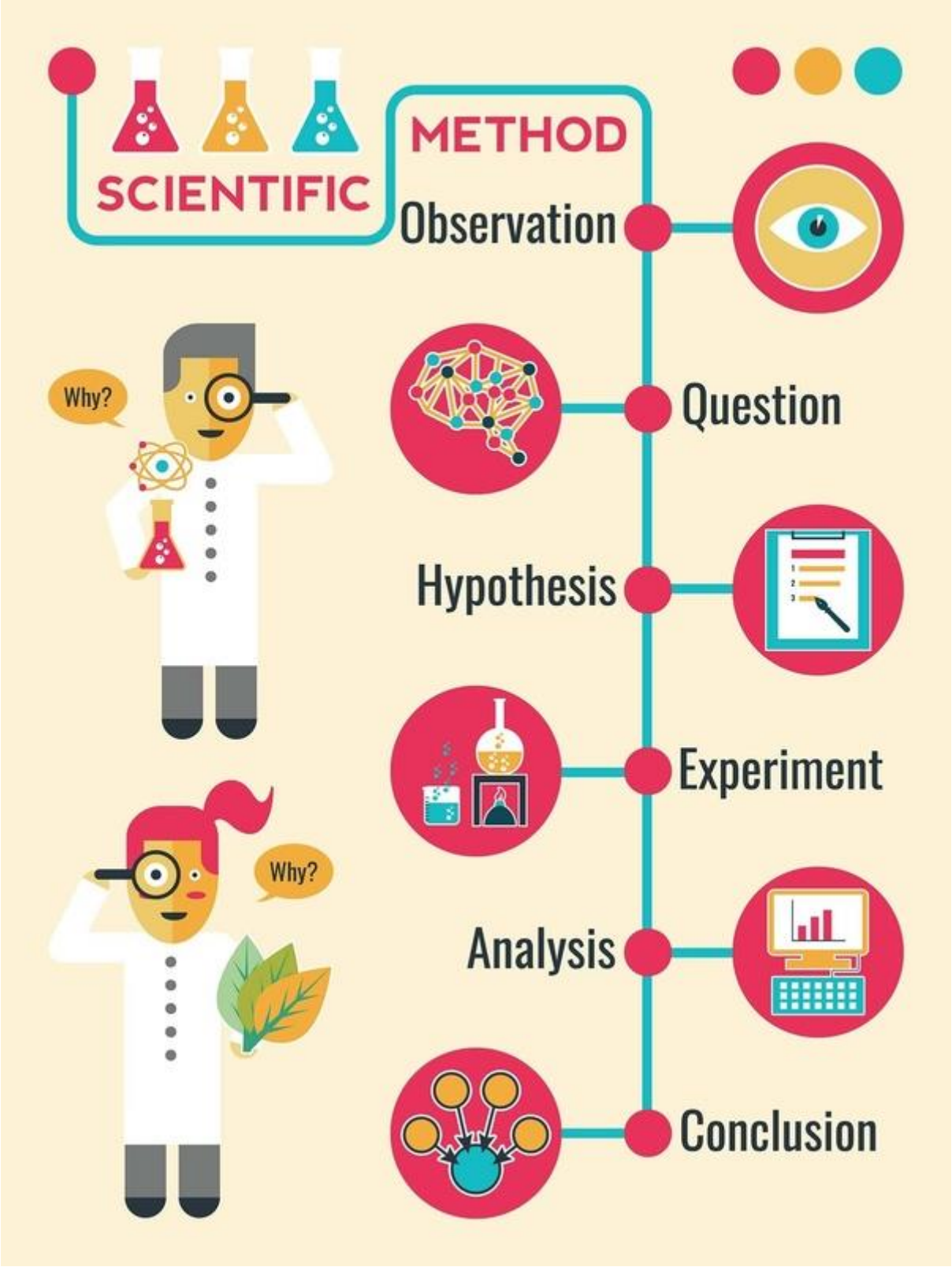
Humanity's capitulation and dependence upon technology is depriving it of its needed life experiences, subjecting itself to being cloned – everyone uniformally being programmed to become the lowest denominator of personality – zombiism and stupefied without intuition and spontaneity! Life is all about experiences and doing. We learn by doing. It is then about expressing our feelings about what we are experiencing AND longing for the truth of what we are feeling! Life is one continuous journey of LEARNING.

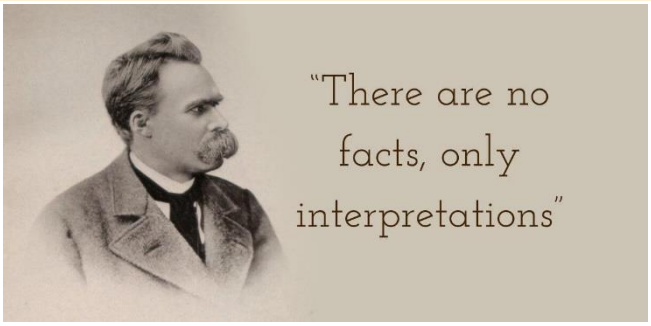
NO artificial intelligence can substitute for our personal involvement and doing.

Simple is what Life is meant to be!

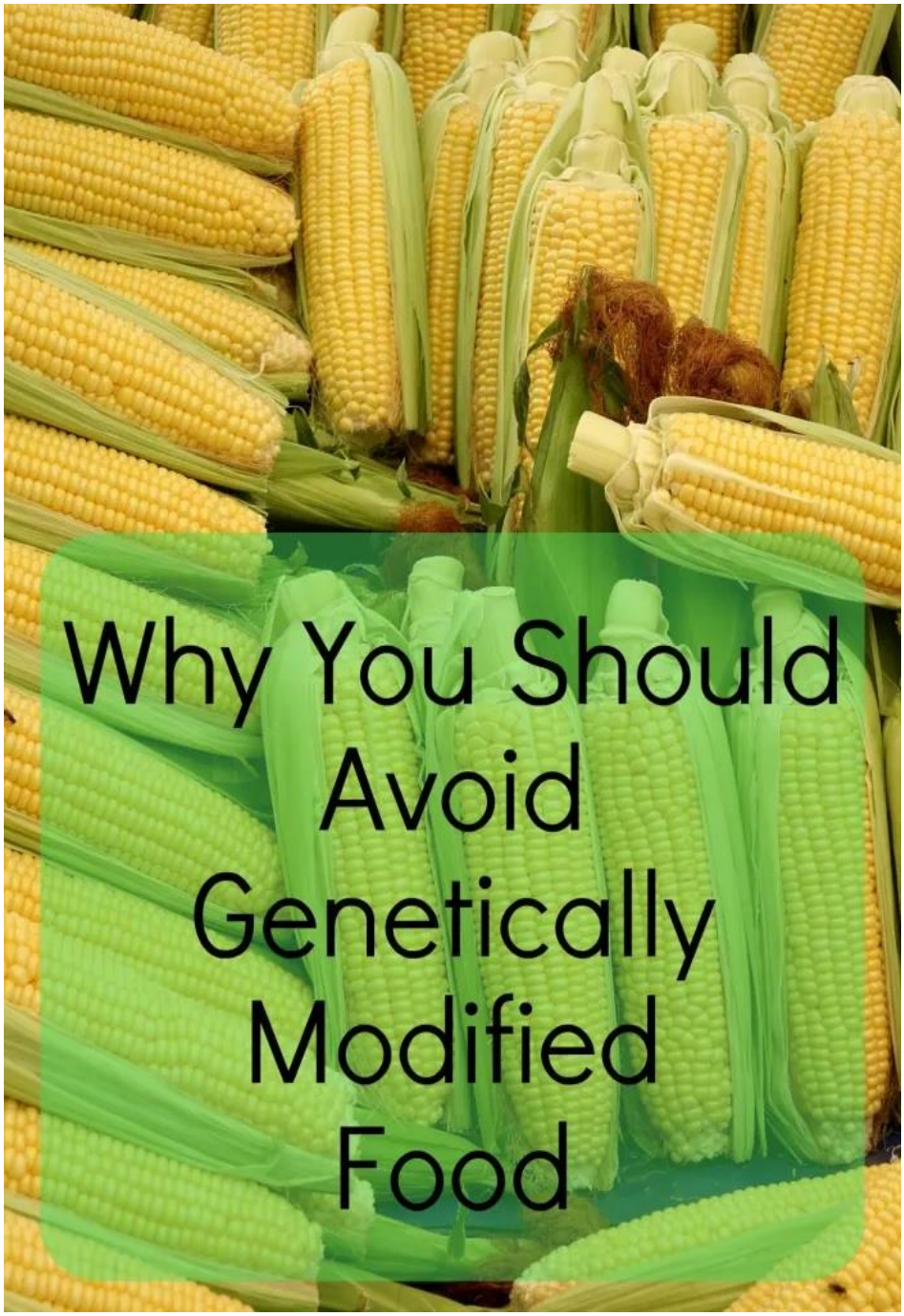
Become engaged and embrace every opportunity.




SCIENTIFIC METHOD
Observation
Question
Hypothesis
Experiment
Analysis
Conclusion
Why?
Why?


"There are no facts, only interpretations"

What are the biggest problems in the world?
https://www.quora.com/
Akash Chakraborty 21 June 2023



Genetically modified crops

It is poison that we are eating, genetically modified food is poison, the most important thing in our life is the food we take and it has become poisoned.

There is less nutrition in them.

Food is most important to us, but we don't give enough importance to our foods.

We are not getting high quality crops.

So our food has less nutrition.

Mass cropping has reduced the quality of mono-crops to that of factory production.

This is a serious global issue, we should focus in this more

Artificial fertilizer for crops is also dangerous

Because of this crops grow fast, but it has less nutrition.

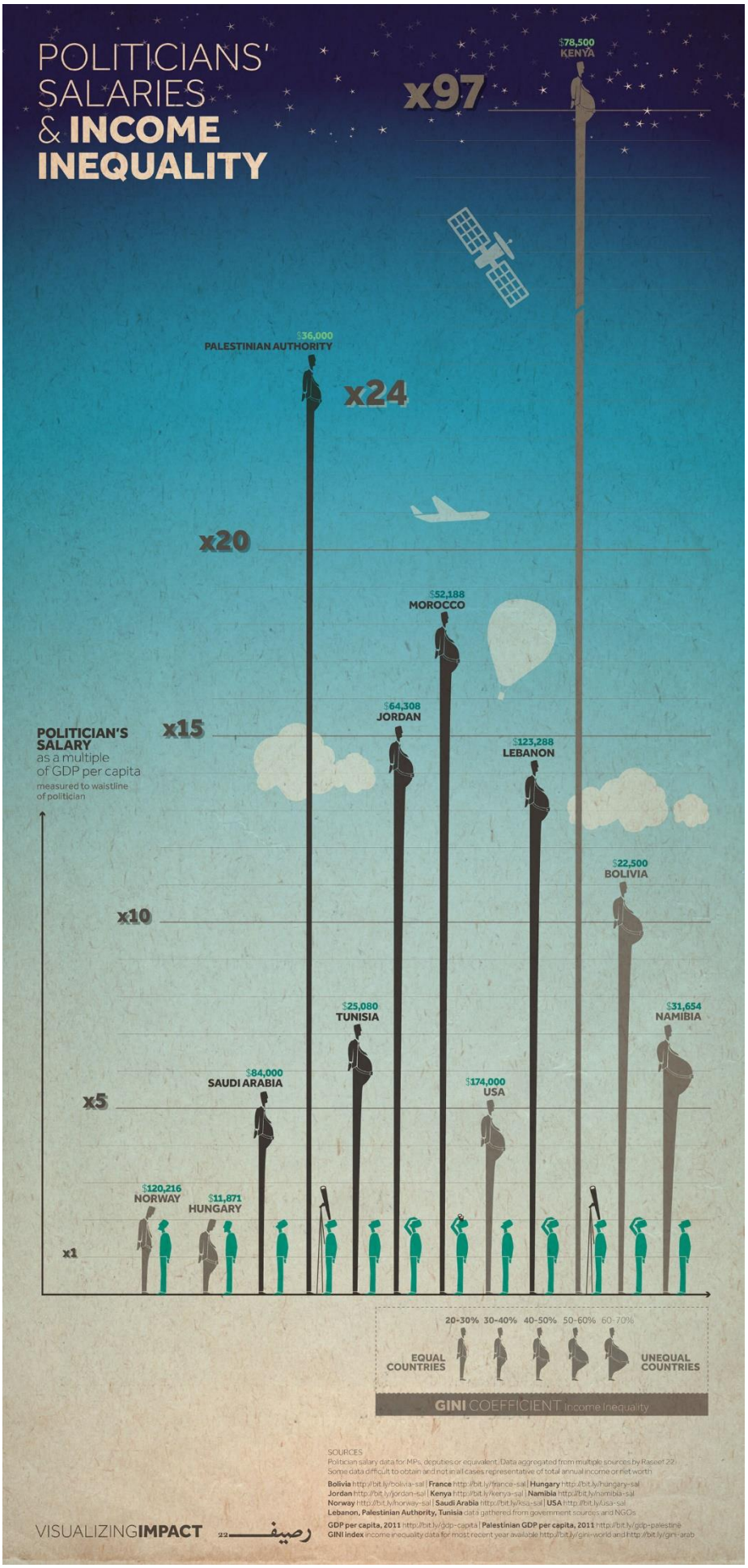
We become what we eat so we become like the crops which are lacking in diversity of nutrition.

Everything has become artificially ‘created’ nowadays, from crops to fruit plants, this is dangerous for us.

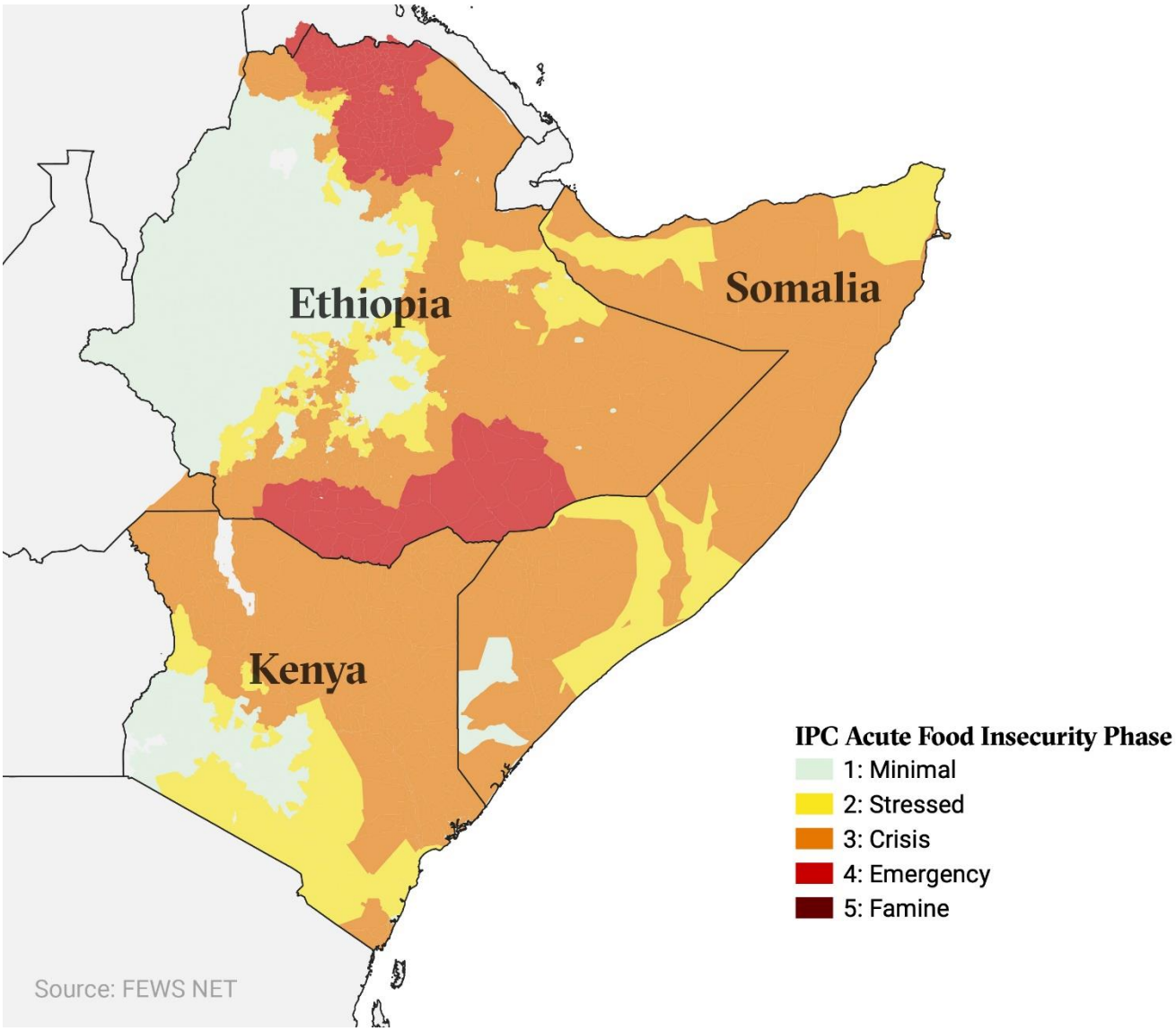
Why is seed being modified and manipulated so that ongoing seeding continues on?

