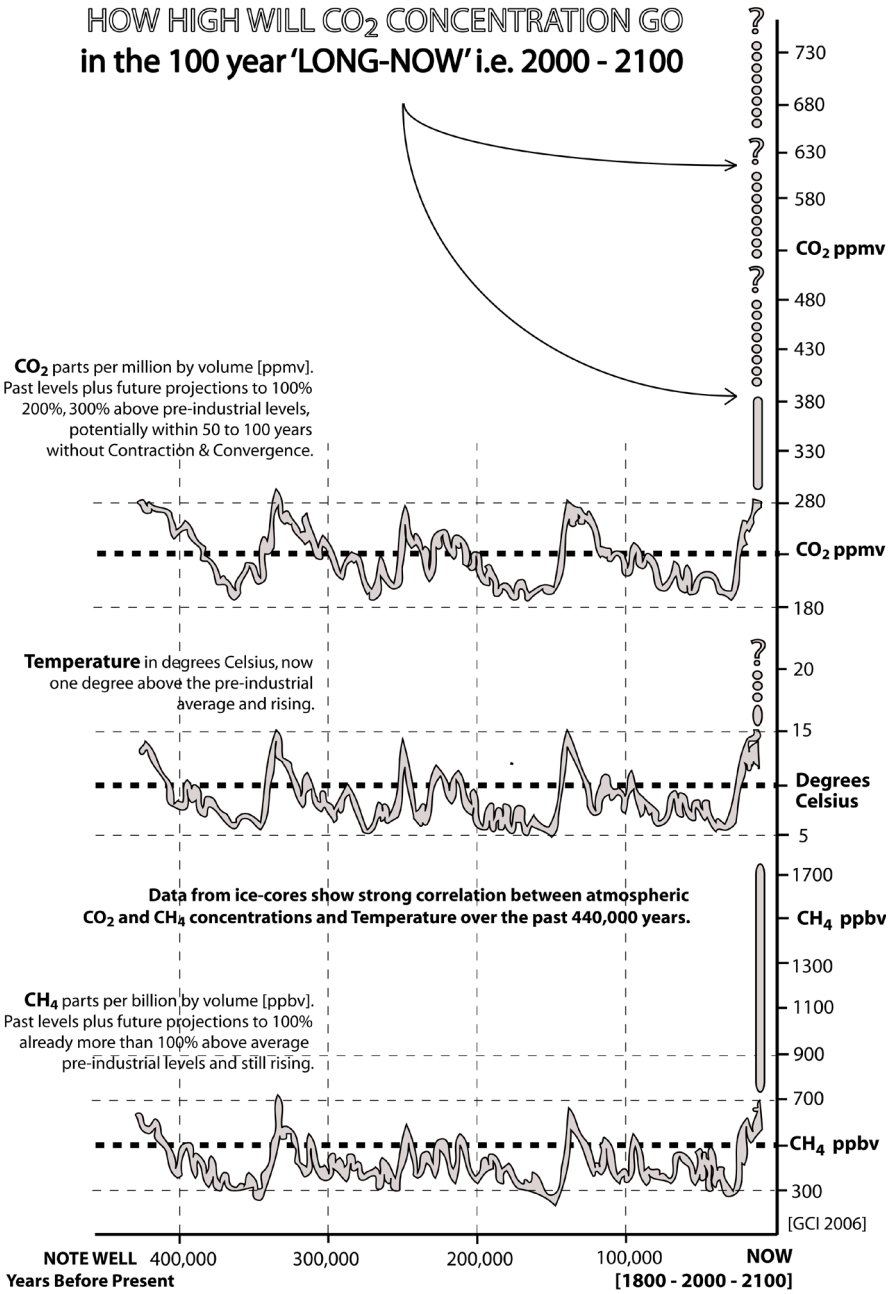
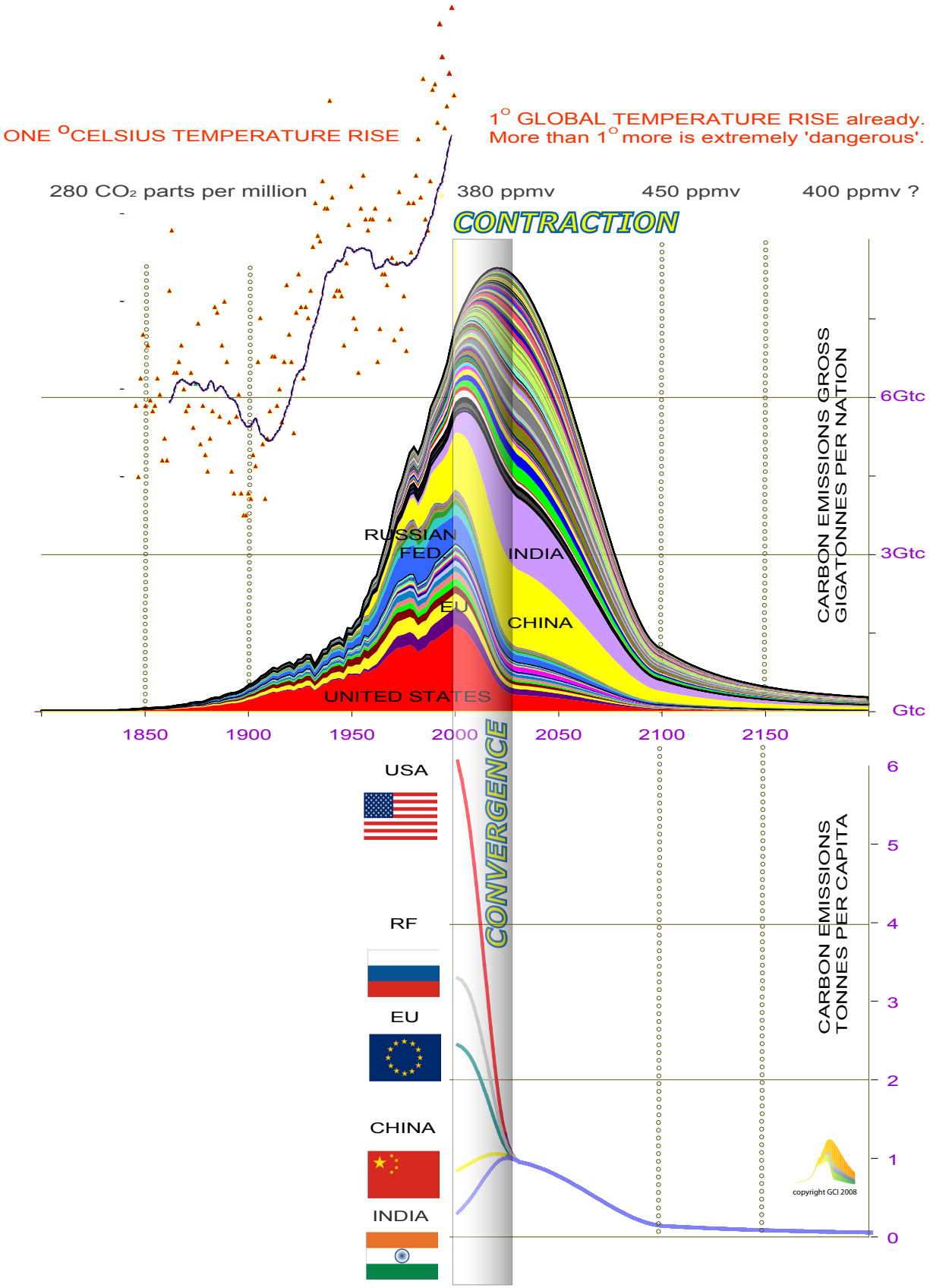
Contraction & Convergence Framework for Preventing Dangerous Climate Change

A meeting with Peter Betts
Director International Climate Change
DEFRA
3B Ergon House, Horseferry Road
London SW1P 2AL
22nd August 2008

Aubrey Meyer Global Commons Institute



Contraction & Convergence


ONE °CELSIUS TEMPERATURE RISE
1° GLOBAL TEMPERATURE RISE already.
More than 1° more is extremely 'dangerous'.
280 CO₂ parts per million
380 ppmv
450 ppmv
400 ppmv ?
CONTRACTION
RUSSIAN FED
INDIA
EU
CHINA
UNITED STATES
CARBON EMISSIONS GROSS GIGATONNES PER NATION
6Gtc
3Gtc
Gtc
1850
1900
1950
2000
2050
2100
2150
CONVERGENCE
USA
RF
EU
CHINA
INDIA
CARBON EMISSIONS TONNES PER CAPITA
6
5
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3
2
1
0
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CONTENTS

The Royal Commission on Environmental Pollution (RCEP - 2000)
The Need for an International Agreement - Contraction & Convergence

"3. The government should press for a future global climate agreement based on the Contraction & Convergence approach, combined with international trading in emission permits. Together, these offer the best long-term prospect of securing equity, economy and international consensus (4.69).

4.47 Continued, vigorous debate is needed, within and between nations, on the best basis for an agreement to follow the Kyoto Protocol. Our view is that an effective, enduring and equitable climate protocol will eventually require emission quotas to be allocated to nations on a simple and equal per capita basis. There will have to be a comprehensive system of monitoring emissions to ensure the quotas are complied with. Adjustment factors could be used to compensate for differences in nations' basic energy needs. Those countries which regularly experience very low or high temperatures might, for instance, be entitled to an extra allocation per capita for space heating or cooling.

4.48 A system of per capita quotas could not be expected to enter into force immediately. At the same time as entitling developing nations to use substantially more fossil fuels than at present (which they might not be able to afford), it would require developed nations to make drastic and immediate cuts in their use of fossil fuels, causing serious damage to their economies.

4.49 A combination of two approaches could avoid this politically and diplomatically unacceptable situation, while enabling a per capita basis to be adhered to. The first approach is to require nations emission quotas to follow a contraction and convergence trajectory. Over the coming decades each nation's allocation would gradually shift from its current level of emissions towards a level set on a uniform per capita basis. By this means 'grandfather rights' would gradually be removed: the quotas of developed nations would fall, year by year, while those of the poorest developing nations would rise, until all nations had an entitlement to emit an equal quantity of greenhouse gases per head (convergence). From then on, the quotas of all nations would decline together at the same rate (contraction). The combined global total of emissions would follow a profile through the 21st and 22nd centuries that kept the atmospheric concentration of greenhouse gases below a specified limit.

4.50 The upper limit on the concentration of greenhouse gases would be determined by international negotiations, as would the date by which all nations would converge on a uniform per capita basis for their emission quotas, and the intermediate steps towards that. It would probably also be necessary to set a cut-off date for national populations: beyond that date, further changes in the size of a country's population would not lead to any increase or decrease in its emission quota.

4.51 In table 4.1 17 we have applied "Contraction & Convergence" approach to carbon dioxide emissions, and calculated what the UK's emissions quotas would be in 2050 and 2100 for four alternative upper limits on atmospheric concentration. We have assumed for this purpose that 2050 would be both the date by which nations would converge on a uniform per capita emissions figure and the cut-off date for national populations. If 550 ppmv is selected as the upper limit, UK carbon dioxide emissions would have to be reduced by almost 60% from their current level by mid-century, and by almost 80% by 2100. Even stabilisation at a very high level of 1,000 ppmv would require the UK to cut emissions by some 40% by 2050.

4.52 The UK-based Global Commons Institute has taken the lead in promoting "Contraction & Convergence", and has developed a computer model that specifies emission allocations under a range of scenarios. The concept has been supported by several national governments and legislators. Some developed nations are very wary of it because it implies drastic reductions in their emissions, but at least one minister in a European government has supported it. Commentators on climate diplomacy have identified contraction & convergence as a leading contender among the various proposals for allocating emission quotas to nations in the long term.

4.53 The other ingredient that would make an agreement based on per capita allocations of quotas more feasible is flexibility of the kind already provided in outline in the Kyoto Protocol. Nations most anxious to emit greenhouse gases in excess of their allocation over a given period will be able and willing to purchase unused quota at prices that incline other countries to emit less than their quota, to the benefit of both parties. The clean development mechanism, which allows developed nations to claim emission reductions by sponsoring projects that reduce emissions in developing nations to levels lower than they would otherwise have been, can also be seen as a form of trading.

4.54 In the longer term trading by companies in emission permits, drawn from national emission quotas determined on the basis of a contraction and convergence agreement, could make a valuable contribution to reducing the global costs of stabilising greenhouse gas concentrations while transferring resources from wealthy nations to poorer ones. Trading needs to be transparent, monitored and regulated, and backed by penalties on nations that emit more than they are entitled to. If it became merely a means of enabling wealthy nations to buy up the emission entitlements of poor countries on the cheap, thereby evading taking any action at home, trading would not serve the cause of climate protection. Nor would it if developing countries that had sold quota heavily went on to emit in excess of their revised entitlements."

