



strikingtargets

matching climate goals with climate reality

BY PHILIP SUTTON



FOREWORD

Amidst the noise of the day-to-day debates, we have lost sight of the simple logic of the advice coming from the world's top climate scientists. Despite the uncertainties in the details, the science carries one underlying message, from which we can draw only one rational conclusion.

It is time to declare a global emergency and mobilise all our available resources, political will and human ingenuity towards one task – reducing the risk of catastrophic climate change to a safe level.

The momentum in the climate system is now so great that the world will, before long, accept that the threat is of this magnitude. It will recognise that, despite the remaining uncertainties, we cannot afford to risk the collapse of the global economy and civilisation. Thus society will at last strike up an appropriate response – one that recognises the science and the true scale of the risk.

When this emergency response is designed, it will certainly require that we immediately act and with a level of determination and commitment not seen since World War 2. A safe climate is an achievable goal and anything less would leave civilisation at too great a risk of catastrophe, and would therefore be irrational. We may be slow, but we are not stupid.

Our remaining task is then to develop and set about implementing an emergency plan of action that is capable of achieving this outcome.

PAUL GILDING
Sustainability Writer & Advisor

Author, *The Great Disruption* (2011)
Co-author, *The One Degree War Plan* (2009)
www.paulgilding.com @paulgilding

IGNITING A NEW ERA

The United Nations Climate Change Conference in Paris this year should mark the end of one era of climate campaigning and the beginning of a new one.

The global effort on climate began, officially at least, as early as 1988 when the IPCC was founded. That's 27 years ago. And the policy negotiations got underway in earnest in 1992, with the creation of the UN Framework Convention on Climate Change – 23 years ago.

For all that time the principal struggle has been between the forces that don't want to act on climate and those that do. In this context it hasn't made sense to many people to be too concerned about what ideally needs to be done on the climate – because some action was better than no action.

In Paris this year at COP 21, it looks like there might, at last, be an accord that engages all countries in the world. It seems that the recent climate agreement between China and the USA will provide the anchor for a global agreement that will probably be strong enough to prevent +4°C warming but not be strong enough to prevent +3°C.

While the fossil fuel industry and its industrial and ideological allies will keep up rearguard action, 2015 probably represents the moment in history when the world finally commits to treating climate as a serious issue requiring non-trivial, ongoing action by all nations. So, most likely, the climate movement is about to achieve its primary goal of the last 27 years. That's something to celebrate.

Given this likely success, it is now time to take stock and consider what our primary goal should be for the next stage of climate activism.

Over those last 27 years, while all the research, activism and negotiation has been going on, the climate has actually become dangerous. So, the key goal now must be to provide, at the 11th hour, real protection for the vulnerable people, species and ecosystems of the world.

The principal struggle must shift, from the clash between no action and some action, to the crucial struggle between those who want to constrain reform to levels that are not too disruptive and those who want action that will provide highly effective and timely protection.

As we come up to the Paris milestone, each group and person active on climate needs to prepare for the impending shift in the purpose of climate campaigning and to work out how they can play the most effective role in the new era that opens up 'post-Paris'.

WHAT MOTIVATES OUR CHOICE OF CLIMATE GOALS?

It is often said that it's the science that tells us what to do – but this is not so. It is our interests and ethics that motivate us. Climate policy should be driven by both our self-interest and our moral concern for others – especially the most vulnerable majority of the world's people and species.

Once we are clear about our ethics and interests, we can draw on science to help us identify threats and risks. The science can also guide us in imagining preferred futures and setting environmental goals and action objectives.

WHAT CAN WE LEARN FROM SCIENCE TO INFORM OUR PROTECTION EFFORTS?

To provide effective protection, the world needs to prevent:

- the crossing of major earth system tipping points, and
- major impacts on people, non-human species, ecosystems, ecosystem services, the economy and civilisation.