Why is it that those in authority and those with wealth do not collaborate to mitigate hunger and starvation?

Why do children die of starvation – why is this not addressed on a permanent basis?


POLITICIANS' SALARIES & INCOME INEQUALITY
$78,500
KENYA
x97
$36,000
PALESTINIAN AUTHORITY
x24
x20
$52,188
MOROCCO
$64,308
JORDAN
x15
$123,288
LEBANON
POLITICIAN'S SALARY
as a multiple
of GDP per capita
measured to waistline
of politician
$22,500
BOLIVIA
x10
$25,080
TUNISIA
$31,654
NAMIBIA
$84,000
SAUDI ARABIA
$174,000
USA
x5
$120,216
NORWAY
$11,871
HUNGARY
x1
20-30% 30-40% 40-50% 50-60% 60-70%
EQUAL COUNTRIES
UNEQUAL COUNTRIES
GINI COEFFICIENT Income Inequality
SOURCES
Politician salary data for MPs, deputies or equivalent. Data aggregated from multiple sources by Raseef 22
Some data difficult to obtain and not in all cases representative of total annual income or net worth
Bolivia http://bit.ly/bolivia-sal | France http://bit.ly/france-sal | Hungary http://bit.ly/hungary-sal
Jordan http://bit.ly/jordan-sal | Kenya http://bit.ly/kenya-sal | Namibia http://bit.ly/namibia-sal
Norway http://bit.ly/norway-sal | Saudi Arabia http://bit.ly/ksa-sal | USA http://bit.ly/usa-sal
Lebanon, Palestinian Authority, Tunisia data gathered from government sources and NGOs
GDP per capita, 2011 http://bit.ly/gdp-capita | Palestinian GDP per capita, 2011 http://bit.ly/gdp-palestine
GINI index income inequality data for most recent year available http://bit.ly/gini-world and http://bit.ly/gini-arab
VISUALIZINGIMPACT
22 رصيف

MAY WE DELIVER PERMANENT SOLUTIONS PLEASE?



Alarm bells but little action as Horn of Africa faces unprecedented drought
https://www.thenewhumanitarian.org/news-feature/2022/04/13/Horn-Africa-Ethiopia-Kenya-Somalia-drought

'Delay costs lives; an inability to mobilise resources – and respond in time – costs lives.'

Already struggling after three seasons of failed rains, farmers and pastoralists in the Horn of Africa are facing an unprecedented fourth drought – a catastrophe that will tip more than 20 million people into extreme hunger and, for some, possibly starvation.

Parallels are now being drawn with 2011, when famine killed 260,000 people as aid agencies struggled to reach all those in need.

Somalis who have lost everything to the drought often end up in one of thousands of makeshift settlements like this one in Luglow, outside the southern town of Kismayo.

“We need to build more durable solutions, to build capacity and institutions, or we are just scratching the surface,” Melaku Yirga, Mercy Corps’ director for Ethiopia, told The New Humanitarian.

“At the moment, we oscillate between drought and ‘normal’ responses; but we need to recognise that drought is actually the new normal.”

THE
Food Park Project

World's First Vertical Rotating Growing System (RGS)

https://www.abhydroponics.com.au/index.html

The Benefits

The RGS rotates as and when required, with watering regulated by a small motor. It is suitable for growing general vegetables, such as iceberg lettuce, fancy lettuce, strawberries, herbs, tomatoes & fodder for animals to name a few. The RGS is supported with either 8, 16, 18, 20 or more galvanised troughs, depending on the type of crop being grown. For further information concerning the fodder RGS, please refer to the "Fodder page" above.

Typically, to produce approximately 17,100 kilos of strawberries requires a land area (traditional grower in hydroponics) of approximately 3000 m2, compared to the RGS where only 320 m2 is required.

You can save 90% in land costs, with further savings carried through onto site preparation, concrete flooring, greenhouse, connection of electricity & water to site.

There are many advantages of the RGS, they include;

- Greater yield return per square meter.
- Smaller land area required producing the same volume of crop.
- Smaller greenhouse, therefore saving on outer & inner material needed to complete the greenhouse.
- Better Management of crops
- Saving on running costs (e.g. heating, cooling, electricity) &
- Ease of access to individual plants

Fancy Lettuce

Strawberry Plants

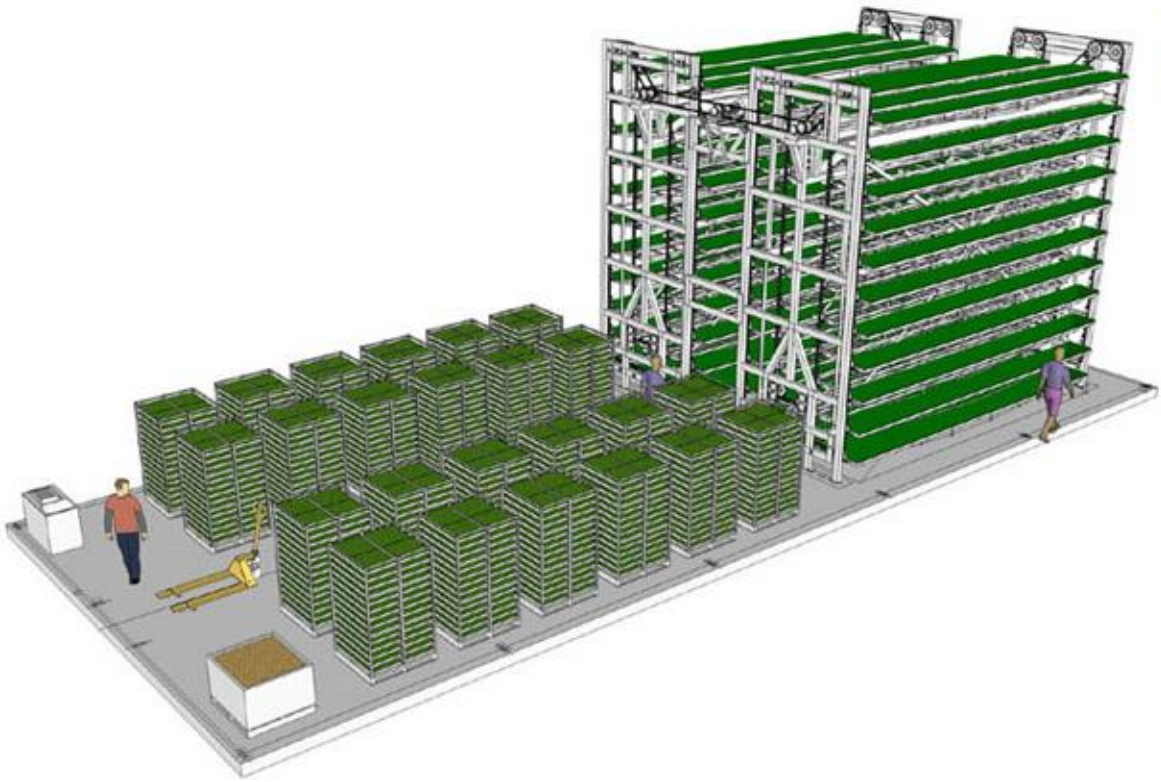
Tomatoes

Fruit & Vegetables	Traditional Growers Average kilograms per m2	Rotating Growing System Hydroponics - average m2 *	Percentage Increase	Increases in kilograms per m2
Strawberries	5 - 8 kg m2	54 kg m2	800%	48 kg
Iceberg Lettuce	72 kg m2	386 kg m2	436%	364 kg
Tomatoes	45 kg m2	168 kg m2	273%	123 kg

*figures will vary on size of greenhouse

Rotating Fodder Machine (RGS)

Patent Number AU02/00097



The **world's first fodder** rotating, high yield producing, hydroponic system has been developed and trialled with outstanding success by A&B Hydroponics International. In a fully environmentally controlled greenhouse of approximately 90 m^2, the environmentally controlled unit provides the correct temperature, humidity and air ozone within the greenhouse. The greenhouse is also covered by 75mm-125mm thick cool-room building material, which provides excellent temperature control. The Rotating Fodder Machine enables growers to produce fresh fodder of around 700,000 kilos per annum equivalent to 50 acres (200,000 square metres of grass pasture). This is approximately 2,000 kilos per day of high quality stock feed in both protein & calcium.

The Rotating Fodder Machine has extensive market potential worldwide - particularly where climate conditions restrict farming; where soil is eroded/depleted/saline & where farming land is scarce/expensive.

The Rotating Fodder Machine unit comprises of 2 sections, approx 6m high. The fodder greenroom is approx 8m high. The fodder greenroom will come complete with a fully environmentally controlled unit providing the desired climate, humidity & ozone throughout the year, eliminating problems that have been caused by the use of evaporative coolers, such as bacteria & mould. Benefits of the Rotating Fodder Machine:

1. Fodder Unit: producing fodder all year round in a small humidity & environmentally controlled fodder greenroom of 90m2.
2. The unit can be set up to be pesticide free.
3. Production output each day is between 1800 - 2000 kilos & is consistent all year round.
4. The fodder greenroom of approx 90m2 produces around 700,000 kg fresh fodder per year, which is equivalent to 50 acres of grass field.(200,000sq m)
5. Fodder is dust free, which reduces risk & prevents respiratory diseases in animals.
6. Fodder is high in energy protein, vitamins and calcium.
7. Fodder has high moisture content which helps prevent colic.
8. Research has found that cows fed on fodder show a higher quality & volume in their milk yield & body weight.
9. Very cost efficient & environmentally friendly, nutrients used are natural & the water can be recycled. The system is very easy to operate.
10. The fodder is sprayed from above with a very fine mist of water with nutrients directly over the plant with no wastage of precious water.
11. Cattle not only eat the barley leaves but the entire root system, providing fibre & protein. No medium of any sort is needed.
12. Green fodder is a supplement to the diet, but in times of drought it becomes the main source of food. The system teaches farmers to better manage their livestock feed & to have feed available all year round, in particular, in drought times.
13. Versatility of this unit is that the system can easily be converted to growing other vegetable crops such as mushrooms, herbs and witloff.



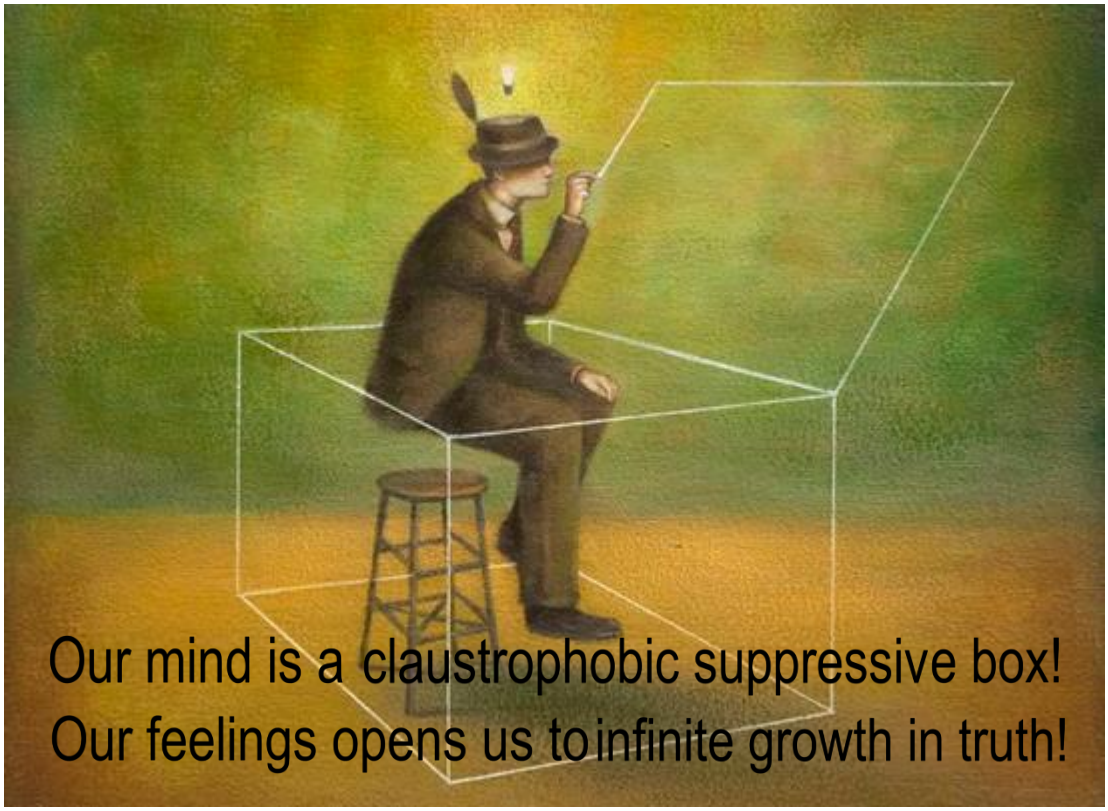
Plant analysis report carried out by the Environment Analysis Laboratory at the University of Lismore, NSW.

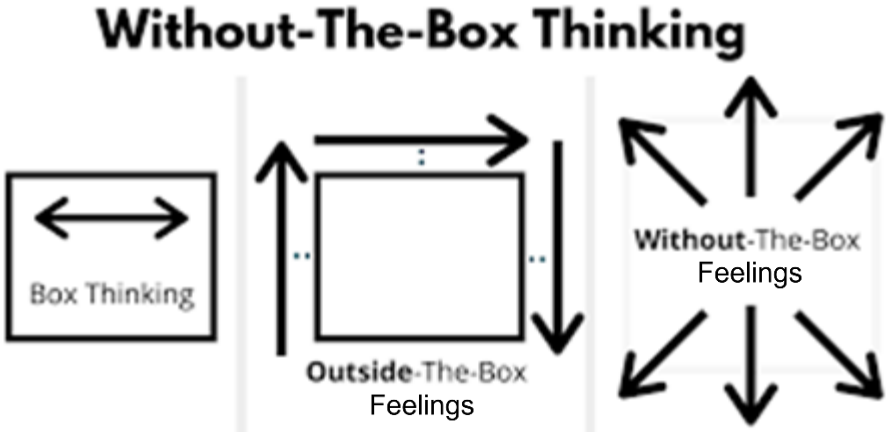
All analysis is dry weight.

Moisture content	89%	Nitrogen	4.6%
Calcium	0.167%	**Protein**	29.87%
Magnesium	0.246%	Sodium	0.117%
Potassium	2.22%	Phosphorus	0.91%
Manganese	53mg/kg	Copper	28mg/kg
Zinc	56mg/kg	Iron	235mg/kg

Day 3 Day 4 Day 6 Day 7 High Quality Fodder

Fodder is a high quality supplement for livestock diet. The above pictures show fodder at different stages of growth.





ATMOSPHERIC CO^2 needs to TREBLE for WORLDWIDE FOOD SECURITY!

What is the best CO^2 level for a greenhouse?

For most crops the saturation point will be reached at about 1,000–1,300 ppm under ideal circumstances. A lower level (800–1,000 ppm) is recommended for raising seedlings (tomatoes, cucumbers and peppers) as well as for lettuce production.

Keeping CO^2 levels around 1,200-1,500 PPM is ideal, but with higher CO^2 levels in the environment, you'll want to keep your temperatures higher.

Grow room and indoor greenhouse growers online agree that for optimum plant growth, you should enrich the air around the plants with carbon dioxide (CO^2) during the daylight growth cycle. Photosynthesis (plant growth) requires light, nutrients, water and CO^2.

If you give your plants the perfect amount of light, water, and nutrients, the limiting factor in their growth will be the amount of CO^2 in the air.