November 2007

The Government's Position on C&C Ten Years after Kyoto

1. UK Government Response to C&C advocacy by House of Commons Select Committee on Environmental Audit

The Government said: -

18. Above all, the Government must draw attention, at home and abroad, not just to percentage targets for the annual emissions in a certain year, but even more to the absolutely crucial issue of the cumulative total budget of greenhouse gases that the world can afford to emit by 2050 if it is to have a reasonable chance of holding global warming to 2oC. (Paragraph 71)

19. In terms of the way in which this cumulative global budget is divided up among individual nations, we recommend that the Government explicitly endorses, and promotes internationally, the Contraction and Convergence method, or a method similar to it. (Paragraph 72)

The Government said: -

"The UK Government would support an allocation method or combination of methods that could achieve global acceptability, be recognised as fair by all parties and had sufficient flexibility to be able to take into national circumstances, e.g. energy mix and availability of natural resources, climatic conditions."

The Minister [Benn] fronts the climate-bill in the media saying, *"it all comes from the Royal Commission" [2000] which [he appears to have overlooked] strongly advocated C&C.*

19 years ago . . . [we were only at 350 ppmv CO2]

Yesterday . . . [we are at 384 and rising fast]

2. UK Government Response to C&C Petition to Downing Street

"Contraction and Convergence is a framework approach for future action based on equal per-capita emissions allowances. It is one suggested approach on how to create a future framework for addressing climate change after the first commitment period under the Kyoto Protocol. Broadly, the idea is that in the long-term all people in the world have equal rights to emit greenhouse gases into the atmosphere.

Certain aspects of Contraction and Convergence are appealing, including the identification of a fixed level for stabilisation of greenhouse gas concentrations, and comprehensive global participation. Any framework that incorporates long term targets can offer countries greater certainty about their national targets and provide a clear signal to allow business to plan ahead and help drive investment in new and better technologies. The principle of equity is extremely important to all countries but in particular developing countries and a number of countries have expressed an interest in using per capita emissions as a basis for assigning responsibility for future action.

Given that there is still some way to go in building the level of consensus within the international community that would be required to agree on a framework for the way forward, it would be premature for the UK government to commit itself to any particular framework at this stage. We are, however, giving full consideration both to the possible frameworks themselves and also to the elements within them that could be used to form part of a workable solution."

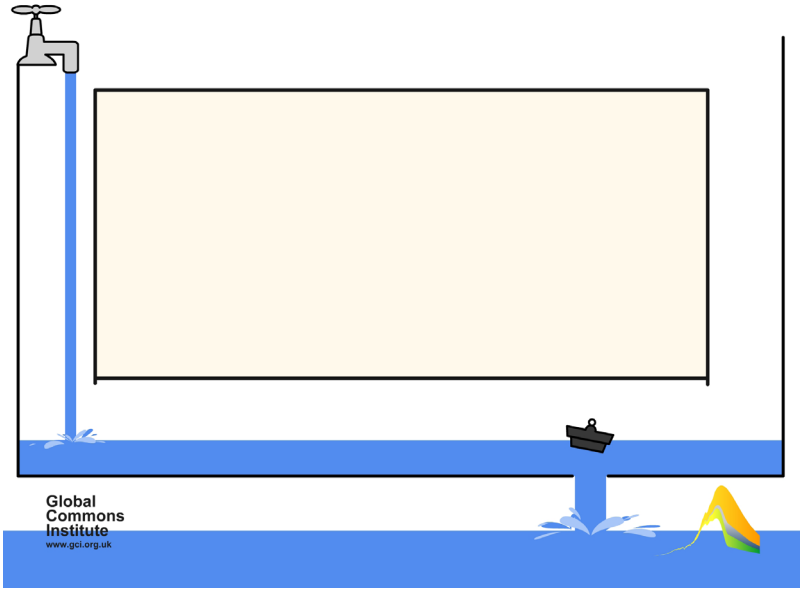
Contraction and Convergence:

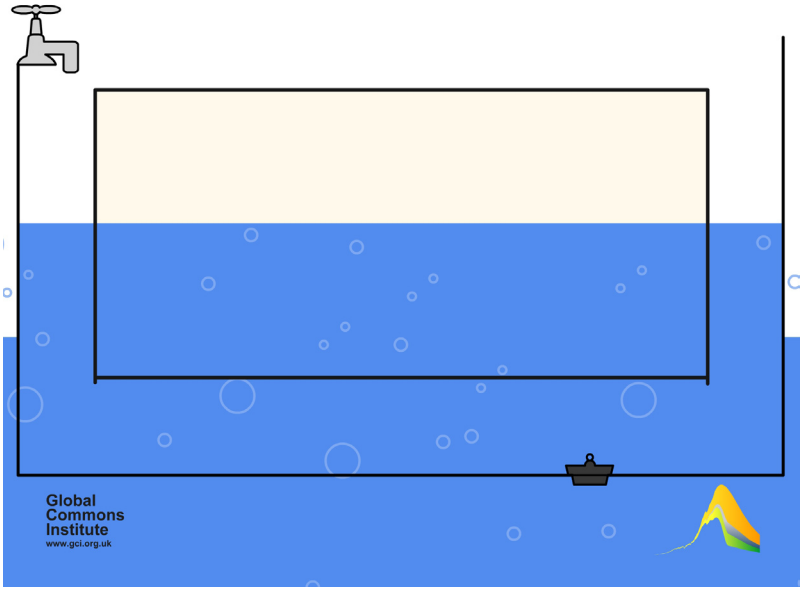
The irreducible response to climate change

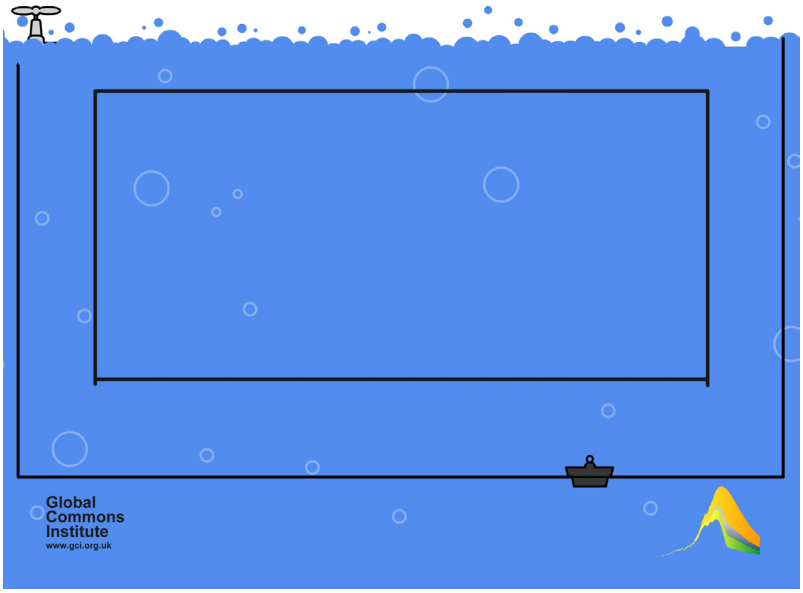
This animation is online at:

www.gci.org.uk/Animations/BENN_C&C_Animation_[Tower_&_Ravens].exe

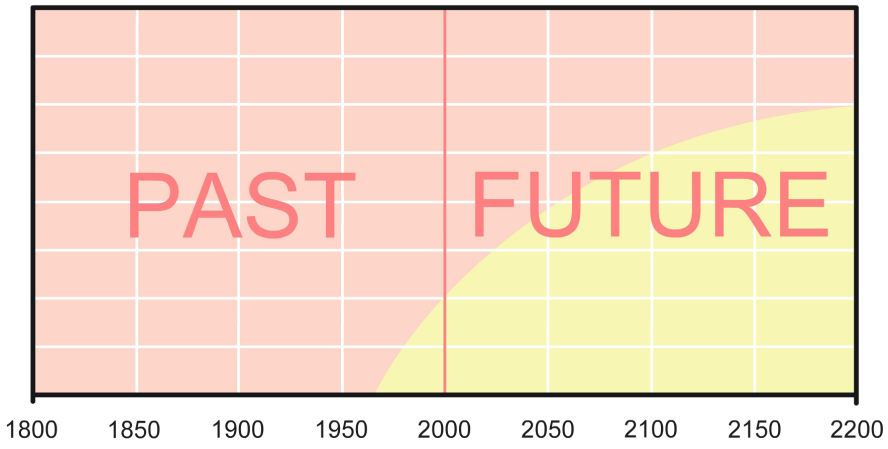
Bath/Tap/Plug - Stock/Ebb/Flow Analogy For Atmosphere, Source-Emissions, Sinks