Scientific knowledge is already sufficient to support the following conclusions:

- even the current warming of 0.85°C is enough to cause highly undesirable and costly extreme weather events across the globe and to trigger very serious earth system changes. So it is clear that the current temperature is already too high;
- global warming of +2°C will be far too hot and so will +1.5°C warming according to the 2015 review under the UN climate convention¹;
- the current greenhouse gas level is enough to produce warming of these magnitudes – once clean energy eliminates the particulate air pollution from coal burning that is currently cooling the planet by just over 1°C²;
- the amount of greenhouse gas pollution in the air is already dangerous (in 2015);
- there is no budget of burnable carbon left³.

THE RIGHT PROBABILITY OF SUCCESS?

With mission critical systems, especially where lives and wellbeing are at stake, current safety best practice in industry is to design for zero failure to achieve design specifications.

Where this approach is applied, the failure rates experienced which lead to fatalities fall into the range of 1 in 1000 to 1 in 10,000 for run-of-the-mill products, and considerably less than 1 in 1,000,000 for high expectation systems like aviation.

Since the climate system is so critical to human survival and wellbeing and to the survival of all other species, our actions should be designed to restore an optimal climate with zero risk of failure.

CLIMATE & EARTH SYSTEM GOALS

We stand at a crossroads. The old climate goals are dangerously deficient. What should we be going for instead?

Humanity has made a mistake in creating climate conditions beyond the safe zone of the Holocene epoch (ie. the relatively stable climate of the last 10,000 years). We need to fully correct that mistake, rather than just curtailing its magnitude.

Our climate and earth system goals need to be designed to restore optimal conditions – to approximately those of the pre-fossil fuel era.

Key climate/earth system parameters that need to be restored to safe levels are:

- ocean heat content
- global surface temperature
- ocean acidity
- sea level

To prevent massive disruption to coastal areas, the global average surface temperatures and the ocean temperatures need to be lowered to maintain a stable sea level at the height experienced over the last two thousand years.

This implies that the average global temperature needs to be reduced to well below the present level – perhaps reversing as much as the full warming experienced in the last 100 years.

To restore the ocean acidity to safe levels, the atmospheric CO₂ level needs to be cut substantially.

To deal with both global warming and ocean acidity issues, it is possible that the atmospheric CO₂ level needs to be restored to somewhere between 280 ppm and 300 ppm.

To prevent severe climate and ocean acidification impacts expected by 2030⁴, net global greenhouse gas emissions should reach zero and temperatures start to fall before then.



Climate policy should be driven by both our self-interest and our moral concern for others - especially the most vulnerable majority of the world's people and species.

GOALS FOR RESTORING A NATURALLY SAFE CLIMATE

Action goals need to be set for each of the human-driven factors that change the climate and ocean acidity. These goals need to ensure that a naturally safe climate and safe ocean acidity can be restored as rapidly as possible. 'Naturally safe' means conditions are regulated by natural processes rather than constant human intervention. For both climate and ocean acidity reasons, the atmospheric CO₂ level needs to be lowered to close to that of the pre-fossil fuel era. This requires two classes of action:

- transformation of the economy and lifestyles to achieve 'zero' emissions⁵; and
- large scale draw down of CO₂⁶ to remove virtually all of the excess CO₂ released to the atmosphere as a result of human activities.

GOALS FOR A SAFE TRANSITION

Goals for a safe transition must be developed urgently. During the transition to a naturally safe climate and safe ocean acidity, action will need to be taken to minimise the impact of a disturbed climate on all people, species, ecosystems, ecosystem services, the economy and civilisation.

THE SPEED OF THE TRANSITION

If the world is to avoid the critical climate and ocean acidity impacts anticipated by 2030⁴, we have only 15 years to not only physically change the economy but for the benefits to be felt in the environment.

The required changes (creating a 'zero' emissions economy and building the full scale capacity to draw the excess CO₂ from the air) are on a par with the biggest and most urgent economic rebuilding ever undertaken by humanity. The experience of World War 2 (WW2) however suggests that the necessary climate-driven physical transformation of the economy could be accomplished in as few as 6 years (ie. the length of WW2), if action was taken at the same scale and with the same urgency. But such a short economic transition would only be possible if society was as motivated as during WW2. An ultra fast transition therefore depends on the development of the maximum possible level of motivation and commitment.

MODE OF ACTION

Physically restructuring the economy before 2030 cannot be achieved using business-as-usual mode – or even reform-as-usual mode. But an approach that has the best chance of being equal to the task is the emergency mode of action.