While normal outdoor CO^2 levels (about 400ppm) will achieve normal plant growth, doubling or tripling the CO^2 levels can increase the growth rate. However, above 2,000ppm CO^2 becomes toxic to plants, and above 5,000ppm CO^2 becomes potentially harmful to people. Most experts agree that 1,500 ppm is the maximum CO^2 level for maximum plant growth, although any CO^2 level between 1,000ppm and 1,500ppm will produce greatly improved results.

How to add CO^2 to your Grow Room

In order to properly implement CO^2 to your grow room and enhance yield, you can use any of the three sources below:

- CO^2 Burners
- CO^2 Tank and Regulator Kits
- Natural methods such as CO^2 bags, tents

While most indoor growers will let you know that CO^2 burners are often most beneficial for grow spaces, CO^2 tanks for larger grow spaces, and CO^2 bags for cutting costs. Overall, it all varies greatly and is dependent upon the size of your grow space, your budget, and overall tent vs. room setup – which will determine which source of carbon dioxide is right for you.

Depending on the quality of your CO^2 enrichment system, your plants can increase their growth by 25 - 40%. Other benefits include, increased number of flowering and budding sites, increased stress resilience, improved nitrogen fixation and increased water efficiency.

CO^2 bags contain a mix of natural ingredients, such as fungi, organic matter, or microorganisms, which release CO^2 into a space.

A CO^2 burner or generator is used by burning natural gas, butane, or propane to introduce CO^2 to the atmosphere. (So we are to burn fossil fuels to increase atmospheric CO^2 levels to bring about higher crop yields and food security!)

GREEN WARRIOR PERMACULTURE
https://www.greenwarriorpermaculture.com/#gallery_1-8

Permaculture skills introduced to a community are to deliver food security plus ongoing livelihood through:

Team Home Food Garden – native food garden
Team Chicken Farm – elevated chicken house for 30 hens and 2 roosters
Team Pig Farm
Team Goat System
Sweat Fertiliser Factory – composting
Community composting fertiliser
Roofed areas all drain drinking water into underground 10,000 litre water tanks to keep cool
Community music band
Fences are built for vines – living fences
Housing from local materials.

Get effective – vibrant sustainability in five layers:

1. Home and Garden: Vegetables, herbs, flowers are in the garden to sustain family.

2. Village Development: Water and sanitation – composting toilet, underground water tanks for cool drinking water, schools with plant nursery with trees having a purpose – children to take home 100 trees each year. Plant nursery in the village. Animal management – collect the droppings for fertiliser with community composting centre.

3. Innovative Farming: Organics being for permaculture to feed the family, then the village, district and then for export. Do it better than before with new products. Avoid terminator genes.

4. Community Cooperative: Have a five year plan, then ten years and then 20 years – such as forestry. Develop a long term strategy, involve the children, it will be the kids that drive and protect the plan with the adults complying. This is transferring poverty to prosperity (growing bamboo to make furniture is a five year agenda). Repairing the economy is repairing the health of the people in the community.

5. Eco-Environment Zones: These are the zones around the home / village that are untouchable. These pockets become genetic banks of nature. They may have nature walks and be tourism attractive.

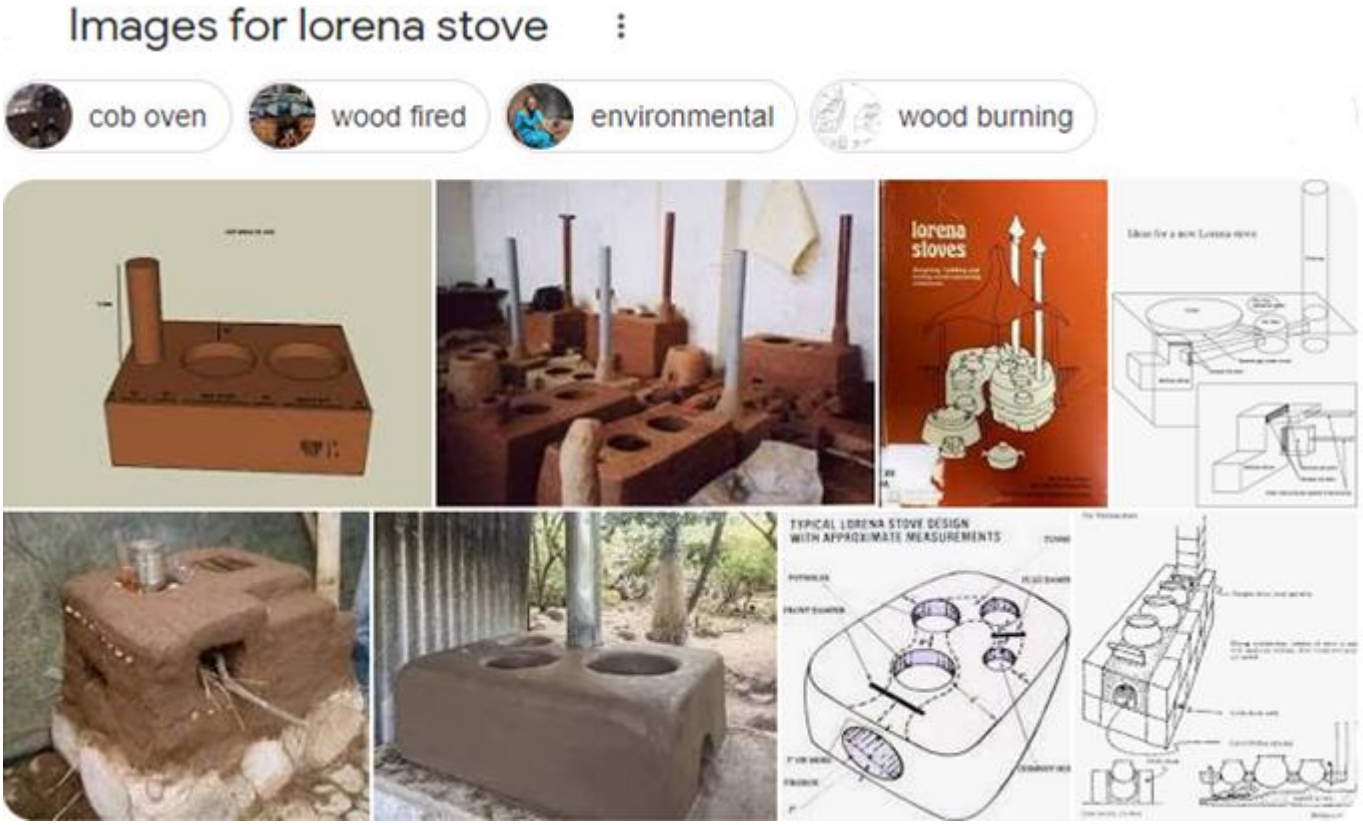
This concept is universally viable and is also repairing the environment. War and conflict leads everyone to becoming impoverished. Kids lead – adults follow. Such a concept may take around two years to have a community plan and its objectives embraced.

This is sustainability whereas traditional aid is aid to the organisation. Sustainability versus a façade and temporary support which is harmful as it disappears.

Green Warriors in Ethiopia 2011

https://www.greenwarriorpermaculture.com/blog/ethiopia-not-utopia

Alex and I (Steve Cran) take a drive up into the mountains to scope out several school projects for our trainee-trainers to try out their new skills on. On the road I see so many women carrying huge loads of sticks up the steep slopes to their villages. Some of them have travelled 10 kilometres bent under a heavy load. They are sweating and grunting as they make the last few kilometres home. I make a note to myself to create a section in my manual about relieving the burden of women in developing countries. All the carrying jobs are done by women in Konso (**Konso** (also known as Karati) is a town on the Sagan River in south-western Ethiopia). Water, firewood, animal feed and goods to market, the women work like pack mules. Planting a woodlot of coppicing trees close to each village would save so much effort and time. Building **Lorena stoves** would cut the consumption of wood right back. People are poor when they have no time for gardening, just gathering their daily survival needs. I get angry when I see so many poverty alleviation projects never cover the basics like firewood, water or home gardens.



As soon as we leave town I see the terracing. Konso has terracing as far as the eye can see on just about every kind of slope. WOW! Closer up I see the terraces and made from stacked stones. The sheer volume of terraces is staggering. I calculate the types of community forestry these guys could do. Terracing is always the hardest part of forestry and these people are the terrace champions. Instead of clever forestry on their terraces, they have inter-planted eucalyptus, and juniper trees with their corn, sorghum, and teff (a local grain). These trees are totally incompatible with food crops as they rob the soil of nutrients and give little in return. The crops around these trees are scrawny. What if these people had access to trees that gave valuable products like oil, fruit, nuts, medicine… My mind's eye sees a vast commercial resource forest and lots of wealthy villages.

Many concrete cisterns are dotted along the mountainside, all broken and empty. Somebody spent a lot of money and effort on a poor design, *idiots!* I'm told a project called Farm Africa were responsible. What a waste and somewhere somebody has recorded that these people now have access to water!

We pull in to a school made of sticks and mud. I spot several school gardens that Zimbabwean permaculture trainer Tichafa has built with the kids in the year before. Maize, sweet potato, banana, paw paw and lots of vegetables grow around the drip line of the primitive buildings. Great!

We make our way into the mountain village. People are sitting around talking, playing with the children, sweeping out their huts and living a simple life the same as their ancestors have done since the dawn of time. Everywhere are permanent stone terraces making the village appear landscaped by professionals. We are here to purchase some pots to use in a dryland garden irrigation system. A woman opens a thatched grain store and pulls out several fired clay pots. I see small specks of gold in the clay making the pots sparkle. Nice! The women crowd around Alex and I as he haggles the price. While he is doing that, several women are playing with the blonde hair on my arm. I don't know what they are saying as they chatter away but it is probably something like "he is hairy like a monkey". This is also a recurring theme with children. The women's skin is matt black with no visible hair. I may as well be from another planet.

We check out 2 other sites. Each school is shabby and has only 6 squat pit toilets for 1,500 – 3,000 kids. Somebody has built a tank but the guttering has failed miserably. Another crap-aid project. Do the donors know their money was wasted? I make it our mission to build an in-ground cistern here made from earth bags. This type of water storage is cheap and can be built by village people. This cistern will catch all the roof run-off at ground level, eliminating the need for guttering. Most guttering here is homemade and doesn't last because the rains are so heavy in the wet season. This cistern will service the schools vegetable garden.

The PAC (Permaculture Aid Course) part of the training comes to a close. The trainee trainers are ready for their first permaculture aid project. Alex and his crew ferry tools, cement and empty sacks up to our first school site. When we arrive, a crowd of willing villagers are waiting for us. Some of them have brought along their own traditional tools. I check out the tools with interest. One of them, I call the sabre-tooth mattock, uses 2 metal tipped digging sticks roped onto a elbow shaped wooden handle. I laugh when I pick it up feel its odd shape in my hand. A local grabs it off me and starts hoeing into the ground where the cistern is going. I join him using a steel digging bar we welded up at the blacksmith in Arber Minch. The primitive tool puts my efforts to shame. The soil is a hard bluish, rock-like clay. The sabre-tooth mattock eats the ground while I'm only chipping away small amounts of ground. I'm impressed! This tool is what they must use digging the terraces…

Everybody, trainees, students, myself and some volunteers visiting Strawberry Fields hook into the digging. Earth bags are filled as we dig and stored around the edge of the hole. It takes 2 half days before the 6,000-litre cistern is ready for laying the earth bags. We have to dig the tank 4 metres wide so we can put a roof on it for the children's safety at the school. We also have limited time because we are on a course. After lining the hole with stacked earth bags, beaten and compressed as we go, it's time to render the walls with cement. In the hole, several people coat the bags with thick cement while the women mix several loads of concrete simultaneously by hand.

Days later, the tank is finished and we lop some limbs of eucalyptus trees to make a log frame to support the cisterns roof. I'm about to use a machete and a hammer to notch to ends of the logs so they hold together better. A local villager gently pushes me out of the way and starts using another primitive wonder-tool. It's like an adze with a bent wood handle. I call it a "chippy-choppy", as the local name for it is unpronounceable to me. The chippy-choppy makes short work of the notches and wood chips fly at the dude cuts perfect square notches. Again the primitive local tool wins the day. The local axe also

makes an appearance and fells the tree limbs in no time. It's a sharpened wedge of steel sunk into a limp like a cave-man's club. I gain a whole new respect for their Konso engineered local tools.

The last few days are spent with the new trainers training a team of local primary school teachers. I film each trainer and show the film back to them later so they can evaluate themselves. The classroom training is slow because we use a not so good translator. I'm sure much of the translation was inaccurate but we soldier on. I'm stoked by the quality of my trainers. At the end of the course I get the trainers to promise to network with each other for a series of future projects in Africa. In a year we will have field schools in Uganda, Kenya and Ethiopia with a possible two more in Malawi and Zimbabwe. I don't know where the funds will come from but where there's a will there's a way.

Permaculture here is the best, proven solution if we can get it into the schools. The children of Africa are the future gardeners and foresters if we can educate them. What have the UN and the International NGO's done for Africa? Where's the self-sufficiency and sustainability for all those billions spent? Why is the potential of Africa squandered for aid-dependency? The endless poverty spread across Africa is a massive multi-billion dollar industry. It's time for a change of strategy or more people will die, more soil will be lost and many more billions thrown away.

There are two paths in the future for Ethiopia, one leads to destruction and the other to a sustainable paradise. The whole of Africa needs permaculture! What a huge task…educating Africa… Who's going to tackle that job?

I'm having a go and there's now more shoulders added to the wheel. Big things grow from little things – as the song goes. It starts with a few Green Warriors…

Permaculture is the toolbox we can solve the world's problems with!

PASCAPERS

Permaculture Climate-Change Adaption Technology Specialist

https://www.greenwarriorpermaculture.com/

Many people worry about what climate change is and what can we do to mitigate the effects or survive the big events.

At present we live in the "Age of Deception" where we are overloaded with artificial knowledge or simply too much data. Since the birth of the internet we have access to more data than we could possibly digest in many lifetimes just on our cell phones alone. This gives people the false reasoning that they are more informed and are somehow smarter. I can see the opposite occurring. This information overload has tariffed our ability to reason. As a race we are being systematically dumbed-down and kept in a state of fear to keep us under control.

As we move into the "Age of Awakening" people are raising their consciousness and using their intuition to discern truth from fiction and take instruction from their higher self rather than the narrative pushed through social media. Our minds are breaking out of the 3-D world construct into new dimensional awareness.

My personal belief is that Climate Change is actually Earth changes due to our planet having a significant portion of her ecosystems damaged and polluted. The Earth, like us, has an immune system and currently there is an immune response in progress. Many places on our planet are changing due to the flow on effect of our planet moving weather systems, tides and materials around to compensate for the damage inflicted by human activity.

Kindly visit www.pascashealth.com, Library Download, scroll a long way to Corporate Foundation Documents, click on to open:

- AUSTRALIA TSUNAMI during POLE SHIFT.pdf
- Pascas WorldCare Earth Changes Environmental Changes.pdf

Simply put we can create a drought by killing the trees. We can also modify a desert's weather system by planting many thousands of trees. Nature will respond either way to our efforts. If you are experiencing floods, look upstream and see if your local catchment is forested. Forests hold water and a deforested catchment leads to flooding downstream. This is all common-sense stuff but of course common-sense is no longer common it seems.

We can mitigate and adapt to climate change activities. We can also be trained on how to respond to events before and after they happen. If you have no self-sufficiency skills and you obtain all your food from a shopping centre, then most likely you will suffer again and again from any climate event. You may even perish.

If you know what to do and how to read the situation then you will not only survive but thrive in the process. As the Earth changes there are new opportunities for those who can read the signs. Climate change will bring about new ways of designing our houses, communities and food systems. Climate change will wean us off the current brown technology that chews up the Earth's resources and leaves us with a bleak future. In its place we will have new green technology and a culture of repairing the ecosystems and preserving the natural environment our planet has given us.

I am now focusing my permaculture activities into helping people adapt to climate events and prepare themselves and their communities for what may come. An important part of this training is raising our consciousness so we can see through the deception and awaken. We always knew that at some point our destructive activities towards our planet would bring repercussions. We have certainly reached that point.

The CCATS course or Climate Change Adaption Specialist course is the first permaculture training on how to adapt and mitigate climate events. It is a 14-day live-in course, run on our eco-farm sites in Australia and the Philippines. Don't be afraid, be prepared instead. Watch for the next course near you.

PASCAS leadership encourages all to embrace and follow their passions. Parties are to follow and embrace their self-expression and innate truth which is always welcome and our innate guidance. Parties are to be supported through good and bad experiences – we all learn. Leadership is to rally around and assist events that have difficulties by bringing about solutions. Team structures are not individualisation of silos, but opportunities for many to meaningfully gain experiences on a broader scale, we are not to impose our will upon others but to assist self-expression and discovery by all; life is about experience and true self-expression.