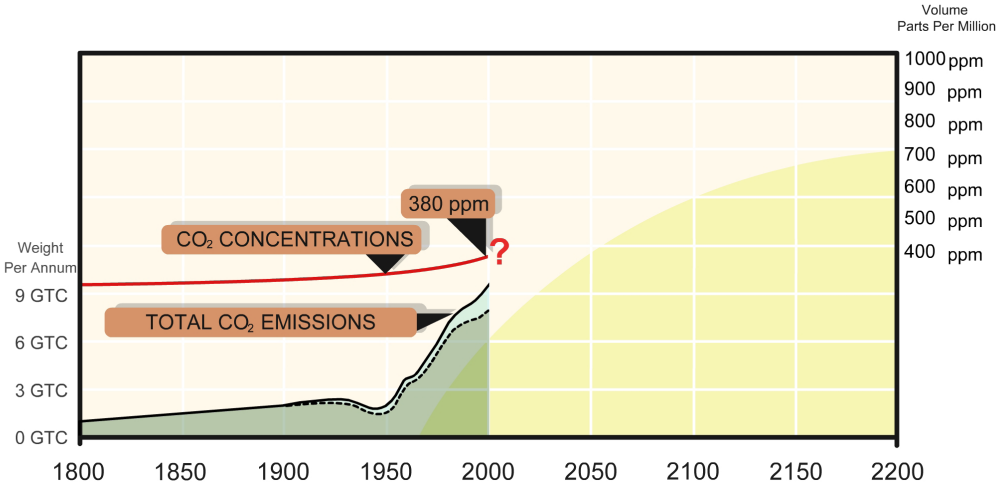


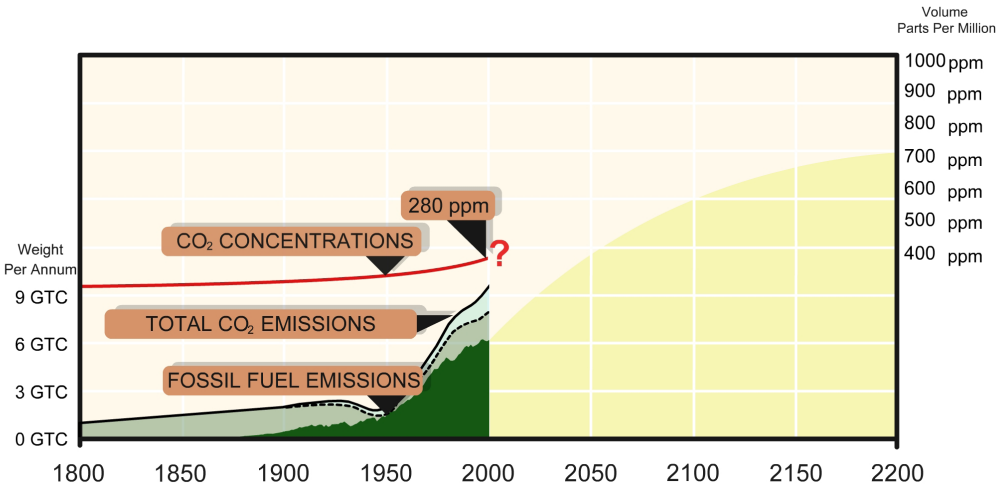




Past 200 years Non/Fossil Fuel Emissions

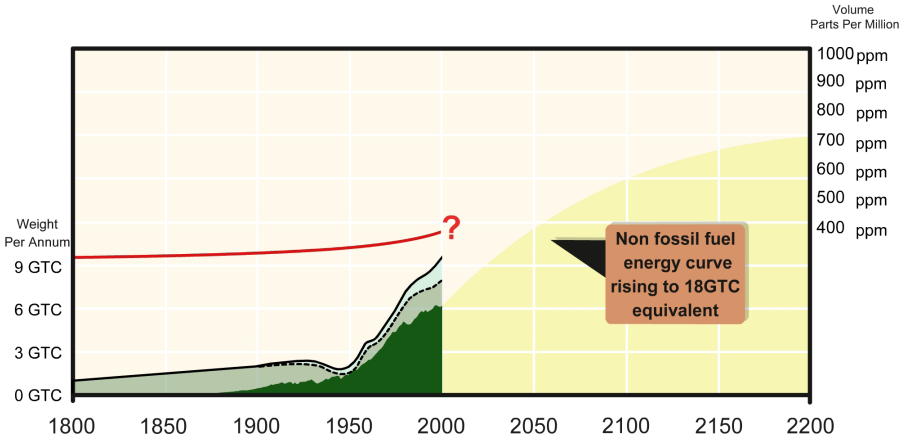


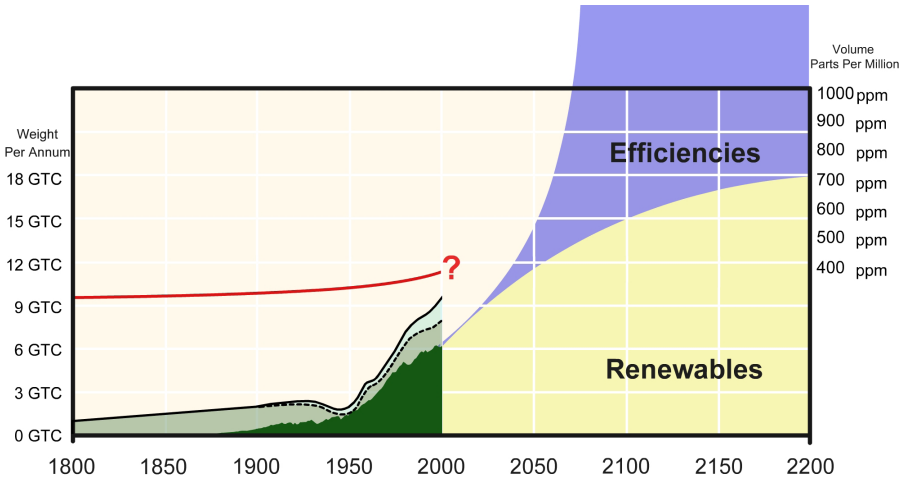




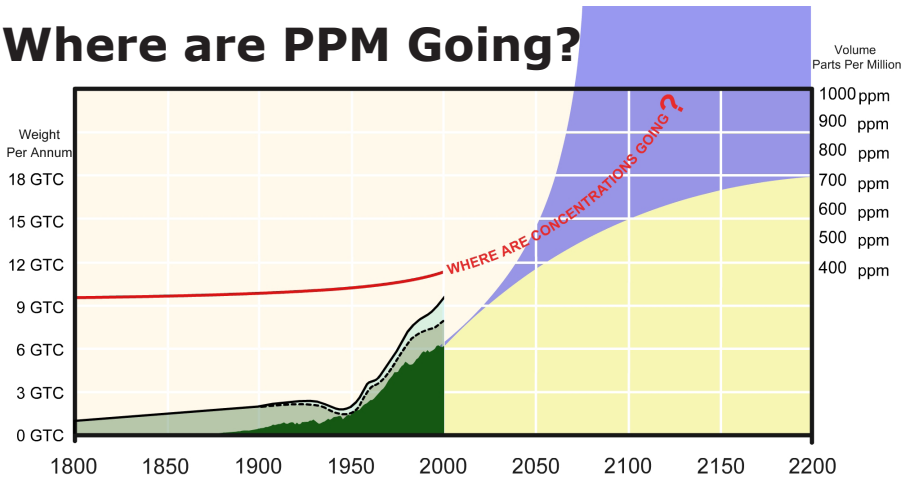
Darker = Fossil Fuel; Paler = other Emissions

Without a C&C Framwork
Renewables & Efficiency are Sun/Moon-shine

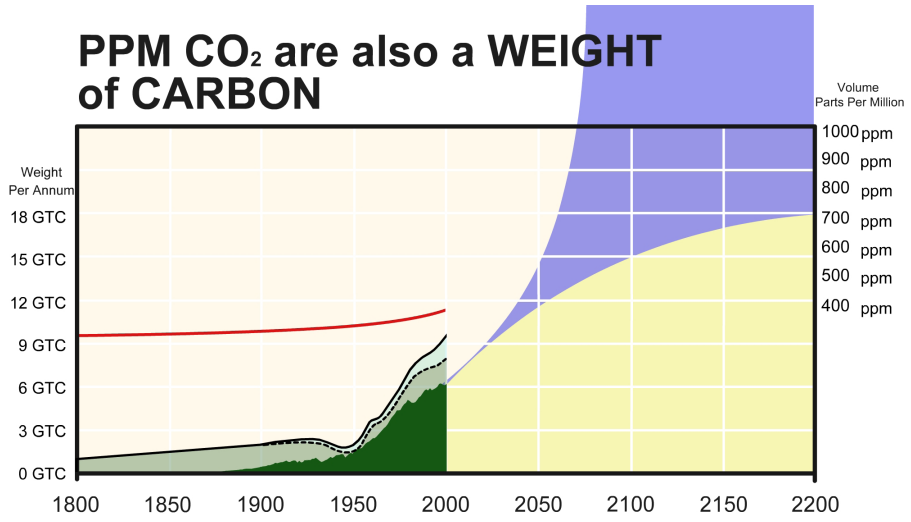


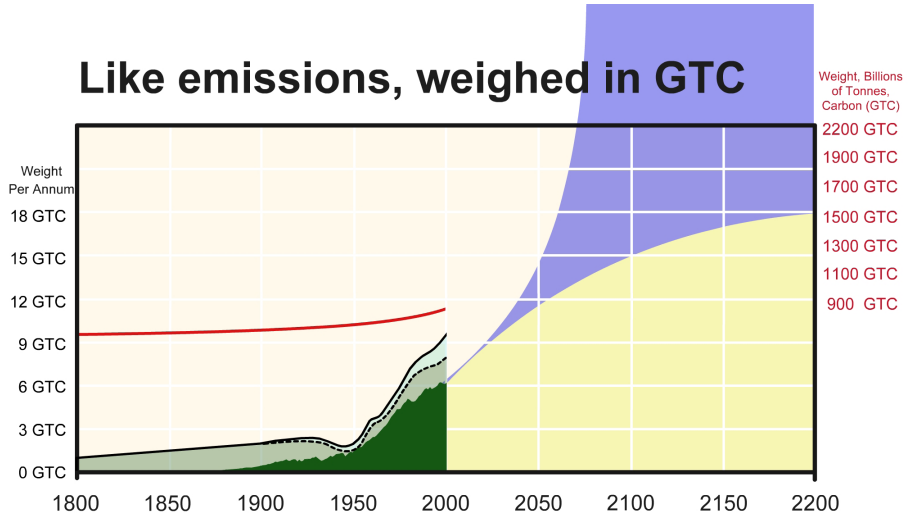


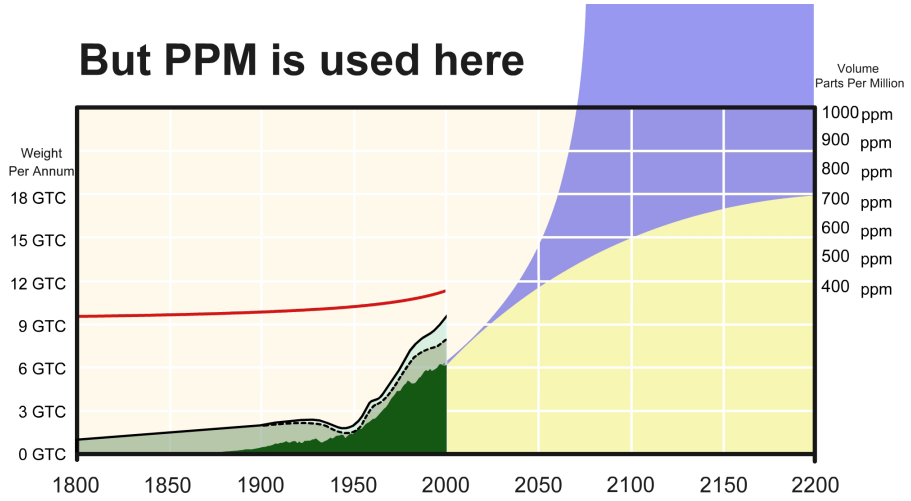
Where are PPM Going?



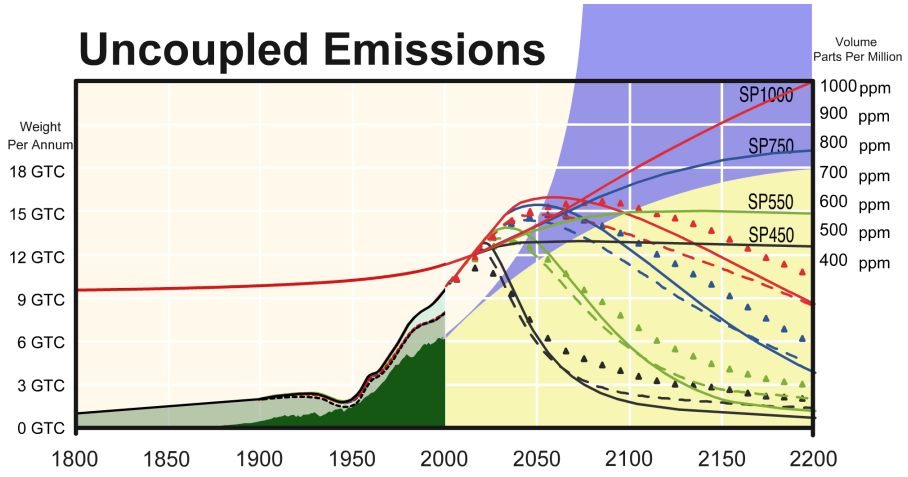
PPMV as Weight Carbon: 1 PPMV = 2.13 GTC