Emergency action is distinguished by:

- a very strong social consensus about a central problem that must be solved urgently, without fail;
- a strong willingness to reallocate the necessary resources from lower priority activities to support effective action on the central problem;
- a strong commitment to work quickly through arguments and disagreements so that the necessary pace of action can be maintained;
- a willingness to pragmatically adopt, for the duration of the emergency, economic management and other action measures that can deliver the needed results, no matter how unconventional the measures are.

Once society is in emergency mode, it is possible to plan with reasonable accuracy the required restructuring of the physical economy, including its duration.

SPEED OF GETTING INTO EMERGENCY MODE

Getting into emergency mode, rapidly, is the central challenge for the climate movement and for all those who understand what we are facing.

With only 15 years to head off critical climate impacts, and at least 6 years needed, at an absolute minimum, to create a safe climate restoring economy, the time taken to get into emergency mode must be kept as short as possible.

However because adopting the emergency mode involves a strategic struggle with forces that want to block effective action, it is not possible to plan with accuracy how long it will take to 'get to go' on the emergency. Shortening the time however will depend on the development of decisively superior strategic capability.

BROAD SUSTAINABILITY & WELLBEING AS A CONTEXT FOR ACTION

Action on climate must be put into a broader context of ecological and social sustainability and human wellbeing to ensure that climate solutions do not contribute to other fundamental problems. For example, the physical transformation of the economy should build in closed-cycle production (ie. close to 100% recycling) at the same time.

FULL PACKAGE OF ESSENTIALS FOR SAFE CLIMATE RESTORATION

1



STOP THE HEATING & COOL THE PLANET

GLOBAL CLIMATE SYSTEM TARGETS

GLOBAL TEMPERATURE

Reduce the Earth's temperature by up to 0.85°C (from 2014 baseline)

CARBON LEVELS

Reduce carbon dioxide in the atmosphere to pre-industrial levels

2



ZERO EMISSIONS & CARBON DRAWDOWN

CONSISTENT POLICY & INITIATIVES

ZERO EMISSIONS

Drive greenhouse gas emissions to (net) zero through economic and public policy

DRAWDOWN

Draw down all the excess atmospheric CO₂ and store it safely to achieve 280 to 300 ppm

3



TRANSITION AT WARTIME LIKE SPEED & SCALE

SPEED & SCALE OF IMPLEMENTATION

SPEED

Accelerate policy implementation at emergency speed to avoid and reverse critical earth system tipping points and damage to people and biodiversity

SCALE

Mobilise business, labour and the entire community at wartime-like scale and allocate necessary resources

4



NO MAJOR ENVIRONMENTAL OR SOCIAL TRADE OFFS

NO MAJOR TRADE OFFS

ENVIRONMENTAL

Protect and maintain ecological systems during and after policy implementation

SOCIAL

Commit to democratic processes and protection of human rights during and after policy implementation

BACKCASTING FROM PRINCIPLES

When vitally important outcomes with critical deadlines need to be achieved, the projects to deliver those outcomes must be designed using the backcasting method. The outcomes need to be expressed as principles of success. For example, in the case of climate, who and what is to be protected, how well and by when. Next the actions needed to deliver the outcomes are specified, starting from the final actions and working back to the present.

LEARNING FROM THE WORLD WAR 2 ECONOMIC MOBILISATION

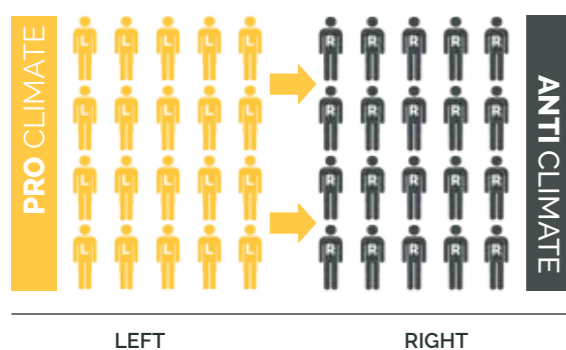
The task of modifying the physical economy at the scale and speed needed to solve the climate problem is nearly unprecedented. The only time something as challenging has been attempted before was during WW1 and WW2 when societies set out to fully and urgently harness their economic productivity.