Permaculture trainer of the trainer

The training of the trainer is one the most important issues in Permaculture right now because the world is in dire need of effective Permaculture trainers. Steve Cran offers a 2-year mentorship program starting with a 10-week hands-on internship. Steve will work closely with an intern to train him/her in all aspects of practical permaculture. A teacher has to know permaculture before they can teach it. From there the trainee will be farmed out to various projects as a novice trainer to gain experience from experienced permaculture teachers and practitioners and co-teach on Permaculture workshops and courses.

The students will also be given a 2-week "Train the Trainer" module on teaching styles and techniques. After 2 years the cadet teacher is qualified to co-teach for a further 2 years. After 2 years of co-teaching the teacher can now open their own Permaculture Field School and branch out on their own or join a guild of trainers.

To become a Climate Change Adaption Technology Specialist (CCATS) we run firstly a 2-week liv-in course and for those who want to enter this field professionally we offer a 2 year apprenticeship. The first 10 weeks of this diploma course are spent as a field apprentice on one of our sites. Once the student has successfully completed the 10 week field section they then travel to one of our many field school sites and develop projects to test their skills. Some of these sites are actual farms or ongoing aid projects. Steve believes that for those to teach permaculture the teacher must know how to do permaculture and not just memorise data from a book.

The 10-week CCATS apprenticeship is also available as a standalone course for those who may already have experience or want to get stuck into climate projects without a full diploma. We can also adapt our course to people with specialist skills or accrued experience in the field.

These courses will be run through our new facilities at the CAP (Centre of Advanced Permaculture). For course details email me (Steve Cran) at green.warriorsteve@gmail.com

Permaculture teacher

Steve Cran is a permaculture teacher who has developed a 50% hands-on training system. Students trained by Steve learn by doing. Steve developed this system after observing many students of Permaculture Design Certificate courses went home with a lot of data but still didn't know how to begin implementing actual permaculture systems. Steve's Green Warrior Permaculture students return home with all the skills needed and get real results in the field with this type of training.

Green Warrior Permaculture training especially is suited to today's youth that are overloaded with Internet information and people who need to get their hands into the earth to learn. Students are always amazed at what they achieve in the field on Steve's courses. Steve conducts Permaculture Design Certificate Courses (PDC) several times a year plus Steve runs Permaculture Aid Certificate courses once a year. Steve also trains in-house interns and apprentices as well as youth groups where ever he operates from.

Permaculture Aid Specialist

Steve Cran has pioneered the "5 Rings / Layers of Sustainability" as a step-by-step strategy used in rebuilding a community after a war, natural disaster, or a community completely overwhelmed by poverty. Steve can create a plan to rebuild the community's eco-systems, food security, and economy where the

people “grow their way out of poverty”. The aim is to make the community resilient and self-sufficient, not aid-dependant.

With today’s climate change events happening in almost every region of the planet it seems inevitable Permaculture Aid will be needed in every community one day soon. Climate Change Resilience can be obtained before a disaster. Most communities are slow to grasp what’s really needed to adapt to the challenges facing them in today’s climate. Steve offers strategic planning and education before a disaster. Unfortunately at present he does most of his training after a disaster because the majority of people don’t want to change unless they are faced with a huge crisis.

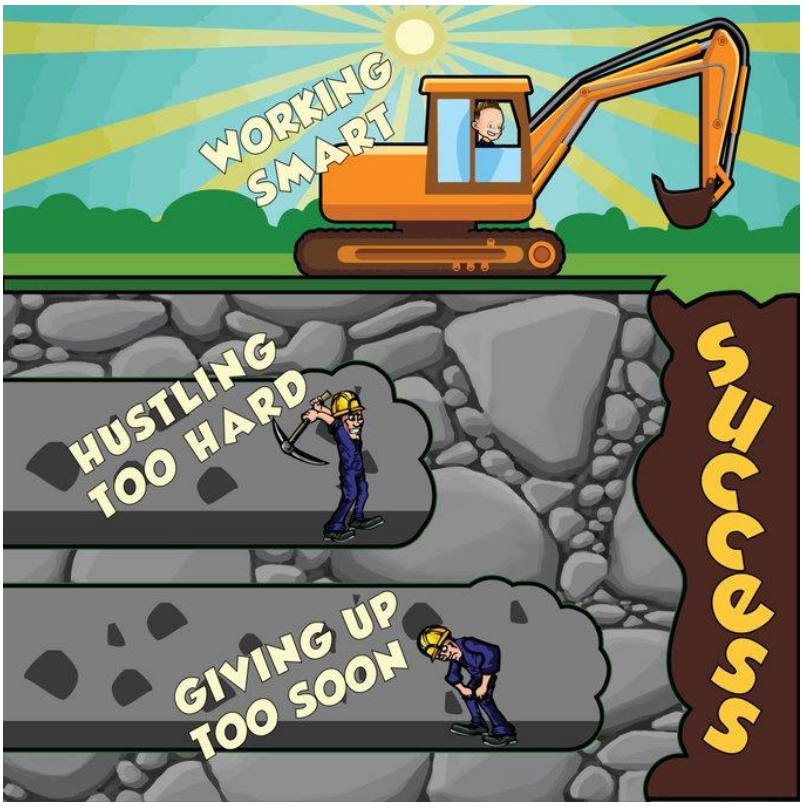
Project Design and Project Evaluation

Many governments, organisations or charities want to create aid projects or social activist programs to help communities adapt to climate change events or recover from poverty or some natural disaster. Steve Cran can help design an effective project that will get solid results in the field and also be cost effective. With 27 years field experience Steve has learned the best-practice ways to design and implement these types of projects.

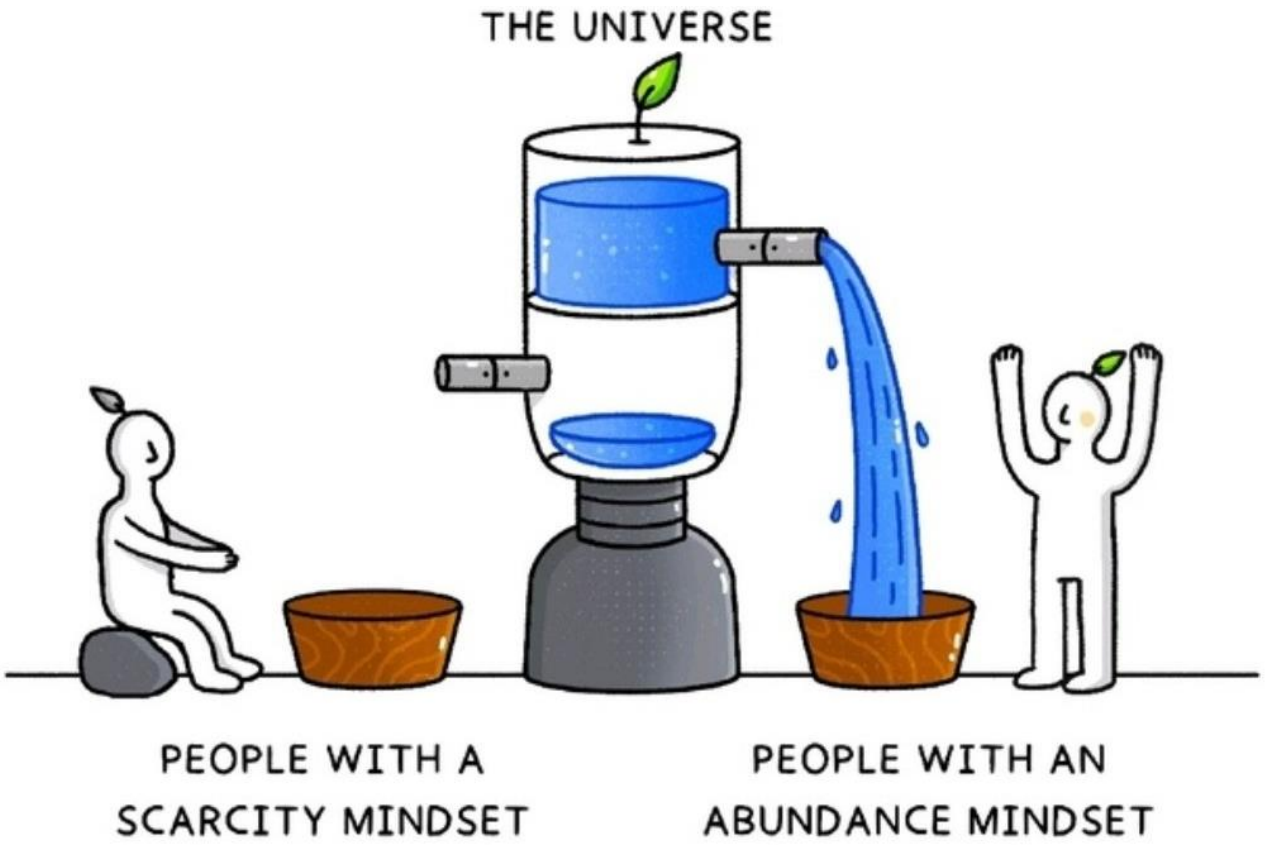
Steve can also evaluate existing projects for those organisations or groups who want an honest professional appraisal of how their project is performing in reality. This is important where one group is channelling money and resources into a remote location and needs to know the real story on what’s happening in the field. Steve can also help design a strategy where a program or project is failing or has fallen short of its intended outcomes.

Permaculture Designer

Permaculture design can solve most of the world's problems. From retrofitting urban waste areas to replanting denuded land into productive forests, a good plan with a design can get real results that are seemingly impossible. Steve Cran has designed large-scale organic polyculture farms and forestry systems in many countries. Some designs are to repair damaged ecosystems and some designs are to socialise the idea that humans should become partners with Mother Nature. Steve has an intuitive creative ability to come up with an effective strategy for almost any situation. The most important factor in Permaculture design is the people. Without people a design is worthless. Steve's initiatives blend people and their permaculture designs into a symbiotic harmony.



For the success, one is best to plan for it, re-analyse the plan, review progress, implement innovations, evaluate developments and look for proactive measures / always evolving plan 'B' and proceed till the goal is achieved.



EDUCATION CANNOT WAIT

EDUCATION CANNOT WAIT

EDUCATION CANNOT WAIT

however

Technology dependent societies collapse!


PCAS
CRITIC
TALKER
DOER
PASCAS

The Permaculture Research Institute

https://www.permaculturenews.org › what-is-permaculture

Permaculture (the word, coined by Bill Mollison, is a portmanteau of permanent agriculture and permanent culture) is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability and resilience of natural ecosystems.

What do you mean by permaculture?

Permaculture can be understood as the growth of agricultural ecosystems in a self-sufficient and sustainable way. This form of agriculture draws inspiration from nature to develop synergetic farming systems based on crop diversity, resilience, natural productivity and sustainability.

Definition of Permaculture

Permaculture can be understood as the growth of agricultural **ecosystems** in a self-sufficient and sustainable way.

This form of agriculture draws inspiration from nature to develop synergetic farming systems based on crop diversity, **resilience**, natural productivity and **sustainability**. Still, since the early 1980s, the pre-conceived idea of permaculture extended to a systemic approach that goes far beyond the agricultural domain.

Nowadays synonymous with *permanent culture* in its broadest sense, permaculture is a global ethic method for designing integrated systems based on the idea of **sustainable development**.

Therefore, human activities must consider natural ecosystems and operate in harmony with them.

Permacultural Design: The Principles and Techniques of Permaculture

Based on the precise observation of how ecosystems work (particularly in terms of productivity and efficiency), permaculture draws on non-fixed modes of design that are adaptable to the fields of application. The result is a method of universal principles known as “permacultural design”.
The permacultural design (the word *design* here includes the notions of project and process of realisation) is set up from **three founding ethical requirements**:

- Preservation of the environment and **biodiversity**;
- Willingness to build a community for individual and collective well-being;
- Sharing of resources and equitable redistribution of excesses (for the benefit of humans and the environment).

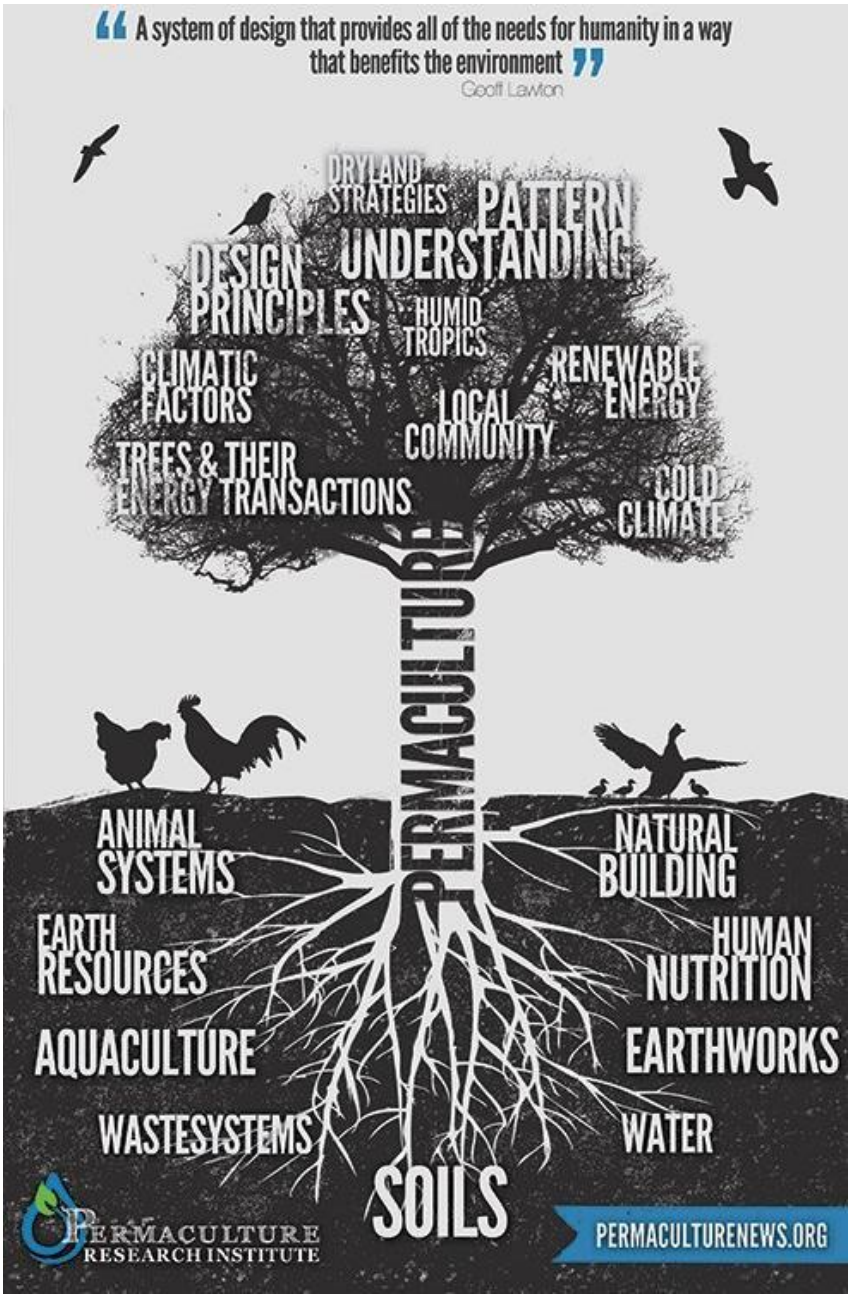
The method itself is based on:

- An overall understanding of issues and systems;
- The analysis of the connection modes between the elements of a system;
- The application, to deficient systems, of solutions derived from operational and proven systems;
- The analysis of natural ecosystems to correct errors in the implantation of human activity and planning for optimal integration;
- The inclusion of people new to permaculture in the process.

Permacultural design implements many solutions inspired by scientific ecology, **biomimicry** and empirical practices developed over the ages by traditional societies.

