

THE STUDENT MOVEMENT AND THE CAMPAIGN FOR ZERO EMISSIONS AND BELOW

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What is Zero Emissions and Below?

There is too much greenhouse gas in the air NOW! There is absolutely no advantage in having any more in the air, NOW! Our private targets should be to have no future emissions in to the atmosphere. That's what we really need.

Philip Sutton, Greenleap Strategic Institute

The phrase “Zero Emissions and Below” describes the goal of reducing human greenhouse gas (GHG) emissions to zeroⁱ in order to reduce our emissions below the level of natural sequestration of GHG.

When this point is reached, natural systems will be sequestering more carbon than is being released into the atmosphere – therefore levels of ***atmospheric*** GHG will reduce.

However we need to speed this process up as fast as we can by employing human sequestration options, such as increasing soil carbon levels through organic agriculture or taking up carbon in regrowing forests on previously cleared land. Otherwise we will be stuck with dangerously elevated temperatures for many hundreds of years.

The process must be continued as fast as possible until ***atmospheric*** GHG are reduced to close to pre-industrial levels, which would over time re-establish the relatively stable climate the planet has experienced for the last 8000 years.

The “Zero Emissions and Below” goal is also described as “Zero Emissions Minus”, “Zero Minus” or “Zero Minus Fast” goals.

ⁱIn reality we might only get an outcome of 97-100% reduction in different sectors, but note the 97% figure is not the goal but an outcome of working towards a 100% zero emissions goal.

How low do we go?

Our goal is to achieve zero emissions as fast as possible and maximise both natural and human sequestration of ***atmospheric*** GHG.

Importantly the goals we aim for need to be significantly tougher than the goal that ***global society*** is pursuing, because we know from experience that individual and organisational efforts often fail – so each of us have to over-compensate. Our personal, organisational and regional (i.e. Australian) goals must be as strong as they can be.

Below I have outlined one possible scenario.

Currently natural sequestration is estimated to occur at around 4 billion tons (Gt) of carbon a year. Higher temperatures are expected to seriously reduce the natural sequestration rate by mid-century.

One estimate is that it will reduce to 2.7 Gt per year by 2030. Let's say we choose a figure of initially reducing **atmospheric** greenhouse gases by 3 Gt of carbon a year, then we are left with 1 Gt of carbon emissions to distribute across the entire world population to deal with meeting emissions that have not yet been reduced to zero.ⁱⁱ

The world population is 6.5 billion and by using the principles of equitable global carbon rationingⁱⁱⁱ, where allowable carbon emissions (1 Gt) is divided up on a per capita basis, Australia would be allowed to produce 0.15 tC per person or 3.1 million tons (Mt) of carbon (11.4 Mt of CO₂) as a nation per year.

We currently produce 564.7 Mt of CO₂e (2004 figure), and therefore we would need to reduce today's GHG emissions by 98% to meet our allowance of 11.4 Mt of CO₂e.^{iv}

Human assisted sequestration would be used to maximise the rate of **atmospheric** GHG removal.

To put these figures in the context of the standard "X% of 1990 levels by 2050", it would mean Australia must reduce its carbon emissions by 98% on 1990 levels, assuming a world population of 9 billion and a continued desire to produce no more than 1 Gt of carbon per year globally and the rest of the world moving simultaneously to reach similar carbon rationing based targets.

Even if we merely wanted our emissions to be "Net Zero" or "Carbon Neutral", i.e. having no net effect on **atmospheric** GHG levels we would still need to reduce our current GHG emissions by 92%, and we would be resigning ourselves to climate impacts worse than we already see today, because of the additional 0.5-1.5° temperature rise already built in.^v

ⁱⁱ The decision to reduce atmospheric GHG by 3 Gt per year is largely an arbitrary decision on my behalf and in reality should be as high as we can make it. It must be supplemented by human assisted sequestration to maximise the rate of atmospheric GHG reduction. Food production would be expected to utilise a significant proportion of the allowable GHG emissions.