Vital lessons for our current effort can be learned from the history of these and other economic mobilisations such as the Apollo moon mission, the Marshall Plan and the emergence of 'tiger' economies. But we need to be alert to the differences between past economic mobilisations and the climate issue, and take into account social changes that have occurred since.

A SUPERMAJORITY OF STRONG SUPPORT

One of the key things to be learned from the history of WW2 is that the drastic repurposing of the whole economy was possible in a very few years because there was a supermajority of strong support (well over 50% and sometimes as high as 95%). Significantly, this means that the more radical the change you need and the faster you need it, the more essential it is to have a supermajority of strong support.

CURRENT MOBILISATION MODEL



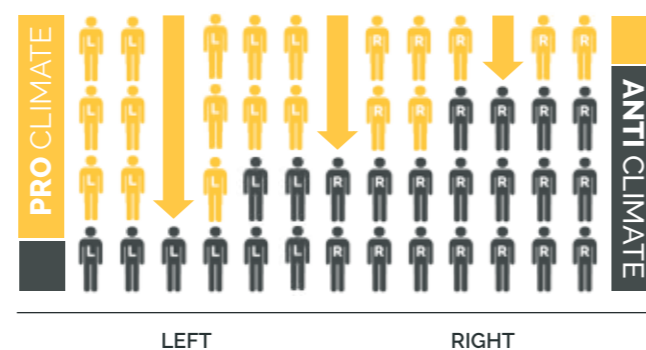
MOBILISING THE GRASSROOTS & THE NON-FOSSIL FUEL ELITES

We won't succeed in restoring a safe climate, fast enough, if we fail to mobilise both the grassroots and the non-fossil fuel elites. Emergency economic restructuring needs a democratic mandate, hence the grass roots must be mobilised, and it also needs the leverage of the non-fossil fuel elites. It's conceivable that the non-fossil fuel elites could, in the end, realise that their best interests are not served by supporting the fossil fuel elites, and, if organised, the former are powerful enough to prevail. But, if the emergency economic mobilisation is shaped only by the non-fossil fuel elites, the solutions and modes of action chosen could easily not be in the best interests of the majority of people or other species.

MOBILISING INTENSELY ON THE RIGHT, AS WELL AS THE LEFT

A critical weakness of the climate movement is the low percentage of participants who have a right wing political orientation. The number of right-wing people who would gain enduring benefit from climate change or who wouldn't suffer from it is very small. The lack of support from the right is not a sign that right-wingers can't 'get' climate – it's more an indication of the chronic lack of climate movement mobilisation within that demographic. Rather than trying to build climate support by recruiting from the right to the left, we need to grow support by empowering climate aware people, across the political spectrum, to engage their peers. There is a lot of catching up to do on the right.

ALTERNATIVE MOBILISATION MODEL



GETTING TO GO

The period of 'getting to go' on the emergency will need to be as short as possible, but it will be impossible to predict how long it will take to get through this phase – as it only ends when there is sufficient, strong community support for a shift to emergency mode. (It is still useful, in a 'Zen' sort of way, to set a very short stretch goal for the length of the getting-to-go period – to energise planning and action.)



ADOPTING EMERGENCY MODE

This might be triggered by a symbolic or legal declaration or it might be the period over which the necessary aspects of emergency mode are activated. This period should be less than a year if the 2030 climate protection deadline is to be met.



EMERGENCY ECONOMIC TRANSITION

This is the period in which the economy is converted fully to zero emissions, fully-scaled CO2 drawdown capacity is put in place and, if it is done at all, solar reflection methods are deployed. To meet the 2030 climate/earth system deadline this period needs to be planned to be 10 years or less (perhaps as short a 6 years if the 'getting to go' period has been lengthy).



THE NEW NORMAL

The return to a new normal following the end of emergency mode should occur after the economic rebuilding has been completed. The timing of the switch should be reasonably plannable. If the climate deadline is to be met, then the new normal should be able to resume no later than 2030. The full development of a sustainability culture would occur in this period.