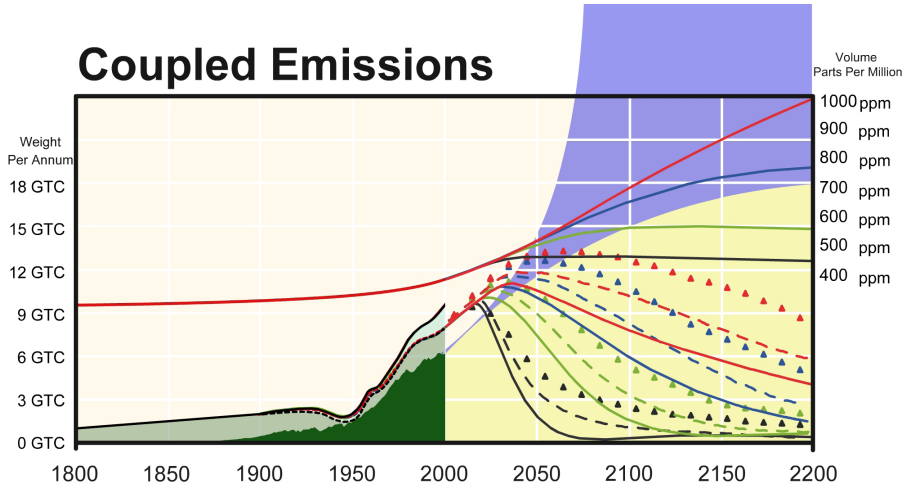


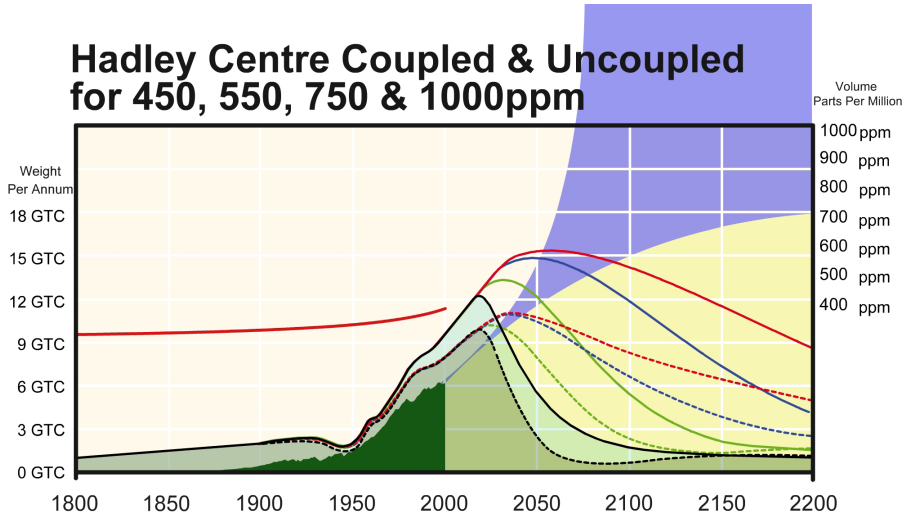




IPCC AR4/Hadley; Un/Coupled Carbon Cycles



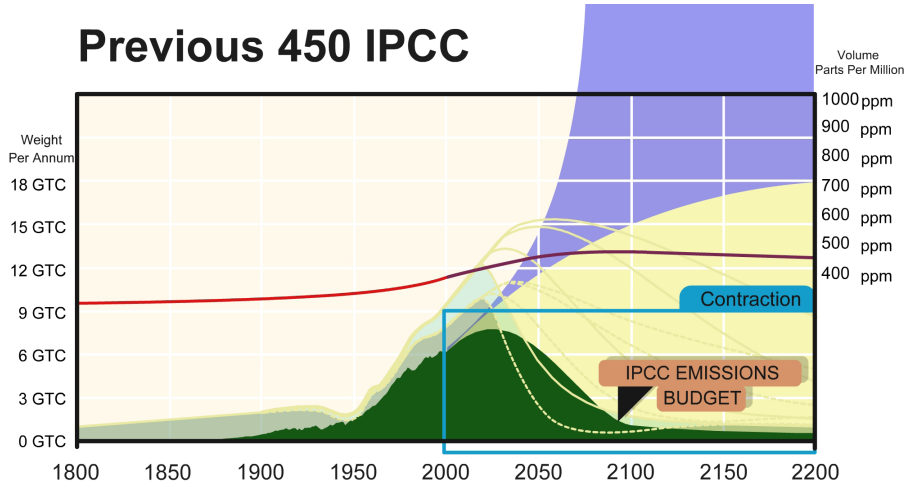


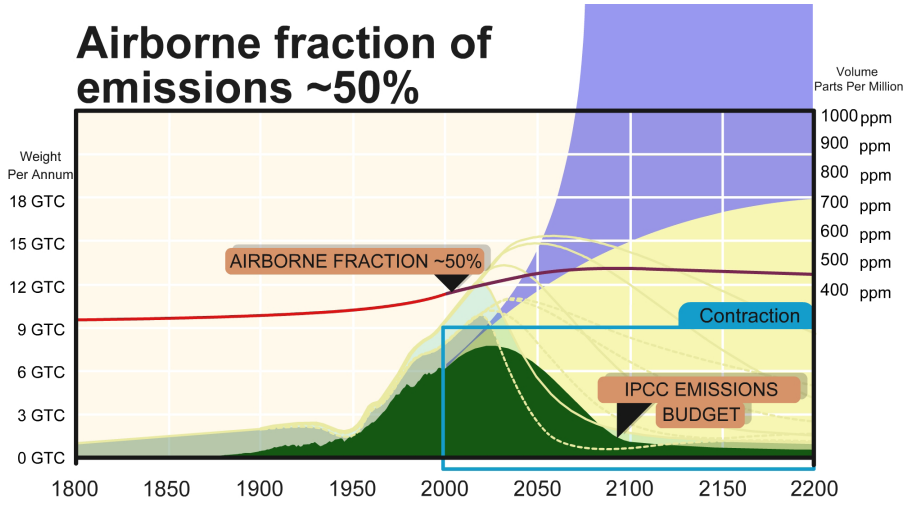


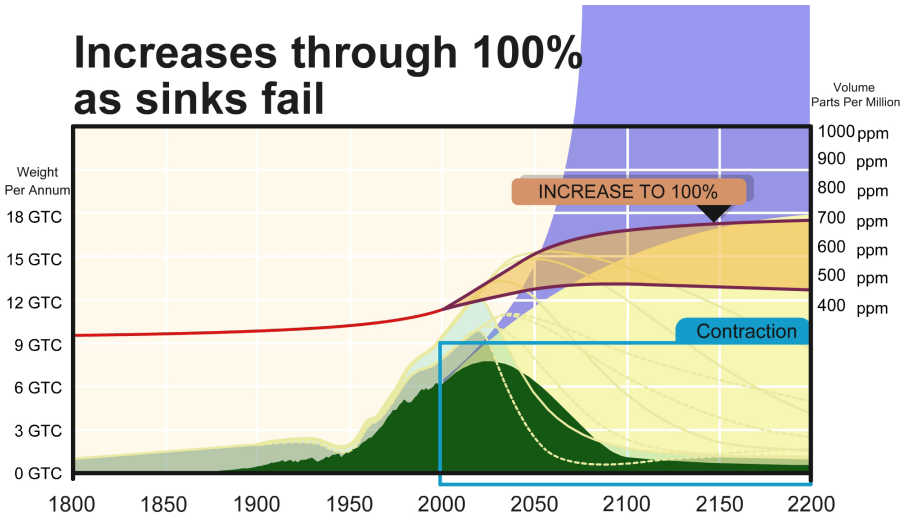
NB Hadley Coupled for 450 ppmv

ZERO ALL EMISSIONS [fossil/non-fossil] by 2060

In/Constant Airborne Fraction of Emissions

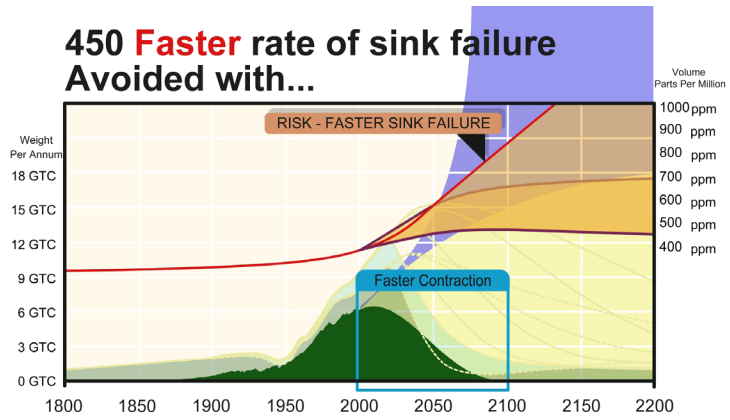


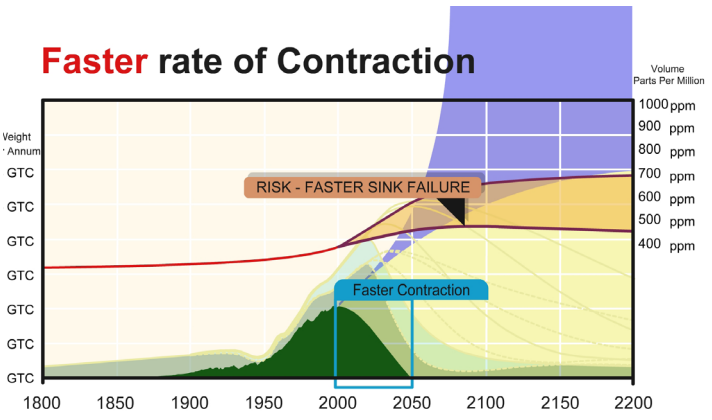


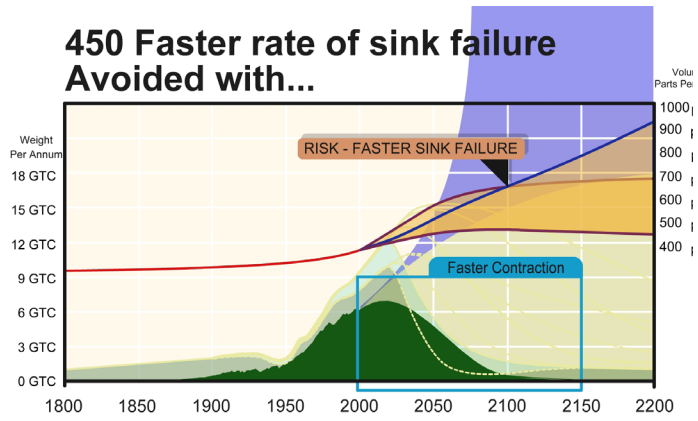


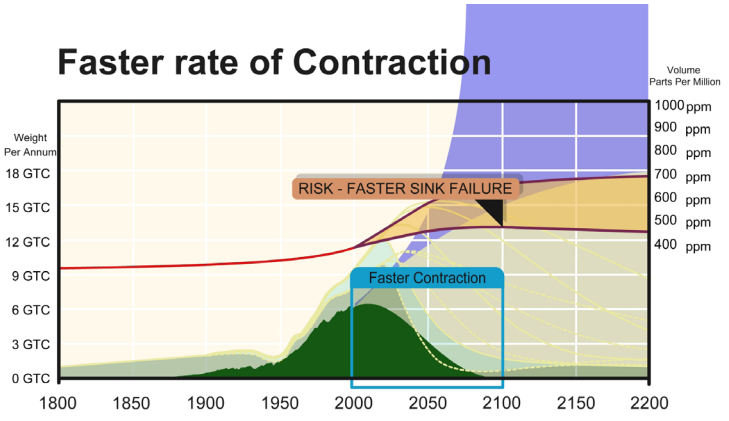
Setup 100% Airborne Fraction Reference to make comparisons of sink-failure

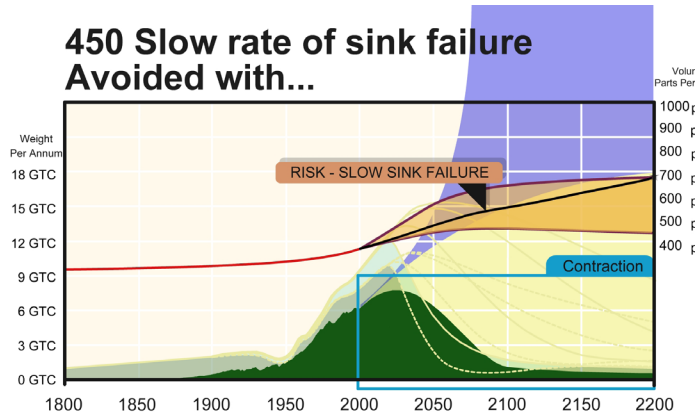
3 Rates of Contraction for 3 Rates of Sink Failure