ⁱⁱⁱ The question of compensation for the damage to the world climate systems by the developed nations (who are responsible for releasing most of the GHG from fossil fuel burning and deforestation) is still not dealt with by the carbon rationing system. The developed world must pass on and fund the roll out of zero emissions technologies, prevent further land clearing and aid in adaptation programs for the rest of the world. A non carbon based economy needs to be established in the developing world as ultimately the carbon economy has no future. Investment in carbon economy technology for the developing world would only disadvantage them in the long run and slow the global move towards zero emissions.

^{iv} I have converted our allowable CO₂ emissions directly into an allowable CO₂e or "carbon equivalent" figure. This allows a comparison against the figure for total GHG emission in CO₂e from Australia's GHG inventory but ignores in the initial calculation of allowable emissions the natural sequestration or decomposition of other GHGs, most notably methane which only has an average life of 12 years in the atmosphere. If we restricted our analysis to purely CO₂ emissions, the figure for CO₂ released in 2004 is 415 Mt CO₂ which would require a 97.25% reduction in our CO₂ emissions to still restrict global emissions to 1 Gt C per annum. If we wanted to tread water (in the ever rising seas) and go for "carbon neutral" looking at CO₂ only, then we would need to reduce today's CO₂ emissions by 89% immediately (calculation below).

*Natural carbon sequestration of 4Gt of carbon per annum divide by world population of 6.5 billion gives us .615 t C per capita per annum, multiply this by Australia's population of 20.25 million gives us an annual figure of 12.46 Mt of carbon which can be released into atmosphere. Multiply this by the carbon to carbon dioxide weight conversion factor of 3.6675 gives us a total annual figure of 45.7 Mt of CO₂ allowable for release into the atmosphere. Converting this figure to a percentage of our total CO₂ released per year (451.05 Mt , or 45.7/451.05*100) gives us a goal of 11% of CO₂ emission or an 89% immediate reduction.*

^v The 92% carbon neutral figure would increase in size each year we delay reducing our emissions, and would also have to increase over time as the earth's natural systems lose their ability to absorb atmospheric carbon, a process which is occurring now.

How fast do we go?

The simple answer is as fast as possible, which we believe is ten years.

We also need to go as fast as possible to take a leadership role in the world showing that a country such as Australia, which until now has been dependent on coal for power and export dollars can go zero emissions.

The ten year figure also matches numerous calls by leading scientists, including James Hansen, NASA's leading climate scientist, who say we have ten years to significantly reduce our emission levels or we are in serious trouble.

The crystallising scientific story reveals an imminent planetary emergency. We are at a planetary tipping point. We must move onto a new energy direction within a decade to have a good chance to avoid setting in motion unstoppable climatic change with irreversible effects. The 'dangerous' CO₂ level is at most 450 ppm, and it may be less. CO₂ has already increased from pre-industrial 280 ppm to today's 383 ppm, and it is now increasing about 2 ppm per year. Global disasters can still be avoided, but only if we act promptly.

James Hansen, State of the Wild: Perspective of a Climatologist, April 2007

Why a fast transition to Zero Emissions and Below?

1. A moral and ethical imperative

If you simply look at the impacts of climate change today which include species extinction, 150 thousand or more human deaths per year, ecosystem collapse, catastrophic weather events, drowning pacific islands and growing numbers of climate refugees, in any moral or ethical analysis it is difficult to argue that we should allow the situation to remain the same or even get worse.

Consequently the only logical response open to those holding a moral and ethical position on climate change is that we must reduce the level of *atmospheric* greenhouse gases and to do this as fast as possible to reduce future impacts. This is especially true given that many of the solutions are available for implementation today.

To argue for anything less is to advocate an increase in the impacts we are observing today and exposing the world to unacceptably high risks of catastrophic or cataclysmic climate change (see points 2 and 3 below).

2. Avoiding catastrophic climate change

Numerous scientific, environmental and political organisations, including the European Union, have been arguing the critical level of dangerous climate change is 2° above pre-industrial levels.

As we approach this point climate change will move from highly damaging to having a catastrophic impact on the world's ecosystems and human society.