PHASES OF ACTION FOR A SAFE CLIMATE ECONOMY

Informed (but not dictated) by the experience of WW2, the effort to restore a safe climate at emergency speed will need to be undertaken under a mode of social organisation that is dramatically different from business-as-usual or even reform-as-usual. The required emergency mode will either have to be adopted all at once, via some sort of legal or social signal such as the declaration of a climate emergency, or society will need to evolve into this mode with great speed – over several months to a year.

With a slower transition to emergency mode, it is unlikely to be possible to renovate the economy in time to meet the 2030 climate protection deadline. Based on the WW2 experience, the granting of the social licence to adopt the climate emergency-mode of action depends on having a supermajority of strong support. That supermajority can only be achieved if there is a formal (legislated?) commitment to only use extraordinary emergency powers "for the duration" of the climate emergency, after which society needs to return to a (new) normal mode.

DEMANDS TO IGNITE THE NEW ERA

Complementing the central campaign, the following crucial action demands are required to get legislation, budgets and investment programs in place, at all the appropriate levels of government

1 DUTY OF EFFECTIVE CARE

Establish a duty of effective care for each individual, the community as a whole, all organisations and all governments

2 ZERO EMISSIONS ROLL OUT

Develop a strong 'zero' emissions economy based on renewable energy, resource efficiency and demand reduction

3 JOBS GUARANTEE

Create a jobs guarantee for the climate transition – so that all people can engage with the climate-driven economic transformation

4 NO NEW DESTRUCTIVE INVESTMENT

Ban all new climate-destructive investments, including fossil fuel exploration, production and use; switch to positive/neutral investments

5 SHUT DOWN EMISSIONS SOURCES

Legislate to create a legally binding schedule of closure/conversion of for all current additive sources of greenhouse gas emissions and other climate destructive actions

6 DRAW DOWN CO₂

Create an environmentally and socially responsible, full-scale capacity to draw down all the excess atmospheric CO₂ (and if possible all the other greenhouse gases)

7 SAFE TRANSITION

Provide a safe transition to protect people, food production, other species and ecosystem services while natural safe climate conditions are being restored

THE NEED FOR A CENTRAL EMERGENCY CAMPAIGN

It is not possible to 'single-issue campaign' our way to an safe climate response. There are too many things to be done and not enough time for each initiative to have its own campaign. We will still need some single-issue campaigns but their strategic purpose needs to be to open the door, as soon as possible, for the adoption of the emergency mode of action.

Consequently our central campaign needs to assist society to move rapidly onto an emergency footing, to convert the economy so it can meet our safe-climate-restoring goals. This core need can be best pursued by campaigning for legislation to establish a society-wide safe climate restoration program.

Getting into emergency mode, rapidly, is the central challenge for the climate movement and for all those who understand what we are facing.

POST-PARIS: THE NEW ERA OF CLIMATE CAMPAIGNING

The 2015 Paris climate conference (COP 21) marks the end of an era of climate campaigning. The struggle till now has been to get climate on the action agenda for every country in the world. Most likely, this will be achieved at the Paris conference. But the commitments that will be made will still leave the earth on a fast path to over 3°C of warming – which is environmentally and socially disastrous.

Post-Paris, the struggle must shift focus – to getting every country to take effective action, based on either a pragmatic or ethical commitment to protect the world's food production capacity, and the most vulnerable majority of people and species. Effective protection will depend on the creation of a safe-climate-restoring economy globally before 2030.

It is now time to match our climate goals with climate reality – both our goals for the restoration of the earth system and our goals for climate campaigning.