Examples and Practices of Permaculture:

- **Agricultural example**: no-till practices that ensure the preservation of soil balance and long-term fertility
- **Habitats example**: buildings made of biodegradable local materials, that are energy-efficient and have a minimal ecological footprint (individual houses made of straw and clay in the Netherlands)
- **Economy example**: the development of community organisations such as LES (Local Exchange System), generating short circuits, social links, solidarity, and community cohesion



Permaculture and Agroecology:

Differences and Similarities

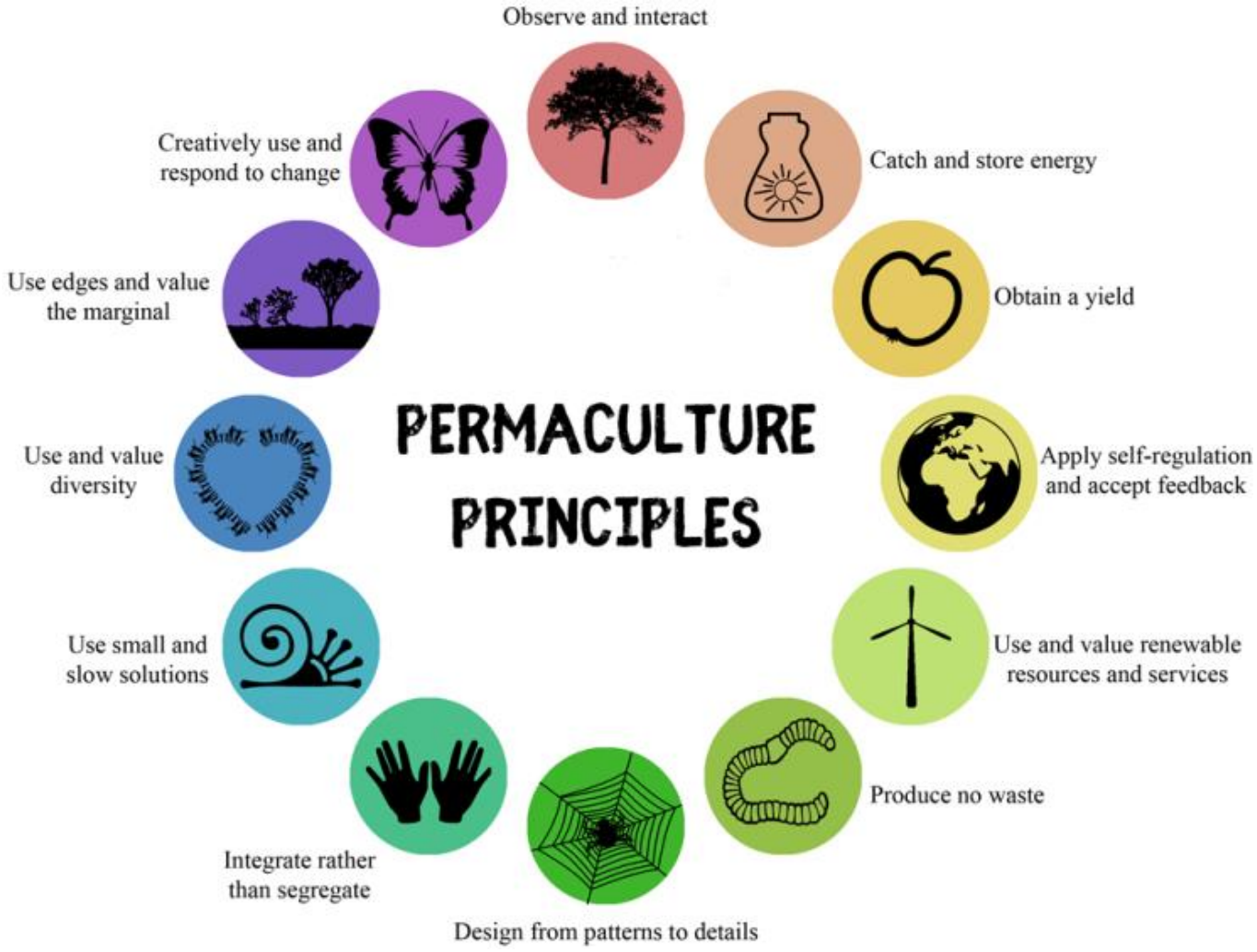
Agroecology and permaculture are often confused, yet these two practices are different. Agro-ecology goes further than biological agricultural as it uses sustainable agricultural systems with techniques such as complementarity, composting or cultivation on mounds. Afterward, it integrates these systems in an ecological way by saving water, fighting against erosion etc…

The practices above can be found in permaculture too, but the latter is broader since it focuses not only on creating sustainable and resilient farming systems but also on integrating them into a broader life system where other variables are also accounted for.

Permaculture Principles

https://kukuapermaculture.org/permaculture-principles/

The Permaculture Design Principles are thinking tools that can help us to identify and re-design the environment that surrounds us in a sustainable way. They are a guidance in choosing and developing useful application of Permaculture methods, strategies and techniques. The principles are universal but can be implemented differently and in different situations and places. They can be used in our personal, economic, social and political reorganisation which will lead us to a more open and ecologically friendly world. Each principle can widen our perspective and change our mind to live healthier and happier.



Design Principles by David Holmgren

Observe and interact – By taking time to engage with nature we can design solutions that suit our particular situation.

Catch and store energy – By developing systems that collect resources at peak abundance, we can use them in times of need.

Obtain a yield – Ensure that you are getting truly useful rewards as part of the work that you are doing.

Apply self-regulation and accept feedback – We need to stop inappropriate activities to ensure that systems can continue to function well.

Use and value renewable resources and services – Make the best use of nature's abundance to reduce our consumptive behaviour and dependence on non-renewable resources.

Produce no waste – By valuing and making use of all the resources that are available to us, nothing goes to waste.

Design from patterns to details – By stepping back, we can observe patterns in nature and society. These can form the backbone of our designs, with the details filled in as we progress.

Integrate rather than segregate – By putting the right things in the right place, relationships develop between those things and they work together to support each other.

Use small and slow solutions – Small and slow systems are easier to maintain than big ones, making better use of local resources and producing more sustainable outcomes.

Use and value diversity – Diversity reduces vulnerability to a variety of threats and takes advantage of the unique nature of the environment in which it resides.

Use edges and value the marginal – The interface between things is where the most interesting events take place. These are often the most valuable, diverse and productive elements in the system.

Creatively use and respond to change – We can have a positive impact on inevitable change by carefully observing, and then intervening at the right time.

What is Permaculture?

Permaculture is a design system which intends to build an ecologically friendly and self-sufficient environment for humans, animals and plants. It also deals with non-living things, such as buildings and infrastructures (e.g. water, communication, energy). Permaculture thinks about the relationship between those elements and how to place them in the landscape in an economically efficient way. Permaculture Ethics and Permaculture Principles are tools to implement the idea of Permaculture in the daily life. They were created by Bill Mollison and David Holmgren. The word Permaculture developed from the words permanent and agriculture which shows the goal to create a sustainable ecosystem in long term. It is also a contraction of permanent culture to emphasise that cultures and communities cannot survive without a functioning ecosystem.

Philosophy of Permaculture

In his book The One Straw Revolution, Masanobu Fukuoka wrote down ideas about natural farming. For him, farming is not only food production but also "an aesthetic and spiritual approach to life". This is seen as the base of the philosophy of Permaculture.

"In brief, it is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labour; and of looking at plants and animals in all their functions, rather than treating elements as a single-production system."

Bill Mollison

Permaculture as an alternative to industrial agriculture

A cornerstone of permaculture philosophy is to turn problems into opportunities and to turn "wastes" into resources. A Permaculture system can be maintained using a minimum of materials, energy and labour. By recycling "waste" back into the system, it also minimises pollution. Permaculture methods include Indigenous knowledge and traditions. Observing nature and observing how life develops, organises, and maintains are main aspects of Permaculture. Without a lot of technical knowledge, we can learn directly from the nature. We need to stop thinking that we have superiority over the natural world. Humans often think that nature is depending on us and our improved techniques, because we destroyed the natural balance with those same techniques. It is on us to accept that we are not the master creators of the nature. Conventional agriculture is destroying fertile soil and land by using monoculture to plant crops, using non-renewable resources and polluting land and water with chemicals. Of course, this will bring often a faster and bigger yield. But over the long term, we are destroying our Earth. Permaculture offers a solution to stop damaging farmland and polluting rivers, lakes, land, air and oceans as well as people, animals and plants. Through Permaculture we can learn to live ecologically-sound on this Earth by using renewable energies, food and natural resources without destroying other life continuously.

Implementation and Branches

Permaculture has a holistic view of the world. That makes it easy to implement it in different contexts – in gardens, fields, forest, villages, cities and in various areas of our lives. Permaculture has different branches such as design (placing element in zones and sectors), rewilding, improvement of soil, animal systems, aquaculture, waterworks, appropriate technology, economics and community development.

"We only invented the word organic because we made things inorganic. We only invented the word natural because we made things unnatural. We only invented the word permaculture because we made agriculture."

Khang Kijarro Nguyen

The Role of Community in Permaculture

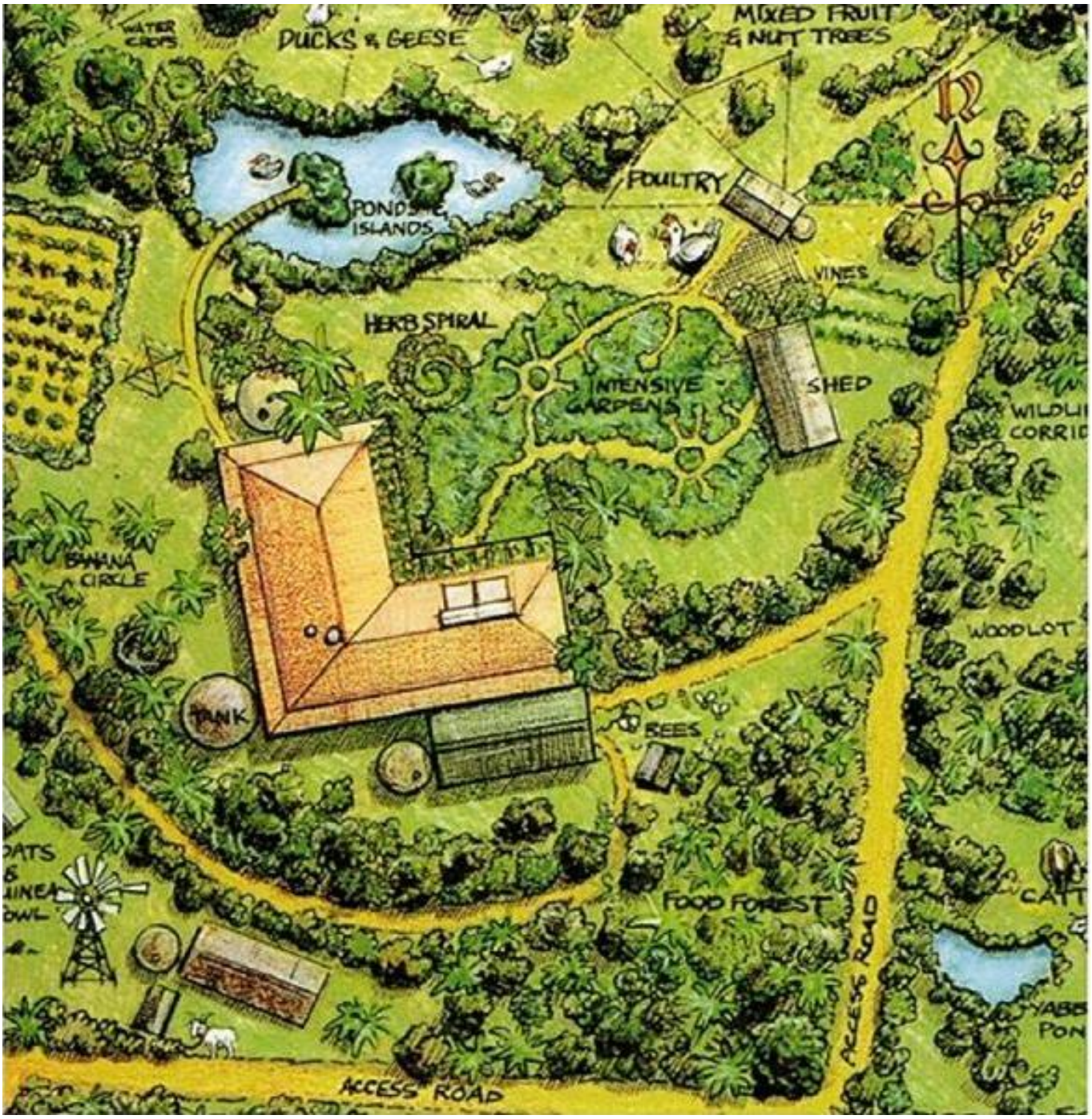
In Permaculture, community work and the care of people around us plays a big role. Therefore, Permaculture emphasises ethical interactions with nature and a community oriented live style. It gives suggested solutions and tools how to rethink and redesign communities. The key is cooperation instead of competition. Permaculture seeks to build stable cultures and communities. A cooperative productivity and responsibility for the community will change our lives and the lives of the people around us. So, our thinking will change to humanity and friendship and we can start fighting against cold, hunger, poverty, and the never ending climate change.

"Permaculture land-use ethics invite us to protect intact ecosystems where they remain and, where ecosystems have been destroyed, to help restore them. Permaculture design also suggests that we take care of Earth while taking care of people."

Juliana Birnbaum Fox

Who starts with Permaculture?

Without help from political authorities, everyone can start to do something. A first step could be to reduce energy consumption and use public transport. Other ideas are building houses energy efficient and/or saving rainwater in tanks which can be used for the toilet system or garden. There are no limits to creativity. Starting on a personal level, Permaculture makes people widening their view and questioning materialism as well as the industrialised economy which is only based on making profit. With its ethics and principles, Permaculture brings solutions on systemic change.



ecoliving design

https://www.ecolivingdesign.com.au/#all

WHAT IS IT?

The production of food and other human needs sustainably, using general principles adapted to specific situations.

WHY DO IT?

1. Permaculture is positive action that can be done by little people to counter big global problems, such as climate change and diversity, loss of biodiversity, pollution, degradation of soil and water, social unrest due to exploitative practices. It's a way of avoiding powerful, destructive organisations like supermarket chains, dependency upon energy companies and corruption within governments.
2. Individual resource security in times of increasing vulnerability to swinging economic and climactic variability which is never ending.
3. It's the good life. Eating home grown organic food dirt cheap is healthy and rewarding.
4. If you don't, it's unsustainable. All the unproductive, un-forested land around developed areas is robbing other species of habitat twice. Once because they can no longer live where you do. Twice because further habitat will be removed to farm the resources you consume.

SOME PERMACULTURE PRINCIPLES:

- Occupy the least possible amount of land and return excess land back to nature. Drive through any typical Australian town or city and you'll see an ecological wasteland of lawns and exotics, and nothing to eat. Consider the resources this landscape demands.
- Space efficient planning (the zone plan), with the most time consuming crops as close as practicable to the kitchen, spreading out in concentric circles of crops / animals in increasing independence and size.
- Observe nature and mimic it to produce what we need. E.g. In areas where forests grow naturally, produce food using the elements of a forest (mulch, shelter, diversity) or go all the way and stack the crops in a forest like structure. Nature is kind of messy although look harder and it has a beautiful kind of order in its own way. If you fight the messiness of nature in your garden, you're in for a lot of extra work.
- The deliberate arrangement of elements for mutual benefit. E.g. water tank overflow and waste water strategically directed to thirsty, hungry crops.
- Diversity of crops provides more even food supply for self-sufficiency, insurance against failure of one crop and avoids pest build up.
- Plant stacking. E.g. a productive shrub, ground cover and vine can all occupy the same area. This saves space, improves microclimate and more efficiently cycles nutrient and water.
- Use biological resources. E.g. organic matter or on site manure for fertiliser. Plants, insects and small birds for pest control. There is a controversial side issue here in that some permaculture gardeners will tolerate certain weeds in certain situations. Either they haven't gotten around to weeding yet or the presence of the weed actually increases productivity because of the ecosystem services (soil protection, predatory insect habitat, organic matter increase) provided.
- Create productive microclimates. Stressed plants and animals are less productive than sheltered, comfortable ones. A diversity of microclimates allows for a diversity of crops.
- Observe, experiment and adapt. Your garden has to evolve around you and the individual situation.

What are the Permaculture Zones?

https://fractalpermaculture.com/what-are-the-permaculture-zones/
by Colin Eldridge | Jun 12, 2020 | Earth Care

Permaculture is a design science that helps us organise our lives in sensible ways in order to reduce labour and maximise efficiency. The zones of use is a helpful design method to achieve that. By placing elements that we use most often closest to where we reside, we reduce the amount of energy wasted.

Theoretically, the zone approach can be applied on any scale, to any system. You can redesign your kitchen using the zones, or the kitchen can be part of your zone 0. It's all about using what you have available to you in a way that allows design elements to interact harmoniously.