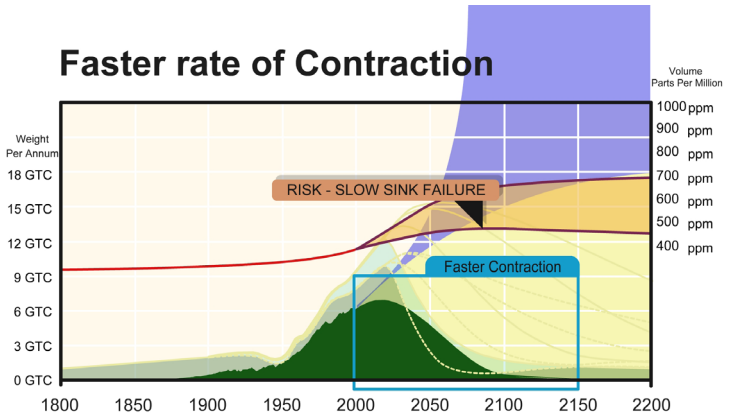




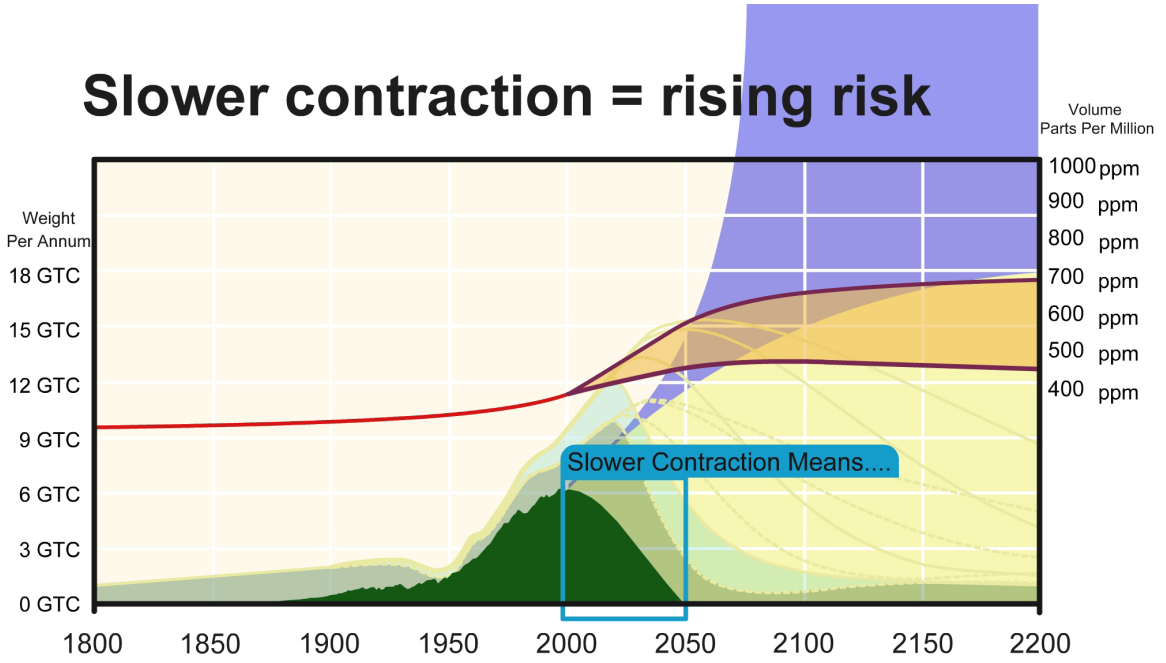




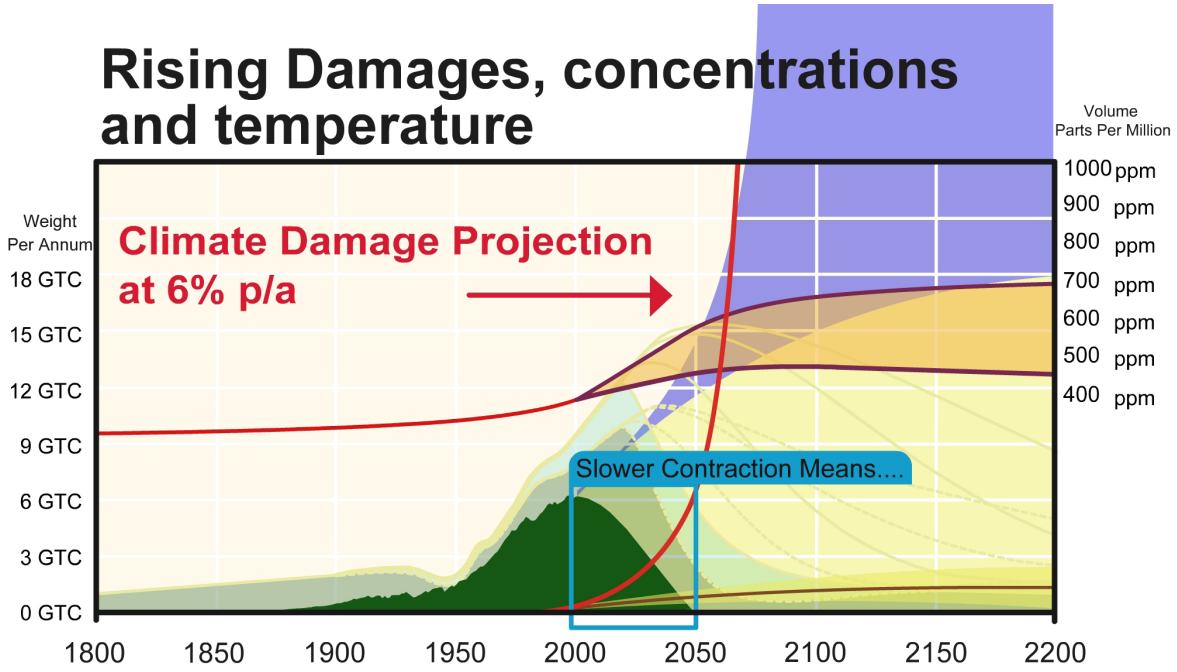




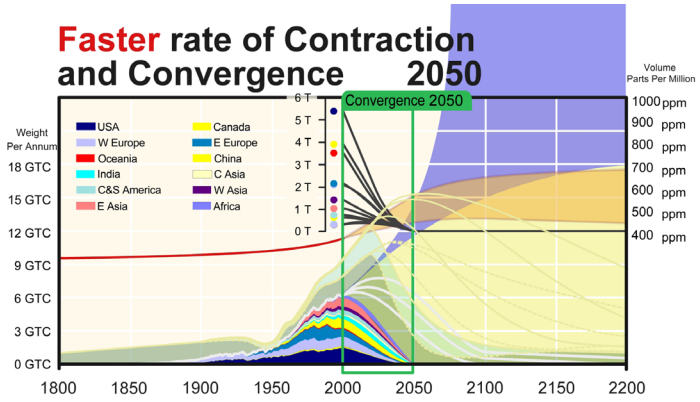
1st Rate of Contraction [FAST] with . . . .



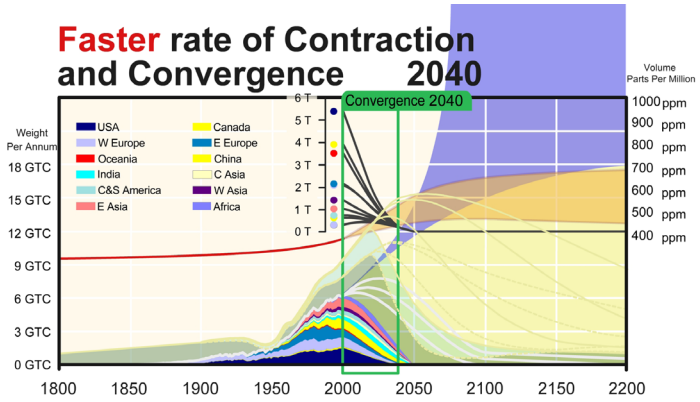
& Low Damages



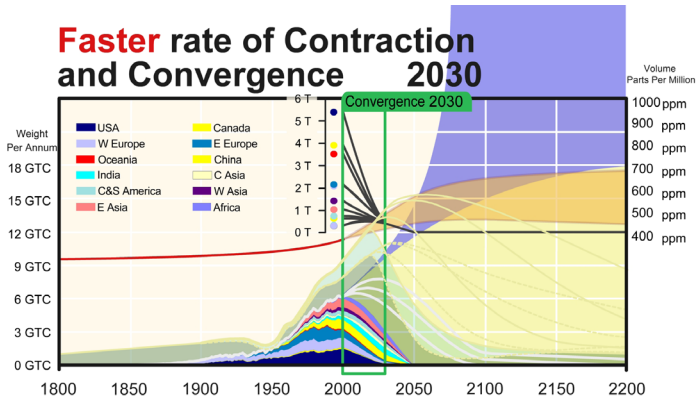
. . . . with 5 Rates of Convergence by



2050



2040



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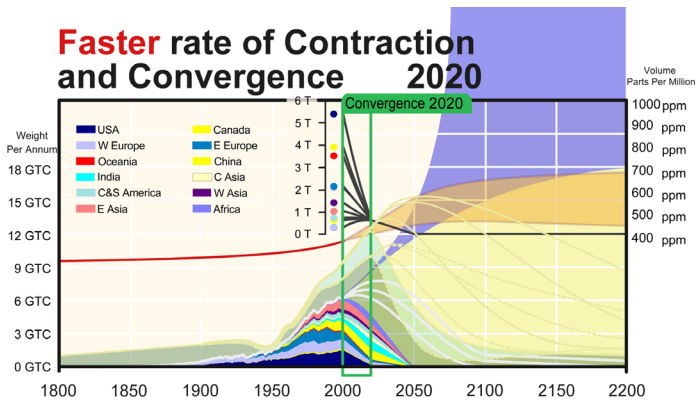
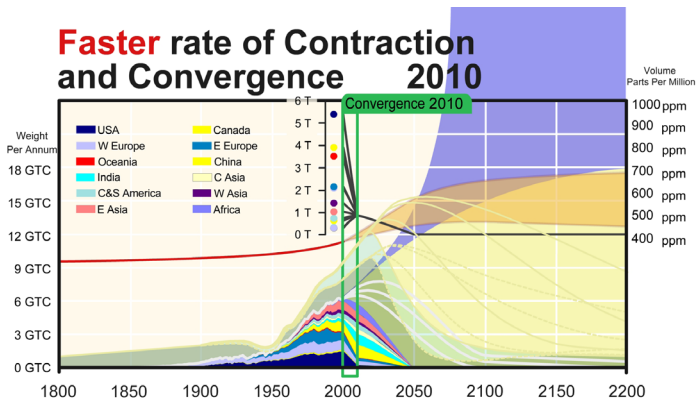
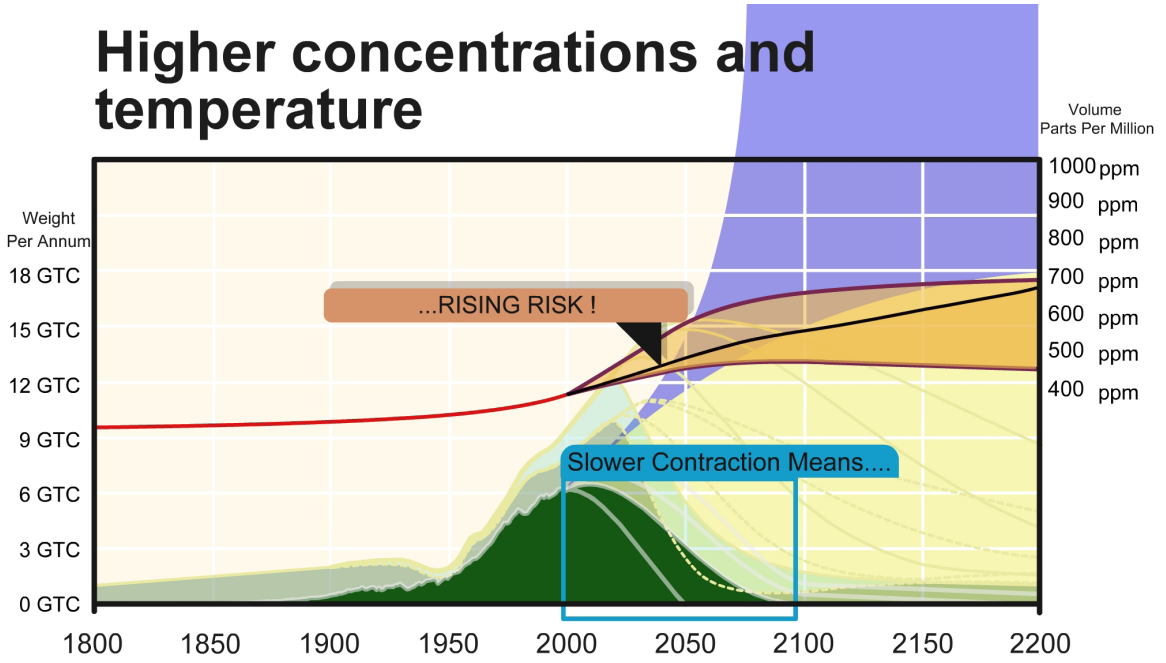