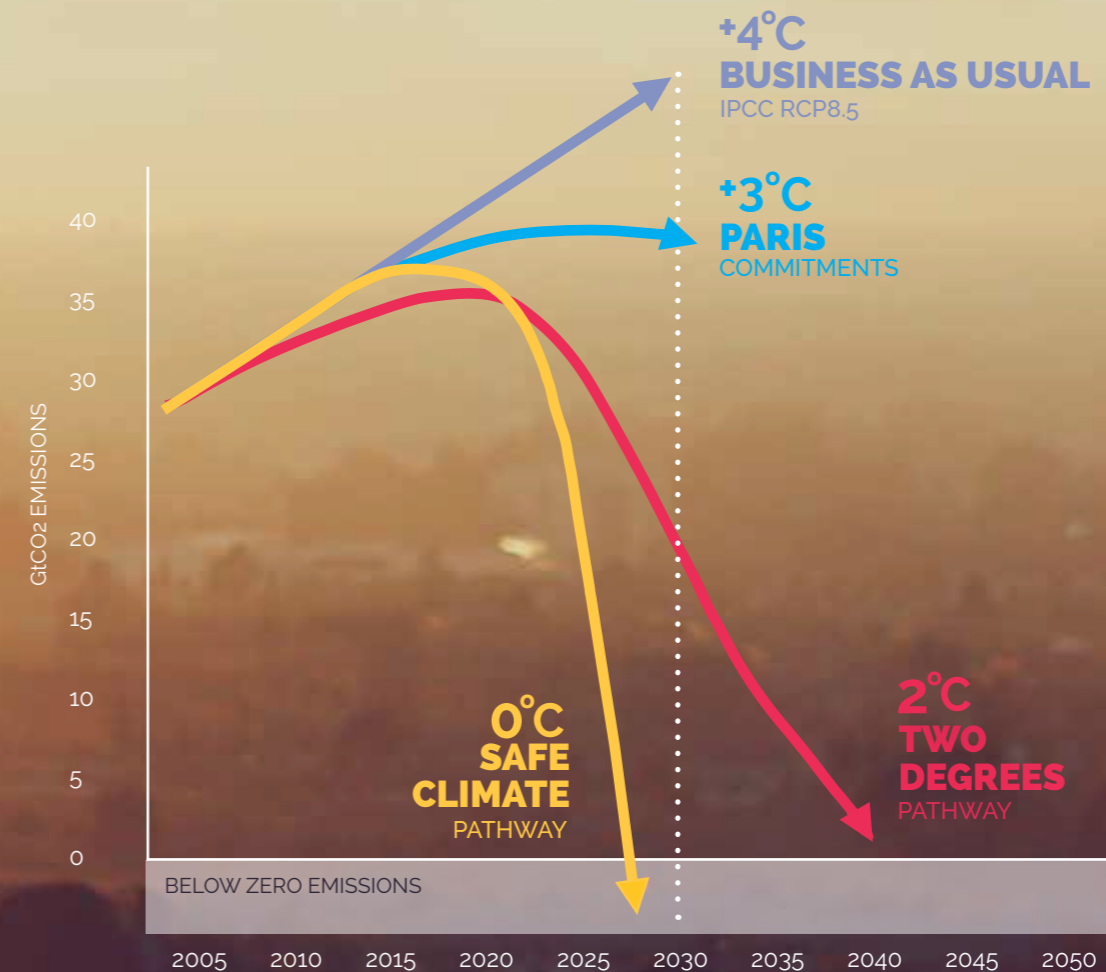
There is still a huge gap between what the world needs for the climate and where we are heading. To see this gap, compare the emissions trajectory under the Paris agreement with what needs to happen to restore a safe climate. New, realistically tough goals, that we intend to actually achieve, mean that we must also develop new modes of action that can deliver in full and on time.

Setting goals for the restoration of a safe climate and acting decisively to achieve them is the most realistic thing we can do – despite the difficulty of the task. Given what is at stake for people, nature, the economy and civilisation if we fail, it is clearly realistic environmentally. And because this approach is now the only one left to us to create a world worth living in, it is also the most realistic path emotionally, motivationally and, in the end, politically.

It is now time to change gears, and go all-out for what is needed: the restoration of a safe climate, delivered at emergency speed.

STRIKING COMPARISONS

TRACKING EMISSIONS PATHWAYS



SOURCES⁷: WBGU special report 2009, Boyd, Stern & Ward (May 2015), IPCC 2014, Climate Action Tracker, Philip Sutton

NOTES

¹ The 2009 Copenhagen climate conference of governments agreed that there should be a review of the +2°C cap. A scientific review has been completed for the secretariat of the UN Convention on Climate Change that concludes that +2°C is not a safe temperature cap, and that a +1.5°C cap, while causing less damage than the +2°C cap is also not safe.