We will see the death of much of the world's coral reef systems, 20-30% of the world species going extinct, large numbers of humans with significantly reduced water availability, committing Greenland to a near complete melting and consequent floating off the West Antarctica ice sheet, and the loss of the Amazon Rainforest and much much more.

On the most optimistic reading of the science we already have a 10% chance on reaching a 2° warming.^{vi} Any policy that sees GHG levels increasing, increases the risk of reaching a 2° warming, which is clearly ***too high already***.

For example at current rates of atmospheric carbon increase we will reach 450 ppm CO₂e around 2013. At that point it is estimated that we will have a 26-78% chance of having a 2° temperature rise.

If we wish to reduce these risks then our only option is to advocate a reduction in ***atmospheric*** GHG levels.

^{vi} See the Climate Risk Analysis compiled by the Greenleap Strategic Institute based on page 195 of the Stern report and further commented upon by Beyond Zero Emissions: <http://beyondzeroemissions.org/climate-risk>

3. Avoiding cataclysmic climate change and a runaway event

If we reach an 6-8° or more temperature increase, climate change will result in truly cataclysmic impacts on humanity and the environment.

This figure could be reached if a critical number of positive feedback loops become active and start a chain reaction of GHG increases, temperature rise and further triggering of positive feedback loops.

Some of these positive feedback loops include the melting of the North Pole, the thawing of the world's permafrost, the drying and burning of the Amazon rainforests, gasification of undersea frozen methane, significant changes to ocean currents and ocean acidification.^{vii}

The point at which the world passes the critical threshold of GHG gas release from positive feedback loops is called the “tipping point”.

The exact timing of the “tipping point” can only be guessed at, with some scientists such as Lovelock arguing we have already passed it, while others argue it will occur if somewhat higher temperatures are reached. James Hansen from the NASA Goddard Institute thinks the tipping point might be as close as a further 1° away from the current temperature and we are already perilously close to locking in that additional warming.

Giving the uncertainty around the point at which we will pass the global “tipping point”, the only logical approach to dealing with this phenomenon given its disastrous impacts is to reduce our ***atmospheric*** GHG levels as quickly as possible and hence reduce the risk of this event occurring.

^{vii} In an article in New Scientist (5/8/2006) on Ocean Acidification, Ken Caldeira from the Carnegie Institution has already called for implementation of Zero Emissions in order to save our ocean from this catastrophe.

Current goals

Why the current goals are a dog's breakfast

As we have argued above, the adoption of goals other than a fast transition to “zero emissions and below” is ethically, morally and logically bankrupt. This begs the question why do so many people adopt the various mishmash of other much weaker goals. We explore some possible reasons below.

Lack of understanding around impacts and risk

It is clear that some people lack the ability to accurately assess the threats posed to us by climate change, both today and into the future, and the immediacy of the need to act to avoid the present disaster and future catastrophe.

Lack of understanding around solutions

Many people simply lack the understanding that zero emission solutions are possible or alternatively seem to have been convinced by the nuclear and coal industry spin that the solutions we need are not available in the timeframes necessary. Consequently, they adopt longer term and more minimal goals based around their perception of solutions, and the timeframes which they believe are likely to be met and feel they can advocate for.

Acceptance of the current impacts

This is perhaps linked to a failure to understand that solutions can be implemented in a way that significantly benefits our society. It seems many people view the impacts we are experiencing today and in the immediate future as inevitable or even acceptable and refuse to adopt goals that will seek to reduce these impacts.

Rocking the boat

For some it is the desire not to “rock the boat” and conform to what is perceived as the mainstream or majority view on climate change goals. Not “rocking the boat” is no basis to establish sound goals and this type of complacency has allowed some of the worse crimes in history to be perpetrated.

Strategic assessment

Rightly or wrongly some groups, while acknowledging their goals are too weak, have chosen weaker goals because they believe it is the best strategic decision at the time.

Looking after their mates

Some elements of the environment movement have grown far too close to certain interest groups and political parties and are now working for their interests, while claiming or actually believing they are working for the general good. They consequently adopt goals that fit with those they are seeking to support.