Like in the image, the standard layout of the zones consists of concentric circles with the centre being the dwelling structure. However, zones can be placed in any order and also intersect with each other.

Zone 0

The home or dwelling is zone 0, where most of human action takes place. The kitchen is a major factor of designing zone 0. The other zones will often be placed in relation to kitchen access to make harvesting, prepping and cooking food easier. Indoor food production (i.e sprouts, ferments, potted plants), waste and water collection, also happen in this zone.

This space should be intelligently designed so that education, sleep, entertainment, and day-to-day activities flow effortlessly. There are also design elements that will bring protection and comfort to this zone. Examples include passive and active solar, attached greenhouses, pets, rocket stoves, and other nifty technologies.

Zone 1

Zone 1 is the intensively managed area immediately surrounding the home. Elements in this zone require daily attention and interaction. It may include the kitchen garden, raised beds, keyhole beds, potted plants, herb spirals, compost collection, utilities, and so forth.

Bill Mollison gave a prime example of how to think about this zone. If a herb spiral is far enough from the kitchen door that your slippers get wet on a rainy day, then it is too far. All of the elements in this zone should be easily accessible from the dwelling. That means that tools are organised strategically, too. Elements in zone 1 (and other zones) will also be designed to bring protection, comfort and beauty to zone 0; shade, windbreaks, thermal mass, bird feeders and so on. These elements may integrate seamlessly with zone 0. For example, a greywater treatment system that feeds from sinks and showers in zone 0 into a vegetable and flower bed, which in turn provides shade for the south-facing living room window.

Plant vegetables and culinary herbs right outside of the kitchen door to reduce labour in zone 1.

Things to keep in mind for this zone in certain climates is fire safety. Having water tanks, ponds, mulch and keeping close-to-home plants well-watered and green in zone 1 is vital for protection of zone 0. Correct grading and planting (with accompanying swales and earthworks), will also protect zone 0 from floods, mudslides, and falling trees.

These two zones together will be where the permaculturists spends most of their time. Setting up several access points and interactions between zone 0 and zone 1 will increase your chances of yields, efficiency and resilience.

Zone 2

Zone 2 hosts a diverse array of less intensively managed elements, but that still may require some daily or weekly attention. Both zone 2 and 3 are the main zones for setting up a food forest, which is a perennial, polyculture crop system that requires less maintenance than an annual vegetable garden.

Perennial crops like medicinal herbs, fruit and nut trees are managed to remain in an early stage of ecological succession, so that production and biodiversity remains high. The permaculturists may favour dwarf varieties to make harvesting easier.

Animals that require daily attention like poultry, bees, worms, rabbits and poultry also belong here. Nobody wants to walk more than 50 metres to collect eggs for breakfast or to put the chickens in their coop at night. Such animals fulfil the functions of pollination, decomposition, fertilisation, pest management, and food production.

Large greenhouses are a source of major vegetable production in Zone 2.

Ponds, plant guilds, larger greenhouses, sheds, barns and compost bins are other elements that will merge functionality and interaction between zone 0, 1 and 2. For example, pond water can be gravity fed to gardens in zone 1, while organic waste from zone 0 can be processed by worms or compost bins in zone 2.

Zone 3

Zone 3 may contain larger open spaces used for farming annual staple crops like corn, wheat and rice.

Paddock and grazing animals can also inhabit this zone, and their waste can be applied directly to crop fields.

A mixture of larger perennial plants mixed with self-seeding annuals can create a biodiverse agroforestry system. The 9 layers of the food forest in zone 3 offer the combined functions of animal habitat, pollinator attractors, nitrogen fixers, windbreaks, food, fibre, fuel and more.

Intersperse annual crops with perennials for a more biodiverse and resilient farm.

Larger amounts of water are stored in ponds and linear food forests set up along swales. These large deposits will serve the function of backup water supply, fire control, soil water retention and food production via water-loving crops and aquatic animals.

Elements placed in zone 3 should self-maintaining to a certain degree. Manage zone 3 semi-intensively (once weekly or monthly) for higher production, or allow it to manage itself to save time and energy.

Zone 4

Zone 4 is semi-managed wild land. This zone is left for more native and self-maintaining elements, whereas domesticated crops and animals may flourish better in zones 0-3. Wild foods, medicine, fibres, and fuels are foraged sustainably here. Maintenance in this zone occurs seasonally. Wild seeds, bulbs and mushrooms may be redistributed yearly. Fuel loads might be cleared once a year to prevent fires.

Zone 5

Zone 5 is wilderness left for nature to run her course. Management is kept to a minimum in this zone. If managed at all, it is to reduce risk of natural catastrophes and to protect the balance of the system as a whole, rather than to solely benefit humans.

The vast majority of zone 5 should remain untouched. Hiking trails are maintained every few years to minimise erosion and understory damage. Zone 5 may extend off of the permaculture property, especially in the case of urban sites. For urban permaculture, zone 5 could also be thought of as overgrown vacant lots or wild thickets between fence lines.

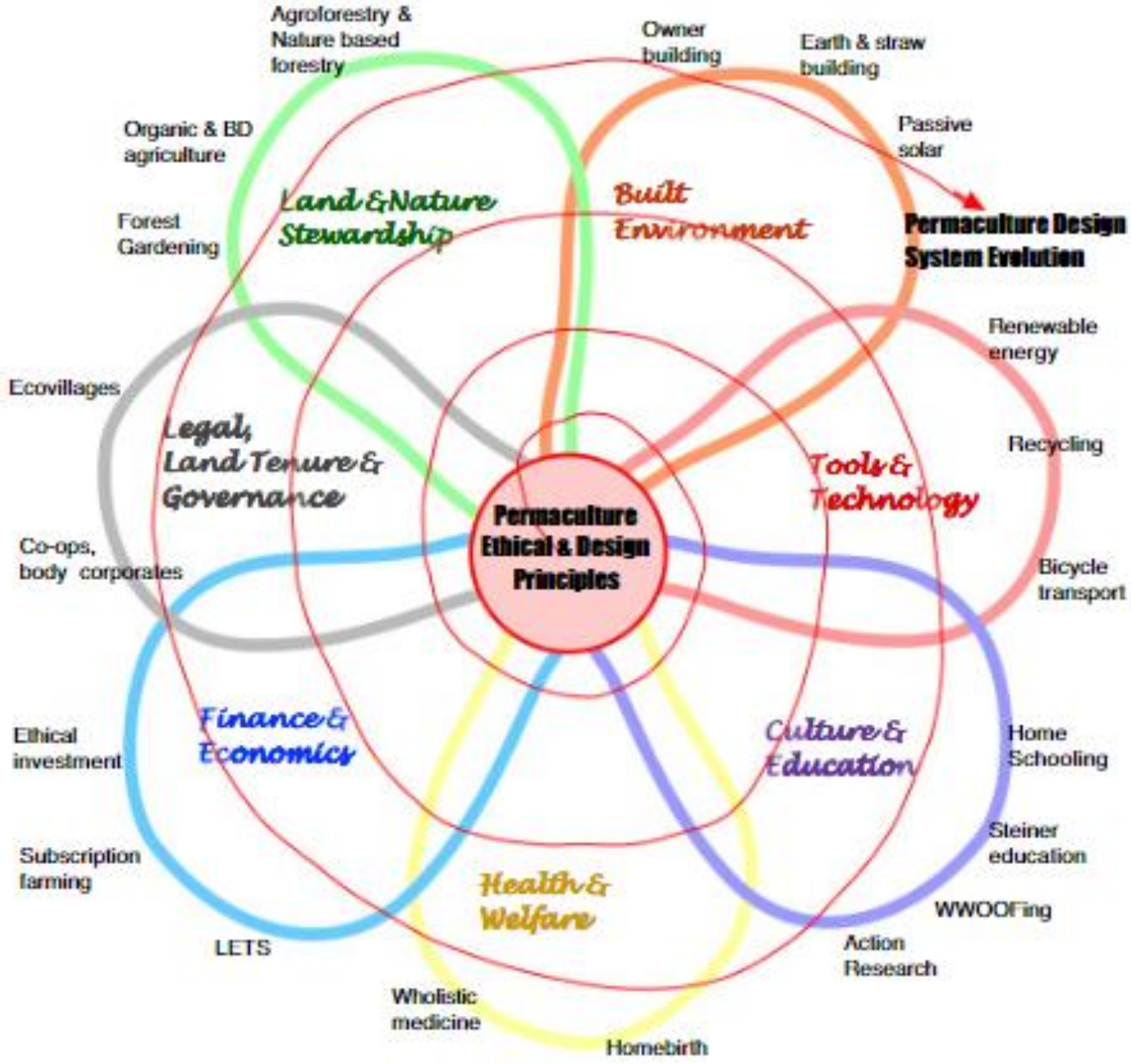
Untouched ecosystems and wildlife corridors are important and vital aspects of any permaculture design.

Zones are not Borders

The entire zone system is intended to merge human habitat with nature. A permaculture system does not have to be clearly delineated. In fact the zones may permeate each other. For example, a wildlife corridor may extend zone 5 through all of the other zones and up to the doorstep.

The main function of zones is not for rigid categorisation, but for a fluid design process. Permaculture designers should use zone and sector analysis to decide where they place their elements, not to limit or restrict their design in any way.

A well implemented permaculture design remains ever flexible and evolving. Zones may change shape and location, or morph into each other over time. Most importantly, zones are a design tool to maximise efficiency by creating more opportunities for beneficial interactions between elements, species, and features throughout the landscape.



The Permaculture Design System Flower

Multiple Benefits

All elements support all the others.

Social Activation

Takes Many Forms

Dharmalaya – Transforming Communities Program, 2012

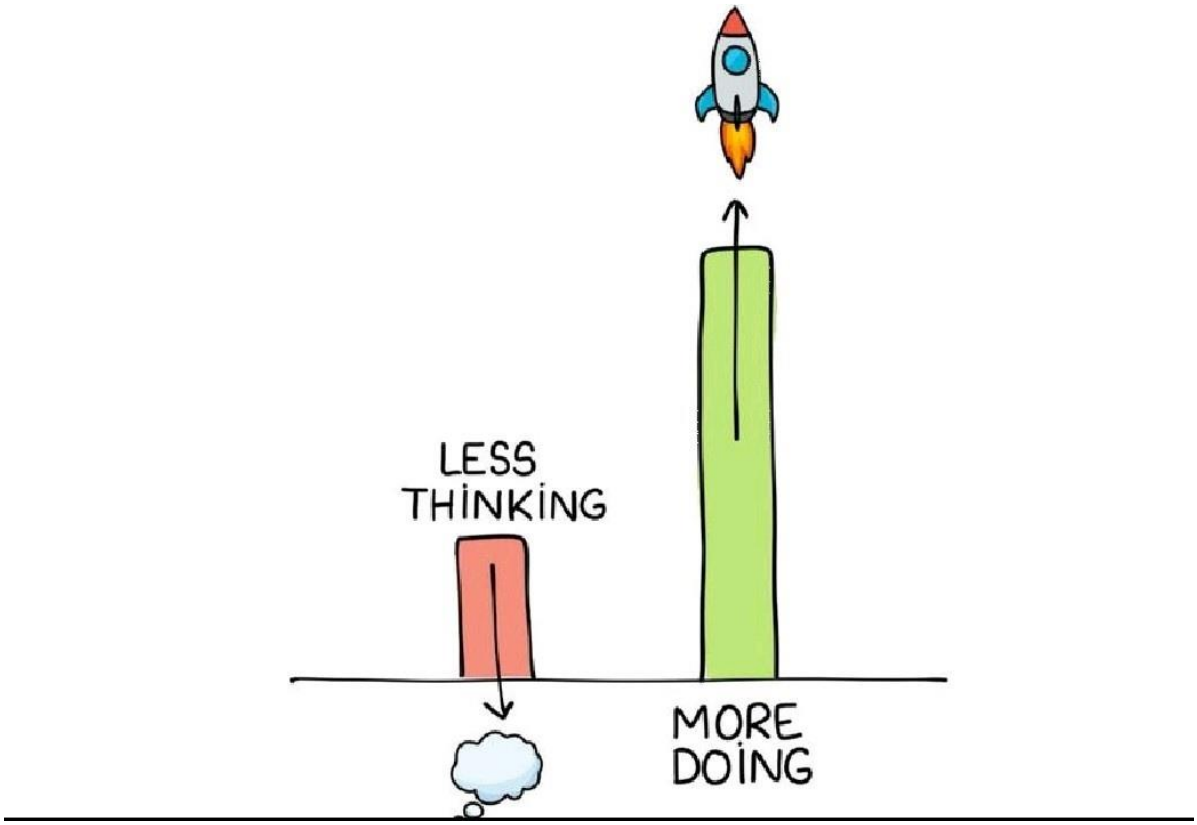
CASL - University of Oregon

Neighborhood Summit

Emergency preparedness – Mapping Your Neighborhood

City sponsors seed saving workshop

Work party in Bellingham


LESS
THINKING
MORE
DOING


getting things done
TIME
WORRYNG
ABOUT
GETTING
IT DONE
ACTUALLY
GETTING
IT DONE

Alternate uses for brown coal

https://earthresources.vic.gov.au/geology-exploration/coal/alternate-uses-for-brown-coal#:~:text=Raw%20brown%20coal%20can%20be,other%20fertilisers%20and%20soil%20conditioners.

Brown coal can be transformed into a number of different products including liquid fuels, substitute natural gas, industrial chemicals, urea fertiliser and hydrogen.

How Victoria's brown coal is used today

The Latrobe Valley's coal is used to feed mine-mouth power generation facilities to service the domestic power market. Victoria's (state of Australia) three major brown coal fired power stations mine and use the coal to generate approximately 75% of the state's electricity.

The state's dependence on brown coal for electricity generation is expected to continue in the medium term, while the contribution from renewable sources will continue to increase.

Brown coal is not currently widely traded due to the challenges in exporting the raw resource. 'Run of mine' brown coal from Victoria's reserves in the Latrobe Valley (Australia) is reactive and has a high moisture content, which makes it unsafe and uneconomic to export without processing (drying and stabilising).

Other opportunities for brown coal

Converting coal to liquid or gaseous fuels

Technology to convert coal to liquid or gaseous fuels has been available in various forms since the 1920s, and a number of commercial plants in other countries are in operation today.

However, in an increasingly energy hungry world, the economics are changing. As a low cost feedstock, coal converted into commodities such as diesel, methanol and its derivatives has the potential to compete with traditional feedstocks and other energy alternatives, such as oil, gas and black coal.

Drying brown coal

The adoption of suitable drying technologies could enable brown coal to be exported and compete directly in black coal markets as an energy and feedstock resource.

Potential coal derivative products

Solid fuel products

In its raw form, brown coal can be used for boiler fuel in power generation. Drying technologies can transform the product into high energy briquettes and pellets that may compete with black coal as an exportable fuel.

Chars and cokes may potentially be derived from brown coal for pyrometallurgical applications, to produce reductants and carbonising chemicals and as a general carbon source for other applications.

Calcium loaded char can be used in water and waste treatment and as an ion-exchange medium.

Brown coal can also be refined into a purer form of carbon for use in production of a number of carbon products including carbon fibres, carbon anodes, activated carbons, filter aids, pigments, graphite lubricants and conductors and formed carbon materials.

Gaseous products

Gasification can be used to convert solid coal into a gaseous feedstock, which can be used to make a range of other products.

Gasification produces synthesis gas or syngas, a mixture of mostly carbon monoxide and hydrogen. The process can also help with separation of carbon dioxide for use of sequestration.

Victoria has had a long history of brown coal gasification. It provided town gas in the Latrobe Valley before natural gas from Bass Strait (between Victoria and Tasmanis) became available in the 1960s.

Liquid products

Liquid products from coal can be produced either from syngas via gasification or by the direct liquefaction of brown coal.

Gasification can produce liquid fuel products such as diesel, methanol, fuel gasoline blends, and high octane gasoline extenders.

Liquefaction generally produces lower quality products, such as synthetic crude oil. Further processing may be used to produce fuel oil, diesel, motor fuel blends, kerosene and heating oil. Non-fuel products may also be produced including solvents, polymers, surfactants, lubricants and a suite of other carbon-based chemicals.

Waxes, resins and polymers

A range of waxes may be produced using products derived from brown coal, as well as phenolic resins and plastics, composites, low strength structural and building materials.

Agricultural products

Raw brown coal can be used as a soil conditioner by providing a source of humic acids for potting mixtures and market gardens and as an ad-mixture to other fertilisers and soil conditioners.