2020

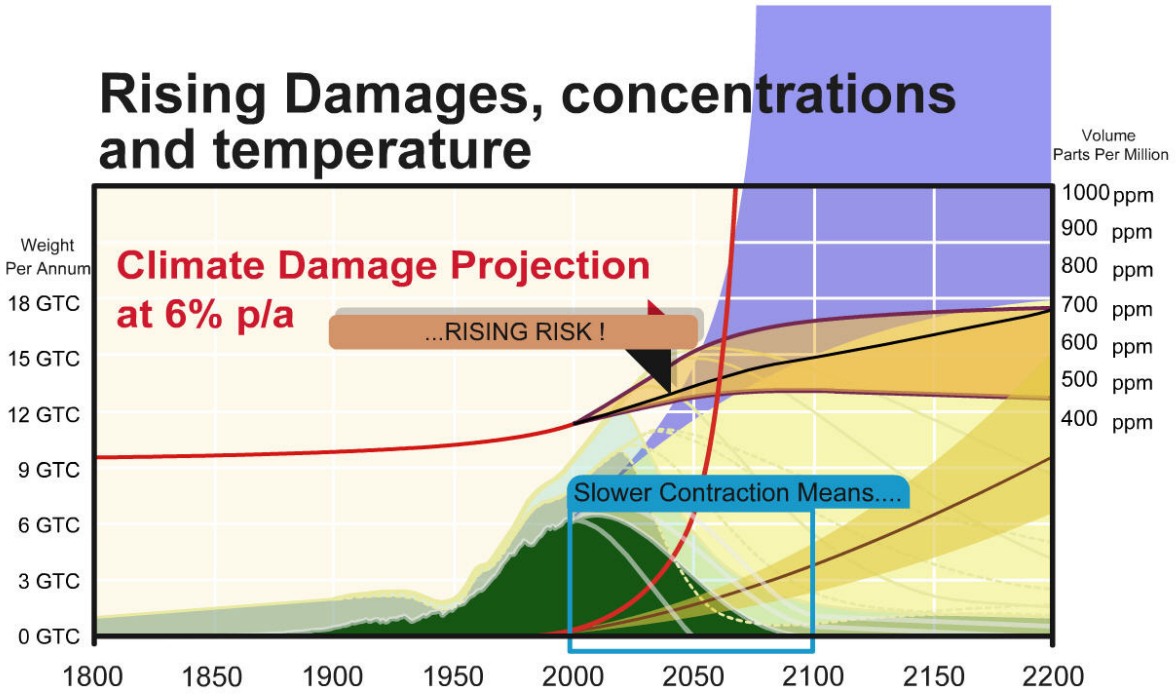


2010

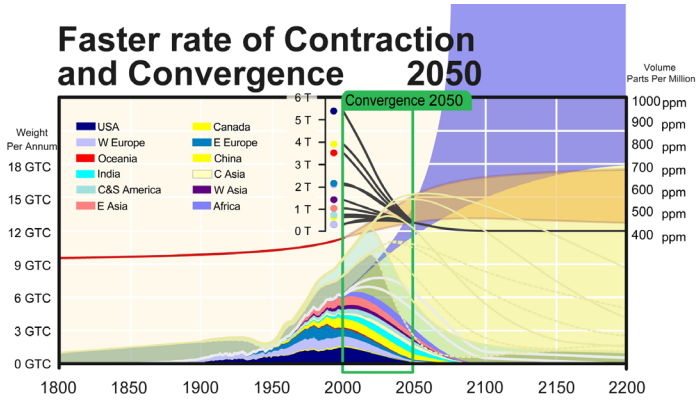
2nd Rate Contraction [SLOWER] Sinks Failing



& Rising Damages



. . . . with 5 Rates of Convergence by



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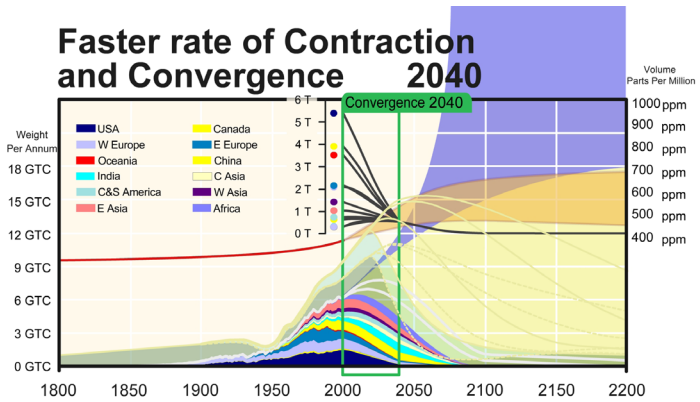

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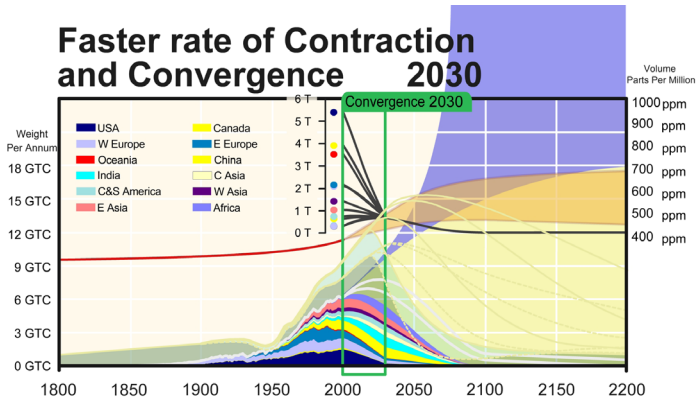

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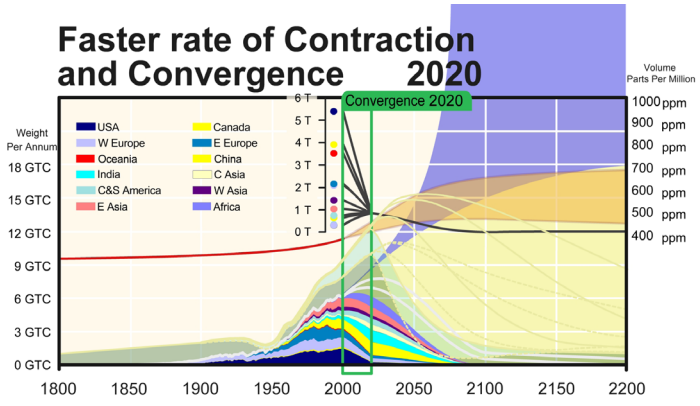
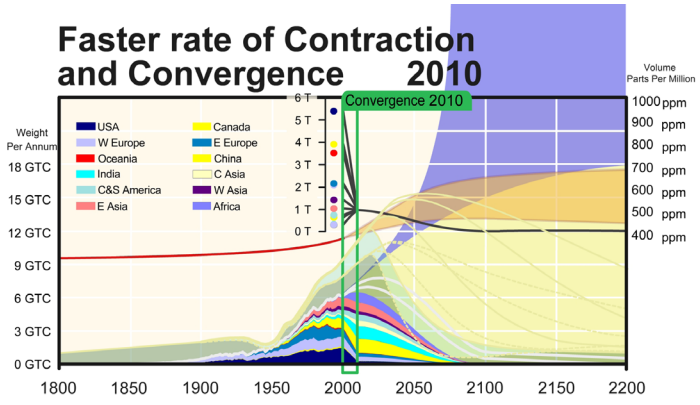
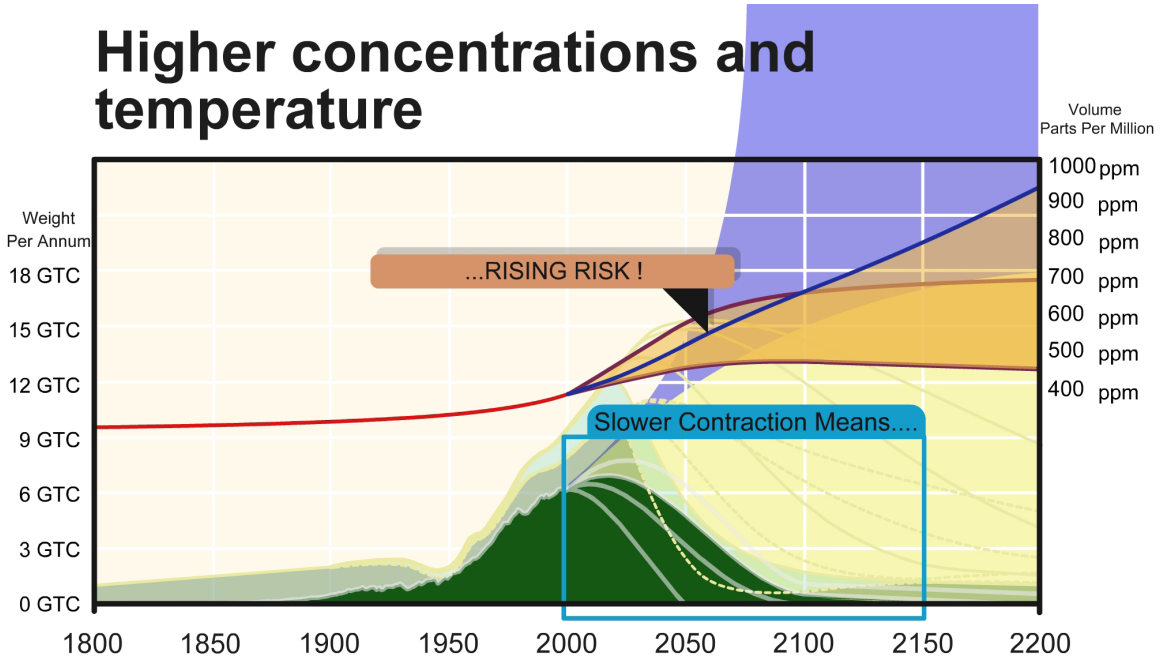


2020

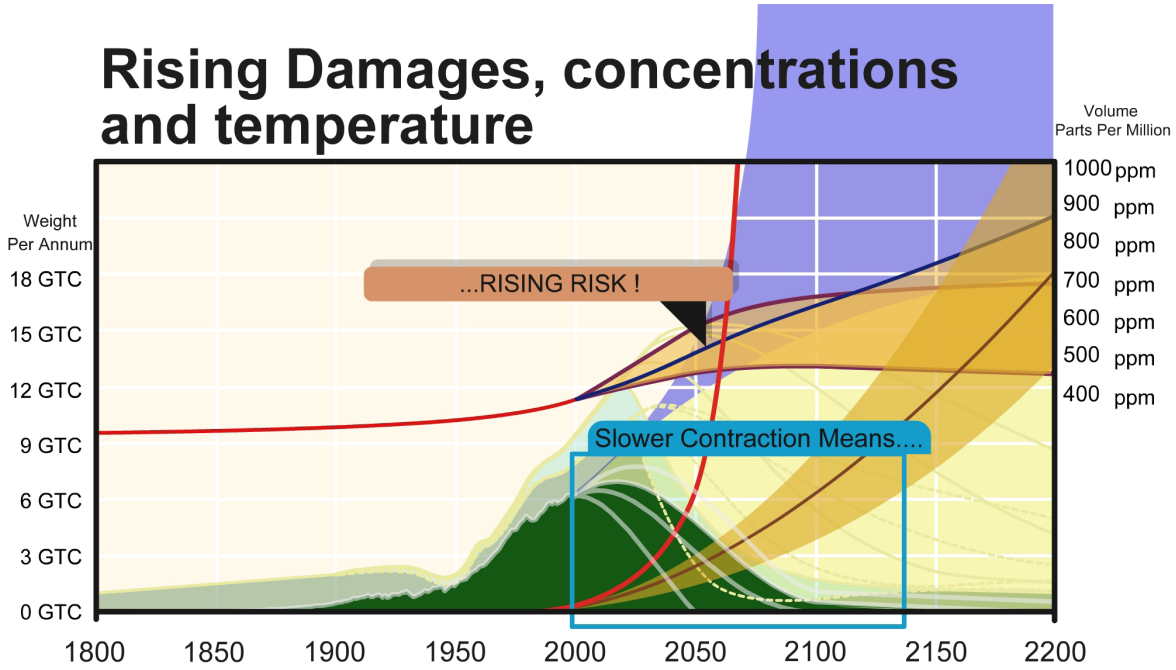


2010

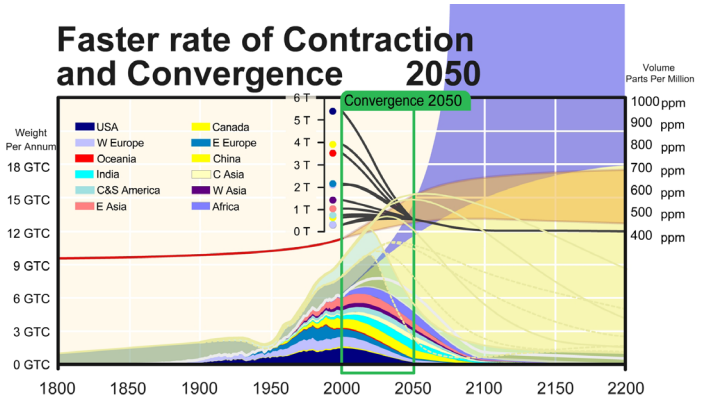
3rd Rate Contraction [SLOWER] Sinks Failing