Embedded culture of incremental campaigning

Since the Franklin, big environmental wins have been few and far between, with a couple of notable exceptions such as the end to land clearing in Queensland and the West Australian forest outcome. Over this time a culture of incremental gains and working with or within the system has come to dominate many environmental groups. Unfortunately the incremental gains approach is totally inappropriate for solving the climate crisis we currently face.

Failure of leadership

There has been a clear failure of leadership on the issue of climate change campaigning. We are now in the ridiculous situation where the environment movement's goal setting is being led by the conservative scientific establishment, and in some cases mainstream political parties overseas.^{viii}

^{viii} The mainstream environmental movement in Australia has finally caught up to US Republican Arnold Schwarzenegger's 80% below 1990 levels by 2050, six months after he signed these into Californian law. It is level-

pegging with the UK Tories on the 2050 goal and is just catching up to the UK Labour Government's proposed binding targets of between 26% and 32% by 2020. By contrast, the UK Greens are calling for a 90% reduction by 2030.

Denial and fear

To perceive with a fully open mind the likely impacts of climate change can be quite overwhelming for some, generating emotions of depression, sadness and fear. It is sometimes easier simply to ignore the true impact of the problem we face and the consequent actions these impacts imply.

Loss of hope

Some people have already given up on the future and think we are lost. Yet they remain in positions where climate goals are set and campaigns implemented. When all hope is lost, actions no longer really matter as the end result will be the same. At best you can play for time.

A belief in God or aliens?

Some of the responses to climate change are so bizarre that the basis of decision making can only be justified on an underlying belief in direct intervention by God or aliens!

Surreal situations arise when "reduction goals" that are adopted don't even meet the minimum levels required to meet the stated "temperature stabilisation" goals, despite these goals often being based on the most optimistic reading of the science and risk.

For example the EU recently announced that 2° was the point at which we had to limit climate change and identified (rather optimistically) that a 30% cut relative to 1990 levels was needed by 2020 to achieve this. Yet they then went on to adopted a 20% goal that missed their own mark by one-third!

Monbiot points out that science shows we might need far larger targets than he was proposing to reduce the chance of reaching 2° to acceptable levels. He states that "there is perhaps a 30 per cent chance that we have already blown it. We might already be committed to 2°." But he then dismisses the point by claiming that "I am writing this book in the spirit of optimism, so I refuse to believe it."

Even the Stern report seems to argue for a limit of 2°, yet settles on the goal of stabilising atmospheric levels at 550 ppm CO_{2e} which gives us a 99% probability of exceeding a 2° rise.

How can the current situation around goals be improved?

Adoption of reduction goals that match our impact goals

The first step is work from goals that give us the best chance of achieving the outcomes we want, i.e. a reasonably stable climate in which today's humans and ecosystems can thrive, survive and evolve. This would involve a large reduction of the impacts we are seeing today, and a dramatic reduction in the chance of reaching a 2° temperature rise or passing the global tipping point to runaway climate change.

The best possible chance we have of reaching this goal is to move to zero emissions and reduce levels of **atmospheric** GHG as quickly as possible.

Once we have adopted this goal we can develop the solutions to meet it.

Clear messages

The current messages are confusing for average members of the public, with shifting targets from 60% to 80% to 90%, from 20% to 30% and even a 108% target, referring to Australia's Kyoto target. There is an abstract baseline or reference point of 1990 but other reference points are also used, such as 2000. There are numerous target years including 2012, 2020, 2030 and 2050. Targets can even get confused between renewable energy targets and emission reduction targets, for example 20% by 2020 could mean either.

All of this creates confusion in the public mind and enables politicians to spin the targets to their own advantage. A recent example of the twisting of messages was the Victorian State Government's announcement that they would produce 20% low emission energy by 2020, which happens to include a brown coal to diesel plant! This was a twisting of Environment Victoria's 20% by 2020 campaign – an emission reduction target. More recently governments have been shifting the baseline year away from 1990 to other later years, for example NSW's goal of reducing emissions 60% by 2050 on 2000 levels.