Syngas manufactured from coal can be used to produce ammonia, the key pre-cursor to nitrogenous fertilisers such as urea. At present these fertilisers are more commonly made from oil and natural gas based feedstocks.

http://www.regyp.com.au/humates/

REGYP PTY LTD
Phone: 1300 473 497 or +61 2 8960 8117
Fax: +612 8076 3047
ABN: 25 128 214 399
Eight Ave Palm Beach QLD 4221
PO Box 463, Tugun QLD 4224

HUMATES

Humates (aka brown coal fines) is a naturally occurring carbon material that is very rich in humified organic matter and humic substances. Humates are now recognised as one of the single most productive input in sustainable agriculture. Humates are available in solid form (Leonardite) and liquid form like Carbon Fulvic Humic (CFH) or K-humates. We can supply these products straight or use them in fertilisers and minerals blends.

HUMATES

Humates, which are composed of various forms of carbon, and are naturally occurring material that is very rich in humified organic matter and humic substances. **Humates are now recognised as one of the single most productive inputs in sustainable agriculture.** It has become a main ingredient to increasing yields in many agricultural areas around the globe.

General application rates for humate powder are 500-1,000kg/ha, however a soil test is recommended before applying the product. Humates do perform better when applied with products such as lime or gypsum and soil test will help with a blend formulation.

Humates perform well in blends with ag lime, gypsum, phosphate rock and manures. Pacific Fertiliser can provide these humate blends in powder or granular form.

The humates fines which we use for our products were formed some 20 million years ago. **Leonardite (brown coal) is an organic matter associated with lignite that has not yet completed the process of transformation into coal.** Humates originally formed as peat from decomposed forests and plants became more and more compressed. Australian humate contains almost 60% concentrated organic matter. The humates are highly water soluble so that the Humic Acid can properly move through the soil, chelate with other salts, minerals and fertilisers, stimulating microbial responses.

Humic Acid 54%
Fulvic Acid 44%

PRODUCT QUALITIES

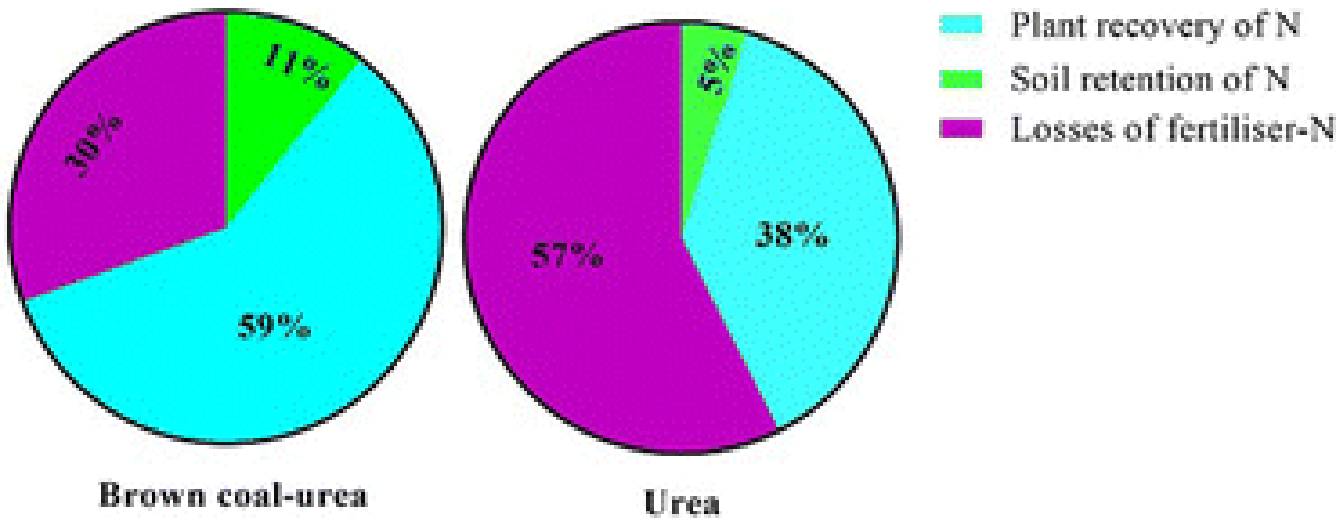
- Improve soil structure by promoting soil microbes
- Increase cation exchange capacity (CEC)

- Increase the water holding capacity and re-wet ability of soil
- Can assist with reducing damage from saline irrigation water or high sodium soils
- Increase the effectiveness of applied fertilisers and has the potential to replace chemical fertilisers by up to 25%
- Assists with nitrogen anchoring providing more stability for applied nitrogen
- Provide plant resistance against stresses such as drought, frost, diseases etc.
- REGYP / Pacific Fertiliser sell humates in raw fines and granular form with the ability to blend minerals like soft rock phosphate, urea, manures, etc., and add liquid biology.

Fate and recovery of nitrogen applied as slow release brown coal-urea in field microcosms: ^{15}N tracer study

https://pubs.rsc.org/en/content/articlelanding/2023/em/d2em00482h

The over-use of synthetic nitrogen (N) fertilisers for crop production can cause environmental pollution through leaching and gaseous losses, resulting in low N use efficiency (NUE). Previous work has shown that brown coal (BC) combined with urea can slow down the fertiliser-N release to better synchronise soil N supply with crop N demand. The study aimed to evaluate the impact of granulated BC-urea (BCU) applied to sweet corn on NUE, fate and recovery of fertiliser-N using an ^{15}N tracer technique. In this in-field microcosm study, 10 atom percent enriched ^{15}N-labelled urea (46% N) and BCU (20% N) were applied as N fertilisers at rates of 90 or 180 kg N ha^{-1}. On average, BCU fertiliser reduced the urea-derived ^{15}N losses as nitrous oxide (N_2O) by 64%, ammonia (NH_3) by 73% and downward movement of total N by 59% compared to urea. Reduced losses of applied BCU fertiliser-^{15}N were associated with significantly increased microbial immobilisation, soil retention and availability of fertiliser-^{15}N to plants for longer periods of time, compared with urea. As a result, BCU enhanced cob yield by an average of 23%, ^{15}N uptake by 21% and fertiliser NUE by 21% over urea. The plant recovery of fertiliser-^{15}N was significantly higher from BCU (59%) than the recovery from urea (38%). Moreover, mining of native soil-N was lower when the N-fertiliser source was BCU *cf.* urea, suggesting that BCU could be used as a more N-efficient alternative to urea in cropping systems.



Ancient Amazon Charcoal Seen as Next Big Thing in Carbon Markets

https://www.bloomberg.com/news/articles/2023-06-18/ancient-amazon-charcoal-seen-as-next-big-thing-in-carbon-markets#xj4y7vzkg

19 June 2023

Biochar drawing interest from blue chip firms like Microsoft

Macadamia biochar

By *Sheryl Tian Tong Lee*, *Peter Millard* and *Heesu Lee*

19 June 2023

A type of charcoal first used by Amazonian tribes thousands of years ago is becoming a key component of net-zero goals set by Microsoft Corp., JPMorgan Chase & Co. and other blue chip companies eager to offset their carbon emissions.

Known as biochar, this black substance created by heating biomass and other agricultural waste can store carbon for hundreds of years and improve soil quality at the same time. It's a "true carbon removal solution at scale," according to Microsoft, and the tech giant along with BlackRock Inc. and JPMorgan are among those that have bought biochar credits.

The market for biochar remains small for now, though it seems poised to soar as more farmers use it as a soil additive and companies seek new ways to meet net-zero targets. Biochar has the potential to sequester up to 2 billion tons of carbon dioxide annually by 2050, or almost as much as India emits in a year.

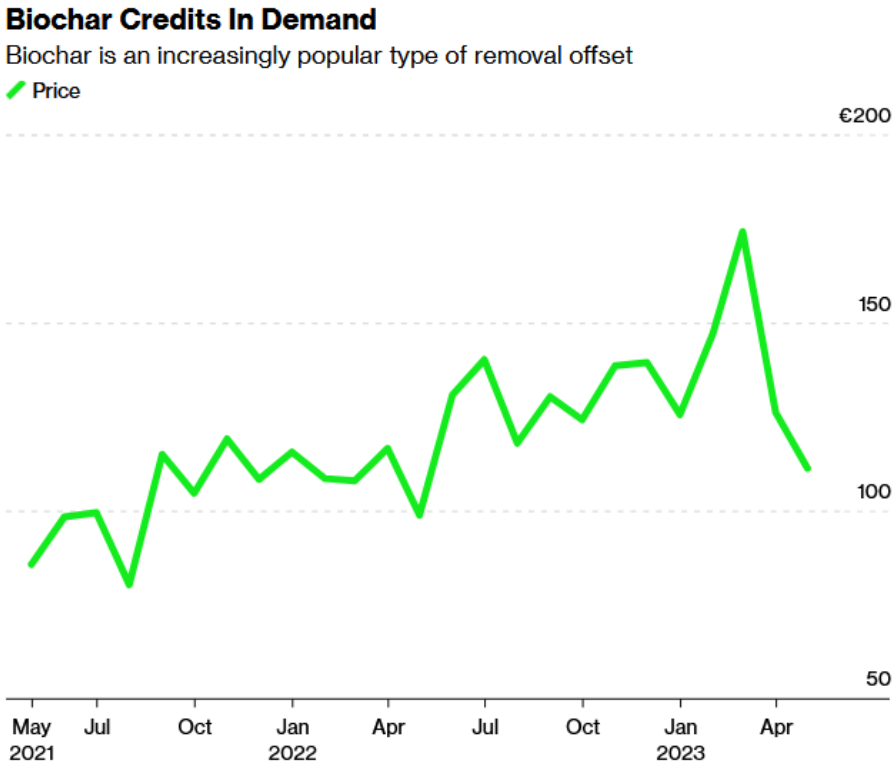
Biochar's popularity stems from a shift in the voluntary carbon markets toward projects that actually remove carbon, instead of the so-called avoidance offsets that keep existing trees standing, for example. Some firms are warming to the idea that you "put a ton in, you take a ton out," said Rich Gilmore, chief executive officer of investment manager Carbon Growth Partners.

Among removals, biochar offsets are sought for their "co-benefits to the ecosystem, biodiversity and soil," said Melissa Leung, director of carbon at biochar consultancy GECA Environnement in Quebec City.

Biochar is produced by heating wood and other biomass in a low-oxygen chamber that limits emissions, in a process known as pyrolysis. As the biomass heats, bio-oils and gas are also produced, which can be used for power generation. Biochar can be buried in the ground as a soil amendment, or

integrated into building materials, among other uses. For every ton of biochar produced, roughly three tons of carbon dioxide are sequestered.

Biochar credits sell for about €111 (US$120) each, according to a tracker by Puro.earth, a Helsinki-based carbon registry that was bought by Nasdaq Inc. in 2021. That's a hundred times more than nature-based offsets, but still only a fraction of the current price of other kinds of removal offsets such as electrochemical ocean carbon capture.

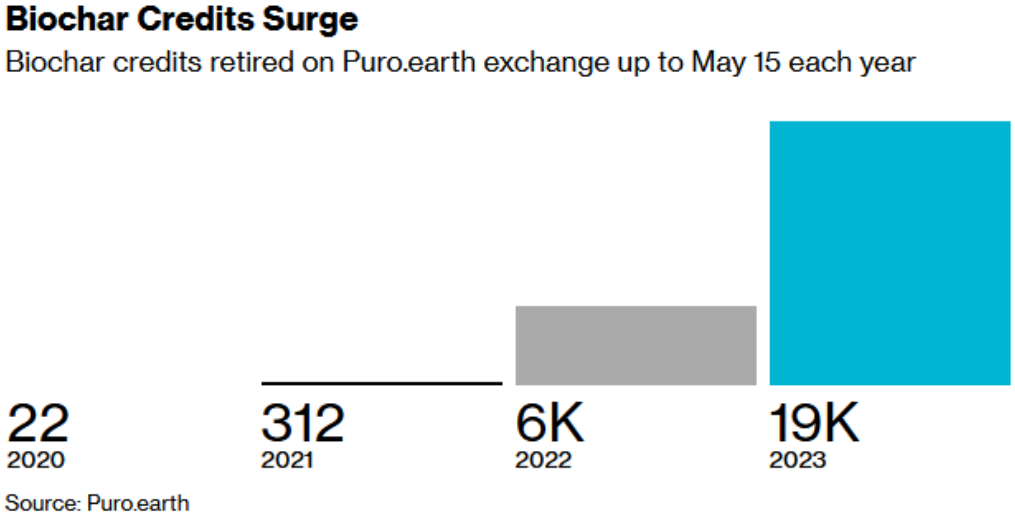


Note: Price of sequestering a tonne of carbon dioxide in the form of biochar

Even after prices jumped 29% last year, biochar credit retirements more than doubled on Puro.earth, signaling strong demand. Puro.earth CEO Antti Vihavainen expects the market value to double this year as interest soars from US companies, which make up half the platform's buyers.

JPMorgan, which has been buying biochar credits since 2021, deems it an attractive option because of its "longer-term durability, relative affordability and co-benefits," Brian DiMarino, head of operational sustainability, said by email.

Biochar's origins date back centuries when ancient Amerindians in the Amazon used charcoal, broken ceramics, compost and other household waste to make Terra Preta de Indio, or Amazonian Dark Earth. Either by accident or design, these societies created a porous topsoil that retains water and hosts nutrients. Settlers in the 19th and 20th centuries gravitated to Dark Earth sites because land in the rest of the Amazon is acidic and not suited for agriculture.



Rainbow Bee Eater is one of Puro.earth's biggest suppliers of biochar credits in Australia. Peter Burgess, who co-founded the company in 2007, says the goal was always to take biomass that would otherwise be thrown away and turn it into biochar.

The company struggled for years as part of a backyard industry with low volume and a negligible climate impact. Farmers, used to boom and bust weather cycles, were reluctant to adopt new techniques and averse to extra costs, given that a truck load of biochar can cost up to 10 times more than regular soil amendments.

A worker lays out biochar to dry in the sun in Lugazi, Uganda. Source: AFP/Getty Images

But in 2018, the Intergovernmental Panel on Climate Change recognised biochar as a source of carbon sequestration. Because biochar decomposes far more slowly than biomass, the locked-up carbon won't re-enter the atmosphere for hundreds of years, making it a viable method of carbon capture.

Biochar offsets "changed everything," Burgess said. The additional income allowed him to drop the price of biochar by 60% to 80%, encouraging more farmers to try it. Rainbow Bee Eater now has two pyrolysis plants, and the plan is to "build more projects, hire more people, make more money and build even more projects," Burgess said.

Other countries are getting on board. The US Department of Agriculture has funding available for farmers who apply biochar and meet certain conditions. Production surged fivefold from 2015 through 2021, when it reached about 800,000 tons, with the fastest growth in China, according to Verra, the largest carbon offsets verifier. By value, the market may almost triple to about US$633 million by 2032, according to Precedence Research.

The challenges for biochar include gaining scale and boosting reliability. Biochar remains a "very small niche" in a more than US$1 billion offsets market, Vihavainen said.

Pyrocal's Continuous Carbonization System turns waste materials into biochar.

Source: Pyrocal

As biochar grows in popularity, experts worry the industry will attract developers that aren't following biochar production and offset standards. Australia-based Pyrocal Pty Ltd, which sells biochar systems, says inquiries for its technology have grown fivefold since the boom in offsets two years ago. Yet many operators aren't managing their emissions to global standards, according to Managing Director Durell Hammond.

Still, the credits sit at an "interesting intersection between technology and nature," said Frederick Teo, CEO at Temasek Holdings Pte-backed GenZero, which has S$5 billion (US$3.7 billion) to spend on climate projects.

"We are very constructive on biochar," he said in Singapore. "It has promise. It is scalable."

Pyrocal Pty Ltd

27 Heinemann Rd, Wellcamp QLD 4350
(07) 4602 0740 https://www.pyrocal.com.au/

Food innovation project at Charles Darwin University aims to minimise waste and maximise farmers' profits

https://www.abc.net.au/news/2023-06-23/nt-food-innovation-project-aims-to-minimise-waste/102510660

Jessica Rendall Friday 23 June 2023

Researchers hope the new technologies will reduce food waste for farmers.*(ABC News: Alexandra Alvaro)*

Northern Australia's vulnerable food supply chain could soon be strengthened through the use of new technologies aimed at repurposing by-products that would otherwise go to waste or offer minimal economic benefits to farmers.