& Faster Rising Damages



. . . . with 5 Rates of Convergence by



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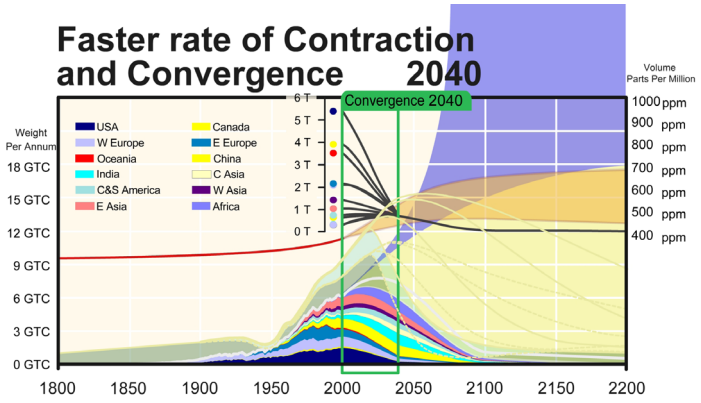
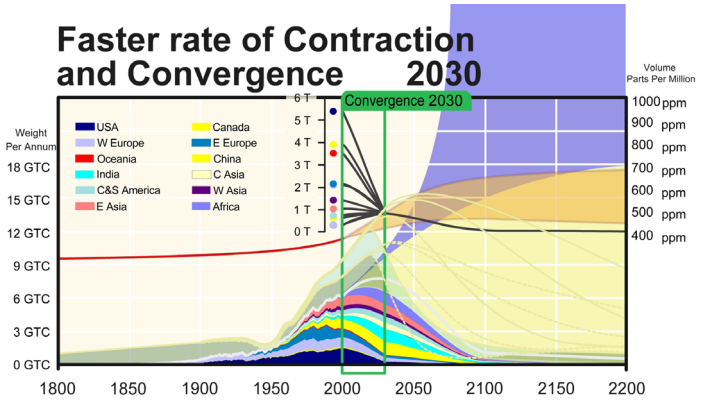


2040



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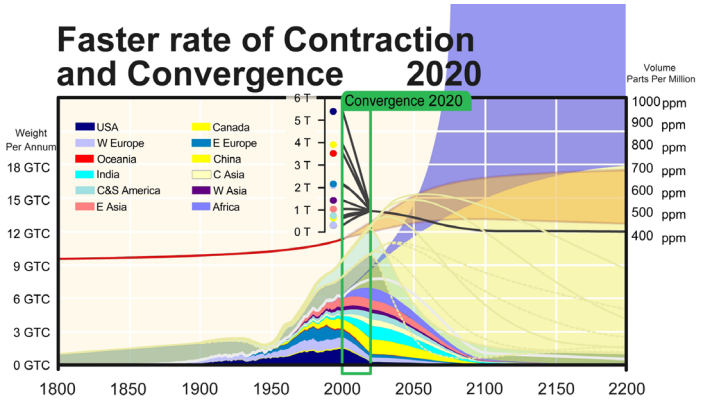
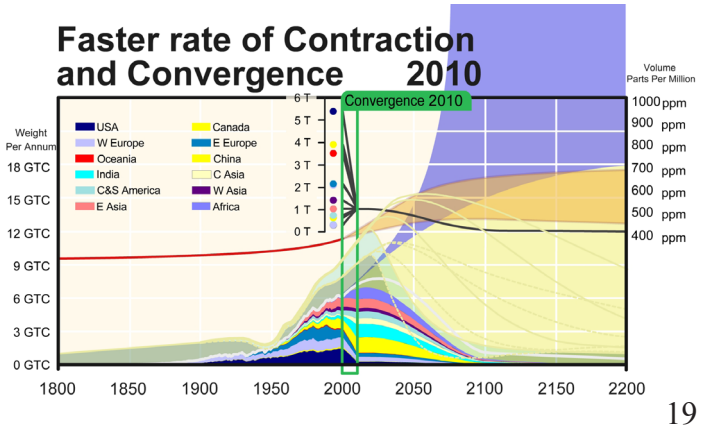
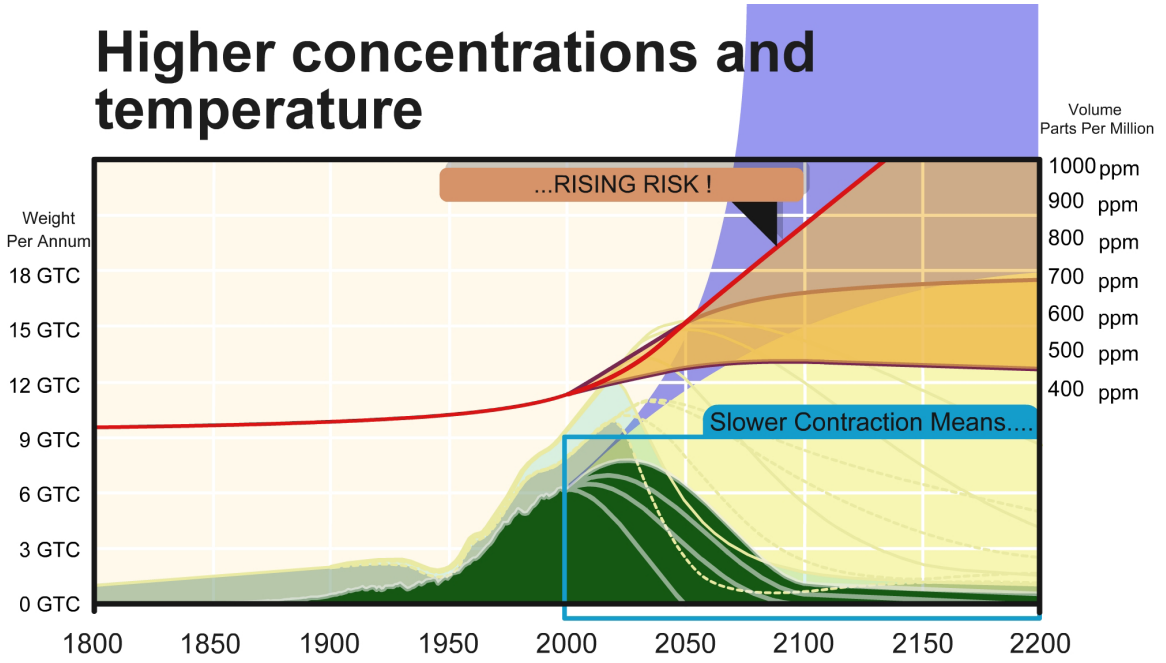


2020

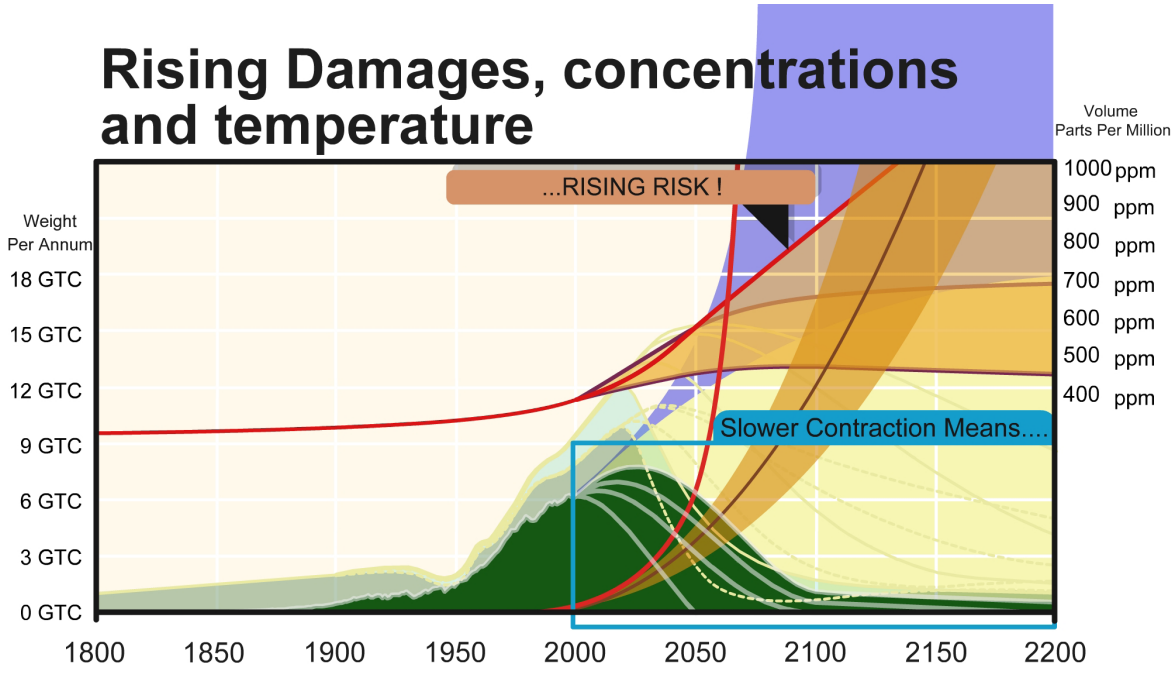


2010

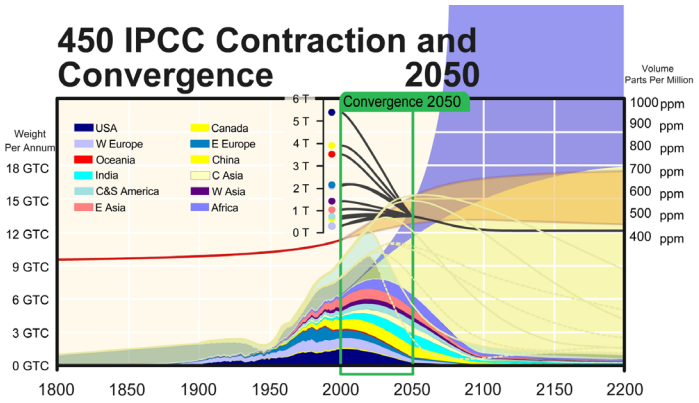
4th Rate Contraction [SLOWER] Sinks Failing



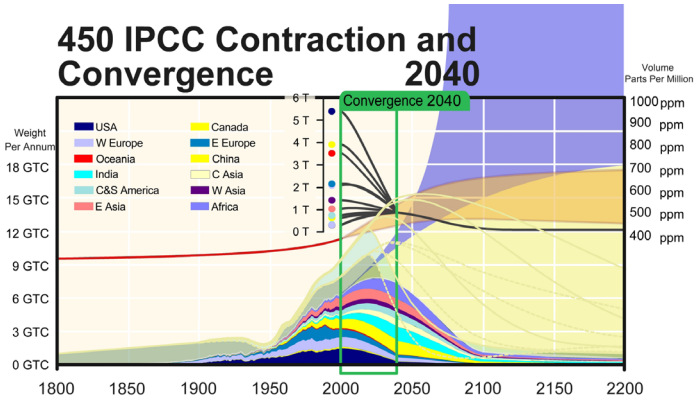
& yet Faster Rising Damages



. . . . with 5 Rates of Convergence by



2050



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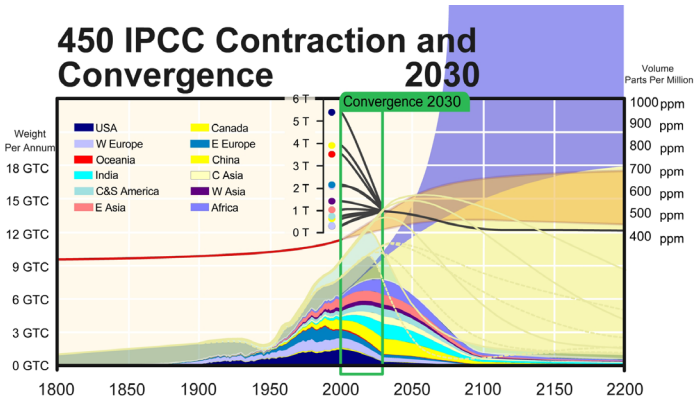
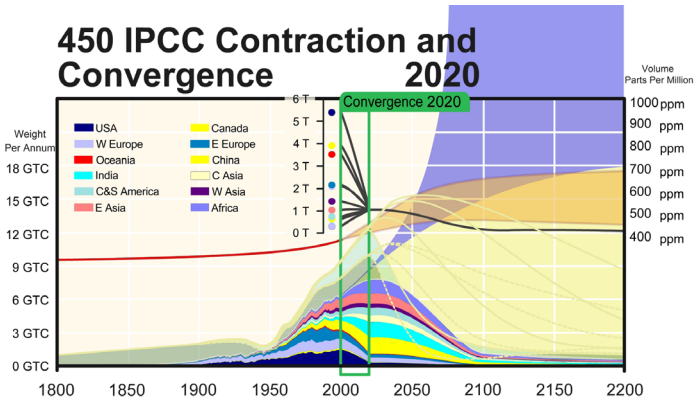
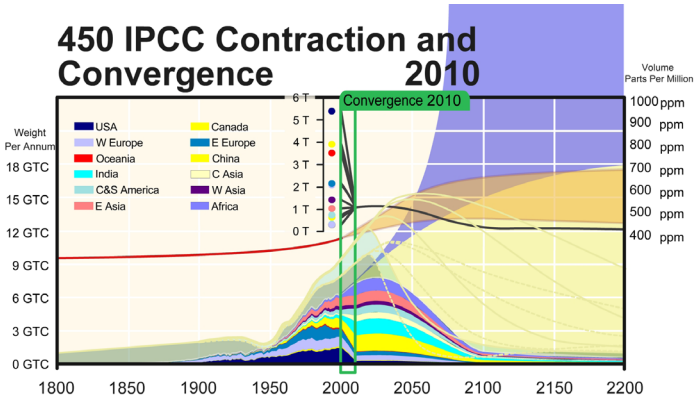