We are proposing that we aim for the goal of “zero emissions and below by 2020”, this goal is then distilled into the simple campaign slogan “Zero Emissions Now”.

This message is instantly understandable by the public, defining both the goal “Zero Emissions” and the time frame “Now” unambiguously and simply.

The “Zero Emissions Now” slogan used on our banners, badges and t-shirts usually receives positive responses from average members of the public who intuitively understand that we have pushed our climate systems too far.

The “Zero Emissions Now” slogan also picks up on the variations on the zero emission goals which include the “Zero Emissions and Below” goal and its less ambitious variants “Near Zero Emissions” and “Net Zero Emissions”, the latter being the goal of a growing number of councils in Victoria.

Innovation

Once the “Zero Emissions Now” concept gets locked into the public and private mindset, our society will respond with innovative ways to solve the problems around reaching zero emissions and sequestering atmospheric carbon.

For example one technology under development which meets both criteria is a biological oil and gas production facility that captures atmospheric carbon via algae and char by-product that is blended with agricultural soils. The more this product is consumed, the more carbon will be removed from the atmosphere and stored in the ground in the form of stable char.

There are precedents for the scale of change necessary: many of the world's industrialised economies were transformed into war economies within 12 months of the outset of WWII.

Role of the student movement

Leadership in reaching Near Zero Emissions

If we are aiming to implement a zero emissions and below goal within about 10 years, it is clear some elements within our society must move first.

Universities and the students within them represent both symbols and a real focus of knowledge and investment in the future by a society, even perhaps the most significant.

If universities fail to act to secure the future of their own students, and the society they serve by not operating in a sustainable manner, ignoring the warnings coming from their own departments, it sends a very negative message to the rest of society about the need to act.

Alternatively, if universities lead in reducing their climate impacts, it will send a strong positive message as to the way of the future.

In the early 90's universities were some of the first institutions to ban smoking from buildings and these bans were often implemented first by the student unions/associations in their own buildings. If we can go zero emissions for our lunch then we should be able to do it for the planet!

Suggested specific actions of the student movement

100% GreenPower and energy efficiency

Get 100% GreenPower on your campus by 2010. Your campuses potentially have enough energy efficiency gains to offset the whole cost of buying 100% GreenPower. Encourage prospective students to attend other universities that are more sustainable if the administration fails to meet your demands. Target sustainability orientated courses and your University's flagship courses – hit them where it hurts.

Campus car fleet

Switch car fleet purchases to more efficient and low emission vehicles such as hybrids, plug-in hybrids and fully electric vehicles when they become available.

Public transport and cycling to campus

Many university campuses are still poorly served by public transport and cycleways. Campaign for electrified heavy or light rail and dedicated bike paths to your campus. Rail can run on renewables and avoid dependence on fossil fuels, which is useful when the oil peak is reached in mid 2010.

Spread the word

Run talks, stalls etc on campus to educate other staff and students. Talk to your friends and family. Buy climate change books for birthdays and Christmas presents.

Federal election

Get active on the federal election. Make sure students are enrolled to vote and link in with campaigns such as VoteClimate.org.au by putting their posters up around campus and in surrounding suburbs.

Push for changes in the teaching curriculum and research

The core business of universities is teaching and research. We need to get this changed very quickly to actively promote a zero emissions future.

Support off-campus campaigns and projects

Support off-campus campaigns, groups and projects. For example bring a presence to this year's Walk Against Warming, help the Greenleap Strategic Institute conduct zero emission research, join Beyond

Zero Emissions Campaign or your local Climate Action Group (see climatemovement.org.au), or help VoteClimate.org.au by leafleting or door knocking in a marginal seat.

Join the Zero Emission Network

The Zero Emission Network is building a coalition of groups to support and campaign on the “zero emissions and below” goal.

ANU's Zero Emissions Society is one of our founding members. We would like more and would be happy to come and make a presentation to your group.

If you support the Zero Emissions Now campaign please join – it's free and you will be part of the most important campaign to save our future.

See www.zeroemissionnetwork.org.au