Key points:

- The food supply chain in northern Australia is vulnerable to disruptions
- A new project is hoping to strengthen local stock
- It's aiming to use new technologies to repurpose low value products

The nation's north relies heavily on deliveries from southern states, and a freight train derailment in Katherine last week highlighted the vulnerability of Northern Australia's supply chain, which stretches across nearly 4,000 kilometres.

But a new project at the Northern Territory's Charles Darwin University (CDU) is looking to bolster food supply in the nation's north, through novel food processing technologies that turn low value products from the region's meat, seafood and vegetable industry into shelf-ready meals.

Products that could potentially be processed at the facility include ready-made meals like buffalo curries, snacks like dried mangoes, health products and pet food.

Researchers have also proposed a pilot facility to explore the technologies further.

A freight train derailment near Katherine last week damaged the rail line and forced some goods to be re-routed. *(Supplied: NT Police)*

CDU Northern Australia Food Technology Innovation (NAFTI) project manager Dr Warren Hunt said creating processing facilities in Darwin would give farmers more economic opportunities.

"We have a good deal of produce both in the red meat, in the horticulture and also seafood sectors that are either low grade, low value, or of no value," he said.

"So, there is the opportunity to produce value where it currently doesn't exist."

Dr Hunt also said the project would provide better food security for the region during natural disasters that could cut off main transport routes.

"It's also about resilience capability in the north to cope with worst-case situations and the tenuous nature of our supply of conduits of food into the north that has been demonstrated recently with the train derailment," he said.

Thermal sterilisation technology being explored

University of Tasmania food scientist Roger Stanley is also collaborating on the project.

He said thermal sterilisation technology could be used to allow food to be transported and stored without refrigeration.

"[The new technology] is a two-step process, a long slow-cooking process followed by rapid sterilisation, and then you've got a product which is ready to eat and it's restaurant quality," he said.

The old technology was to make canned corned beef, high salt, high fat nitrite [which is] not what you want, so this new technology can add the value and replace that product.

"The packaging technology stops oxygen getting in to make the product rancid or take away the flavour profile, and it stops the water going out which would dehydrate it."

Mr Stanley said creating meals this way could also help strengthen food supply in remote communities, or during natural disasters and prolonged power outages.

Dried mango is one product that could be processed at the facility. *(Supplied: Flickr/ Penguincakes)*

"Because [northern Australia] is isolated and subjected to weather events, train derailments that interrupt your food supply, you want a product which can be stored and you can have in the back of the cupboard," he said.

"You can also have a centralised food supply for larger operations that you can draw on independent of whether the power supply goes down, so you don't have to run a generator."

Maximise profits, minimise waste

NT Farmers Association chief executive Paul Burke said the project could give farmers the opportunity to maximise profits while minimising waste.

"Food waste is a really big issue. We put a lot of input into food to grow them," he said.

"If they're not actually making it onto the shelf, then the cost to growers is quite high, so we're looking at how we can utilise more of the crop for more of the year."

Food wastage is something mango grower Muy Keav Ma is all-too familiar with.

Muy Keav Ma hopes the new food technologies will help preserve more of the mangoes grown on her farm. *(ABC News: Jessica Rendall)*

She loses about 20 of the 100 tonnes of mangoes her farm produces each season, and said she would like to see that waste be turned into juice, dried fruit or green mango powder instead.

"We put a lot of resources into it ... for the whole year that's our only income. When you see a lot of waste you feel sad, depressed and your money's gone," she said.

Muy Keav Ma loses about 20 of the 100 tonnes of mangoes her farm produces. *(ABC Landline)*

"I tried to cut up some of the mangoes to sell at the market but there was still a lot of waste because I didn't have a lot of energy or enough hands helping me."

She hopes a project like NAFTI could help her make the most of her crop in future seasons.

"This would be wonderful for the NT because we don't have that sort of thing, and the farmers would be very happy."

Apoch Life Pack

EXECUTIVE SUMMARY

THE PRODUCT:

Apoch Pty Ltd is able to deliver fresh food with shelve lives greater than a year without requiring refrigeration. We start with prime quality inputs and it remains prime quality for periods of one to up to three years.

The process involves:

NO chemicals
NO irradiation
NO microwave
NO preservatives
NO additives

The retained nutrient level is greater than 95% at the end of the products recommended shelf life.

The process technique involves:

Unique handling techniques employed when receiving raw inputs.
Cooking process employing specifically developed recipes.
Patent designed equipment required for handling raw product and processing.
Vacuum sealing processes unique to the Company.

Unique receiving processing removes all microbes, germs and bacteria thus achieving a natural suspended state of animation which is maintained through to consumption.

Product distribution chain requires no refrigeration and the delivery process is significantly cheaper and more reliable to deliver than frozen products. Packaging in multiple film plastics is lighter, more compact and not subject to damage as you observe with canned packaged food.

Product can be assembled to suit any desired taste, employing world class recipes and achieving the objectives of consumer.

THE COMPANY:

Apoch Pty Ltd was reconstructed in 2000 to deliver and license Long Shelf Life Foodstuffs through its Life Pack brand to the world. Apoch Pty Ltd has developed production processes through the associated company, Neat Meats Australia Pty Ltd at its Casino factory in northern New South Wales.

Derek Miller has drawn on his Australian and USA agricultural product development experience together with Ray Morgan, a bachelor of science, to realise the capabilities of packaging food for extended shelf life without refrigeration. Development of unique recipes was initiated by world renowned chef, the late brother-in-law of Derek Miller, Mr James Sawyer.

TECHNOLOGY & HISTORY:

Technology explanation:

Having observed the application of sterilization techniques in Pharmaceuticals, we applied this technology to food products. After paying many contractors and hiring university labs, it was apparent that the food technologists in the labs today were focused on technology that was developed in the 1800's. Knowing that they had made no attempt to redefine the parameters of the process, given the ability of equipment and labs

today, we resolved to achieve this ourselves. As a result, the paragraph below, defines what we have discovered and points to the "SECRET" that we have been able to define.

Food preservation info:

In-container food sterilisation (that is retort processes for product in cans, retort pouches etc) has been widely used in Australia for over 100 years. Therefore the standards required to ensure long term safety of the products is well defined. The effects of heat on product quality factors (eg colour, texture, nutrition etc) have also been studied in "controlled" time-temperature environments. However, under "real world" conditions, temperatures vary not only with time but spatially within the pack. These internal conditions depend on the external conditions applied during product processing.

Traditional retort processing involves the use of an essentially constant process temperature, at which the product is held at sufficient time to ensure product safety. Substantial product degradation generally occurs by the time required food safety standards are reached. Modern retorts such as the "steriflow" have the ability to control process temperature according to a set program.

This, in combination with thin-profile packages such as retort pouches, provides the opportunity to control the heating profile achieved in the product in a way which will optimise final processed product quality. Under this project, the relationship between retort conditions and product heating profiles are being modelled, and product temperature profiles are related to product quality parameters, for a range of food product.

This knowledge is useful as a tool to design thermal processes to achieve optimal quality outcomes for specific food products, enabling priority access to discerning and high value export markets.

MARKETS & COMPETITION:

Direct competition is the technology of frozen food and canned food.
The market for Life Pack is worldwide. The competition is existing food processing systems.
Apoch is delivering to the global food processing industry a new pathway for the delivery of food with greatly extended shelf life whilst retaining optimum levels of nutrition, greater than 95%.
Apoch has attracted forward orders well in excess of its production capacity. Apoch has also advanced negotiations and is in the phase of commissioning its first licensee in South America.
Apoch recognises the enormous consumer education program that must be undertaken for Life Pack to be a global name and become synonymous with high quality nutritious food.
Market segments have been identified as:

- *Existing catering suppliers.*
- *Existing distributors of Fresh and Frozen goods.*
- *Defence force contractors.*
- *International and domestic markets not previously addressed for logistical reasons.*
- *Existing manufacturers of processed foods.*

Product positioning is demonstrated as follows:

	Apoch Life Pack	**Fresh**	**Frozen**	**Canned**
Product Strategy				
Nutritional Value				
Corn	EXCELLENT	EXCELLENT	AVERAGE	POOR
Beef	EXCELLENT	EXCELLENT	MEDIUM-POOR	POOR

Product Life				
Corn	1Year	1 Week	2 Months	Years
Beef	1Year	3 Days	3 Months	Years
Product Durability	**EXCELLENT**	**POOR**	**POOR**	**EXCELLENT**
Distribution Range	**WORLD WIDE**	**LOCAL**	**LIMITED**	**WORLD WIDE**
Production Costs	**LOW**	**MEDIUM**	**HIGH**	**MEDIUM**

Primary markets are for meals for the "heat and eat" culture. Example of these is the pub market throughout Europe.

Product can be developed to satisfy the tastes and needs as specified by purchaser.

WHAT IS SPECIAL ABOUT THIS BUSINESS?

With one or two trained operators, plants can be operated in any community employing local processing staff. This enables plants to be licensed and located in areas that have significant produce for processing and exploitation of potential export markets.

The technology can be applied to an almost endless number of food types, covering all major cooked food brackets i.e. Meats, Sea foods, Dairy, Fruit and Vegetable.

The economies of Life Pack technology excel due to:

- Able to employ raw produce that previously would not get to market due to appearance.
- Able to utilise 'seconds' which represents typically 70% of all farm produce.
- Can custom design recipes to satisfy specific cultures and regional tastes.
- Packaging is lighter and cheaper than canned food (does not dent).
- No refrigeration is required in the distribution and delivery chain.

Production costs are highly competitive with canned food and extremely competitive with frozen food. Distribution costs of Apoch product as significantly lower than for frozen food as well as canned food.

The long shelf life of processed product enables surplus food in any region to be processed and delivered to any market in the world with the product processed to meet the tastes and eating habits of the targeted region.

Results to date have confirmed the improved shelf life, higher utilisation rates of raw inputs and the exceptional retention of nutrient levels.

Apoch Pty Ltd has assembled outstanding professionals in food testing, food processing, engineering, development, manufacturing, finance, and sales and customer service capable of building Apoch into a significant supplier of quality food.

With our team of experienced professionals Apoch will be well positioned to capitalise on the recovery of food seconds for product enhancement and delivery to markets anywhere in the world.

Apoch has the enormous opportunity of being able to utilise produce that does not get through the farmyard gate. Some 70% of small crops produce does not reach the shelves of retail outlets. Apoch can utilise this produce and benefit from highly competitive pricing of inputs.

FINANCIAL REQUIREMENTS:

Funding required is AUD22 million. It is anticipated that these funds will be used for the manufacturing of the laboratory equipment ($1,250,000), production plant ($6,500,000), factory construction ($6,500,000), final upgrade on existing regional factory ($500,000) patent filings ($250,000), R&D costs ($300,000), evaluation costs ($1,300,000), existing creditors ($1,750,000) and increased working capital ($3,650,000).

PROFITABILITY:

The projected return on funds invested (ROI) in year three, 316.6% year four, 439.8%, year five 478.5%, based on EBIT divided by funds now required.

Break even in cash flow will occur in month 18. Profitability is expected to grow from year to year, supporting shareholders equity growth greater than 35% per annum.

Epoch Life Pack

PROFIT BENEFITS for INDUSTRY USERS of TECHNOLOGY

Application: "MEAT & POULTRY" process:

- ❑ **Nutrition retention greater than 95%.**
- ❑ **Unrefrigerated shelf life one year up to two years with appropriate storage.**
- ❑ **Processing requires 30% less energy than for a cannery.**
- ❑ **Significant costs savings in handling and shipping due to less weight and bulk versus cans.**
- ❑ **No refrigeration required ensures quality of product over the vagaries of refrigerated shipping.**
- ❑ **Processing during low price periods of meat can be capitalised upon.**
- ❑ **Produces a higher quality product, world class chef's recipes.**
- ❑ **Enables product branding and differentiation with higher profit margins.**

Application: "SEAFOODS" process:

- ❑ **Nutrition retention greater than 95%.**
- ❑ **All seafood can be processed with one to two years shelf life with appropriate storage.**
- ❑ **Cooking time is quicker than for alternative canned or frozen products.**
- ❑ **Power consumption lower.**
- ❑ **Processing space required reduced whilst increasing output.**
- ❑ **Quality of produce enhanced with the input of world class chef's recipes.**
- ❑ **Enables product branding and differentiation with higher profit margins.**

Application: "DAIRY" process:

- ❑ **Creamed sauces have shelf life of one year.**
- ❑ **Milk is under investigation and further research - possible shelf life of one year.**

Application: "FRUIT" process:

- ❑ **Nutrition retention greater than 95%.**
- ❑ **Unrefrigerated shelf life one year up to two years with appropriate storage.**
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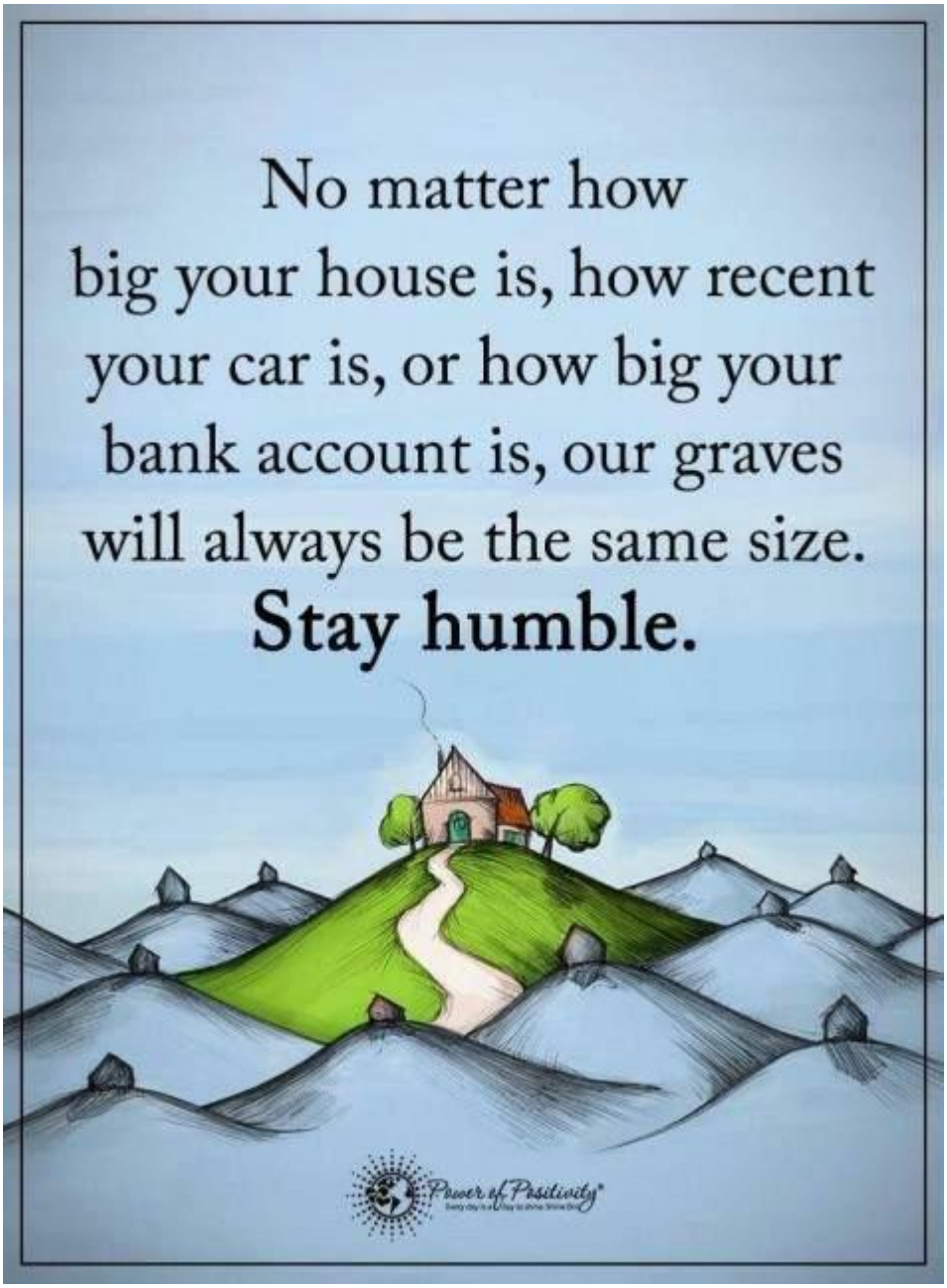
No matter how
big your house is, how recent
your car is, or how big your
bank account is, our graves
will always be the same size.
Stay humble.
Power of Positivity

NOW we are to benefit through the abundance of CO^2!