Climate Analytics Summary:

<http://climateanalytics.org/hot-topics/how-hot-is-too-hot>

Official Report:

http://unfccc.int/science/workstreams/the_2013-2015_review/items/7521.php

² Michael Mann, 2015.

<http://www.scientificamerican.com/article/earth-will-cross-the-climate-danger-threshold-by-2036>

³ Recount: It's Time To "Do The Math" Again. By David Spratt 2015 <http://www.nocarbonbudget.info/>

⁴ Unless dramatic action is taken at extreme speed, by 2030, the earth will have passed through a number of critically dangerous changes eg. in excess of 1000 Gigatonnes of 'carbon' (organic matter) will have begun to melt irreversibly and through microbial action release methane and CO₂ (ie. equivalent to more than twice the CO₂ released by fossil fuel burning to date). A similar amount of carbon stored in the Arctic ocean might be undergoing mobilisation. By 2030, and at the latest 2038, sufficient CO₂ will have been released to cause extreme acidification in the winter in the cold Southern Ocean, preventing marine organisms from forming calcium carbonate shells/structures. And, according to recent studies of ice melt dynamics, temperatures will be sufficient to cause the rapid melting of ice in the West Antarctic, parts of Greenland and parts of the East Antarctic leading to several metres of sea level rise by 2100.

⁵ There should be no use of industrial systems that require the extraction and use of permafrost, peat, clathrate and geological carbon stores. There could be use of technologies that depend on carbon that has been removed from atmosphere and the oceans.

⁶ Other greenhouse gases should be taken out of the atmosphere too if that can be made technically possible at manageable cost.

⁷ Striking Comparisons Graph:

Business As Usual Pathway: IPCC (2014) "Climate Change 2014: Synthesis Report" (figure SPM.11-01).

Paris Pathway: <http://climateactiontracker.org>; Boyd, Stern and Ward (2015) "What will global annual emissions of greenhouse gases be in 2030, and will they be consistent with avoiding global warming of more than 2°C?" Policy paper, ESRC Centre for Climate Change Economics and Policy, Grantham Research Institute on Climate Change and the Environment

2-Degree Pathway: WBGU (2009) "Solving the climate dilemma: The budget approach", Berlin (Figure 3.2-1).

Safe Climate Pathway: Philip Sutton

Inside cover image, Paul Gilding: Photography Brett Faulkner news.com.au



CONTACT: philip.sutton@green-innovations.asn.au

PHILIP SUTTON

AUTHOR

In 2008 Philip Sutton co-authored with David Spratt, *Climate Code Red*, a ground breaking book which puts forward a compelling case for emergency action on climate change. Philip is Manager and Strategist of RSTI (Research and Strategy for Transition Initiation), a non-profit organisation catalysing the urgent transition to a sustainable economy. He is co-founder of Safe Climate Australia, a past-President of the Sustainable Living Foundation and the Australia New Zealand Society for Ecological Economics. Philip was the architect of the Victorian Flora and Fauna Guarantee Act passed in Victoria in 1988 and initiated the campaign that led to the banning of nuclear power in Victoria in 1983.

WRITINGS & PROJECTS

Climate Code Red: The case for emergency action (co-author)

Victoria's Nuclear Countdown: State Government plans for a nuclear Victoria

Seeds for change: Creatively confronting the energy crisis (co-author)

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Reference Committee for the development of the Environment Management & Renewable Energy Industry Plan (Victoria) (2002)

Reference Committee for the Audit of the Environment and Renewable Energy Industries undertaken for the Department of State and Regional Development (Victoria) (2001)

Victorian Government Wood Products Working Party - a joint industry/conservation movement working group (1992-93)

Victorian Premier's Fibre Processing and Sustainable Development Jobs Council (1992)

Manufacturing Working Group, Prime Minister's Ecologically Sustainable Development (ESD) process (1991)

Federal Government's Endangered Species Advisory Committee (1990-93)

Steering Committee for the Victorian Government Timber Industry Strategy (1986)



Written by Philip Sutton

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