2030

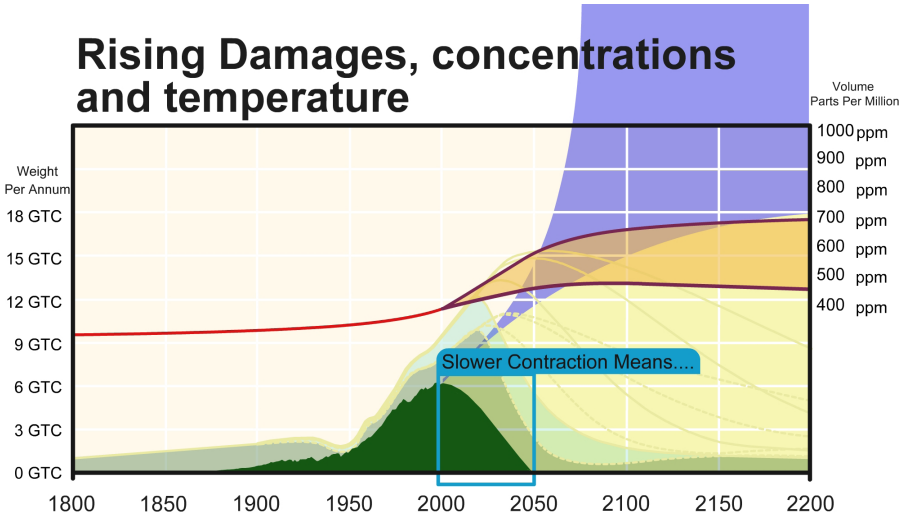


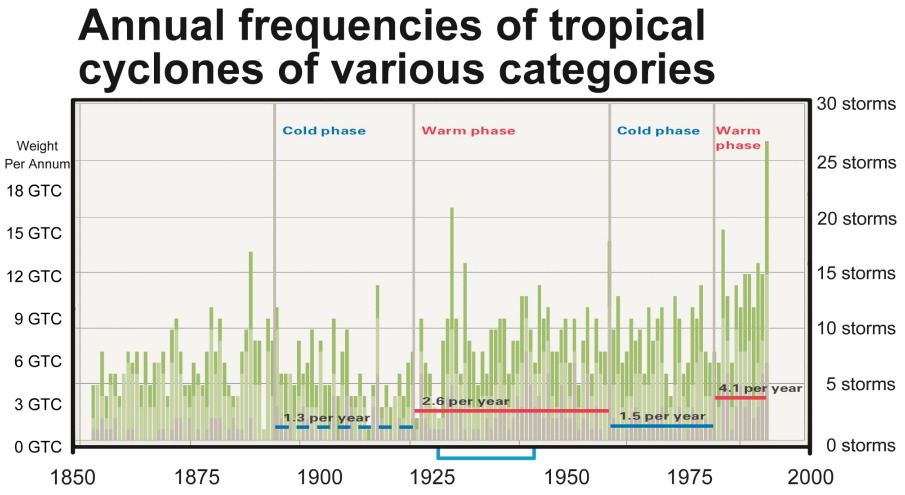
2020

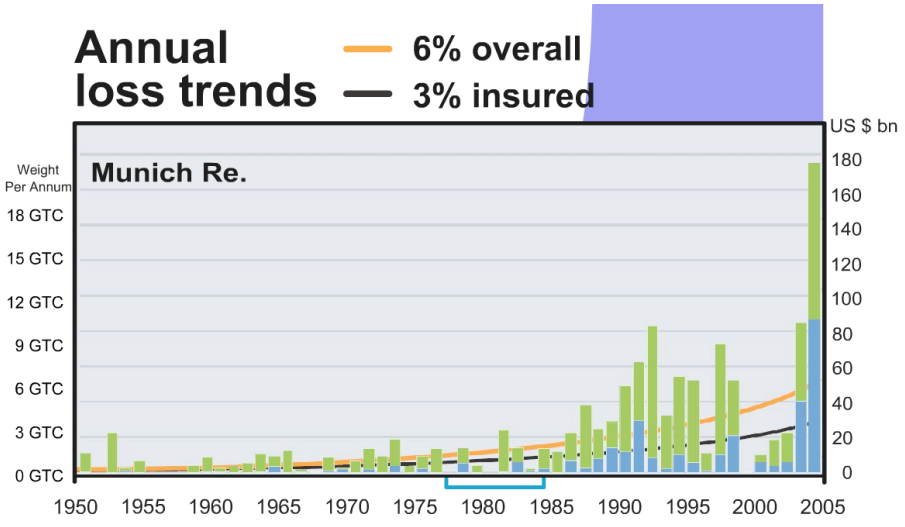


2010

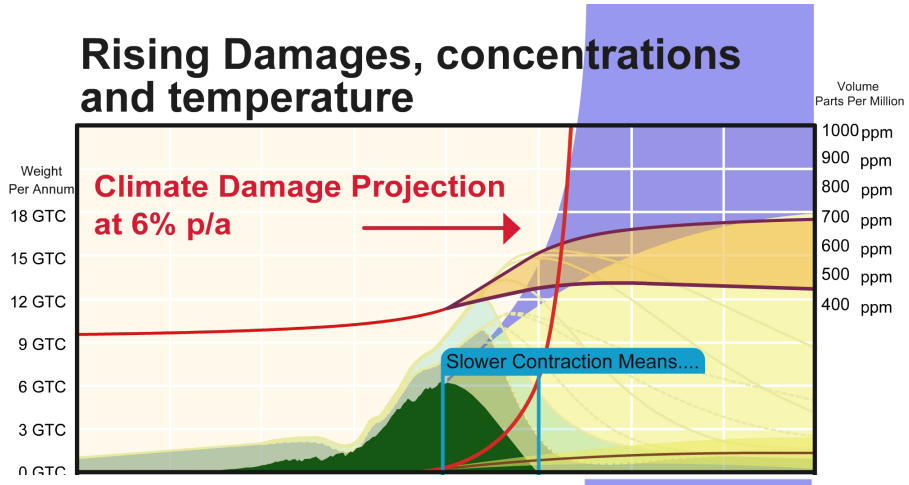
Rising Damage Curves @ 6%/year Twice the Rate of Economic Growth

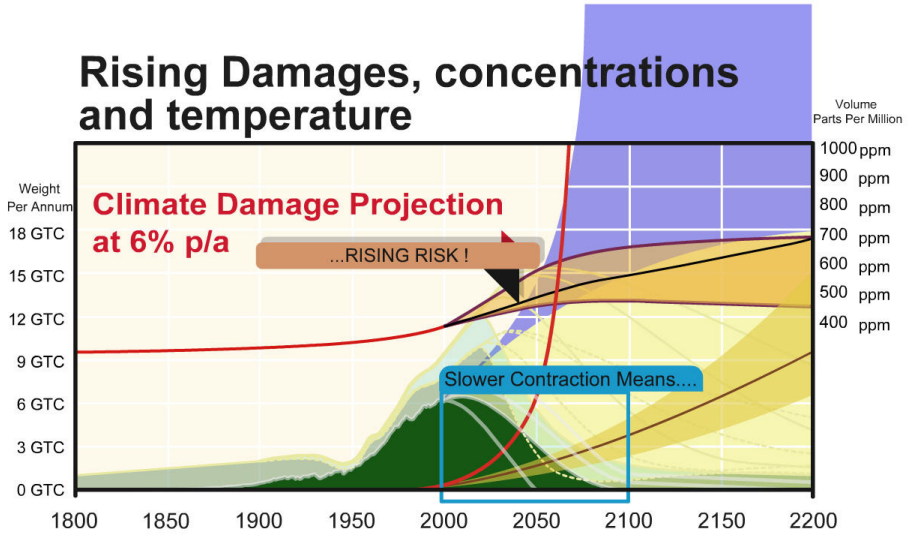






These data and trend analysis from Munich Re


Rising Damages, concentrations and temperature
Volume Parts Per Million
Weight Per Annum
Climate Damage Projection at 6% p/a
1000 ppm
900 ppm
800 ppm
700 ppm
600 ppm
500 ppm
400 ppm
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
Slower Contraction Means....


Rising Damages, concentrations and temperature
Volume Parts Per Million
Weight Per Annum
Climate Damage Projection at 6% p/a
...RISING RISK !
1000 ppm
900 ppm
800 ppm
700 ppm
600 ppm
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400 ppm
18 GTC
15 GTC
12 GTC
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6 GTC
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Slower Contraction Means....
1800
1850
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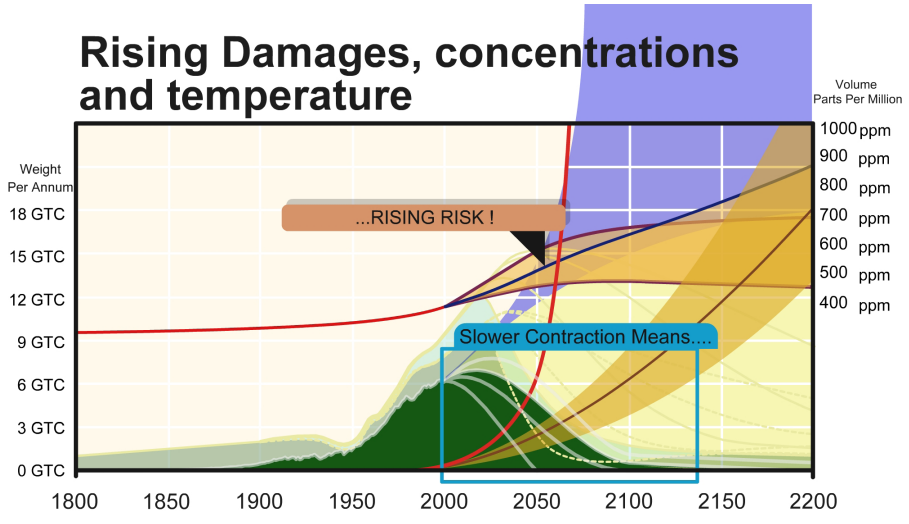
2100
2150
2200


Rising Damages, concentrations and temperature
Volume Parts Per Million
Weight Per Annum
...RISING RISK !
1000 ppm
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Slower Contraction Means....
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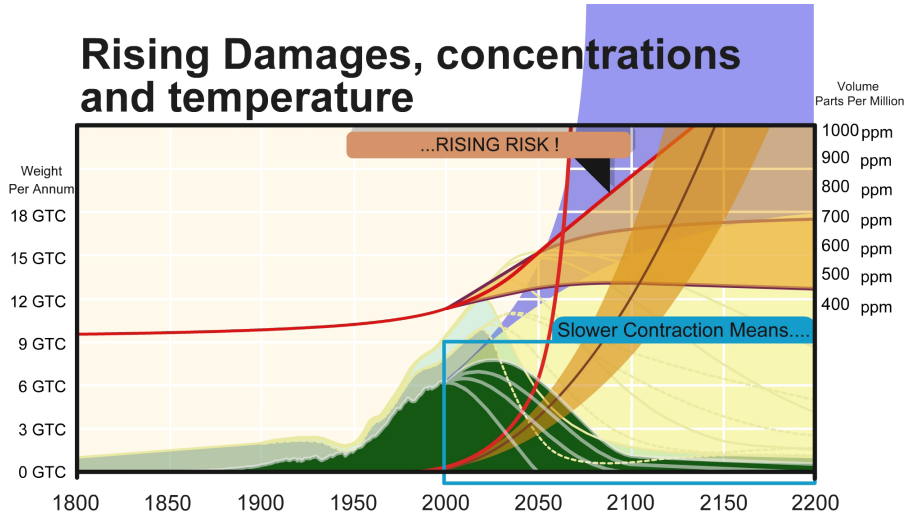
Rising Damages, concentrations and temperature
Volume Parts Per Million
Weight Per Annum
...RISING RISK !
1000 ppm
900 ppm
800 ppm
700 ppm
600 ppm
500 ppm
400 ppm
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
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Slower Contraction Means....
1800
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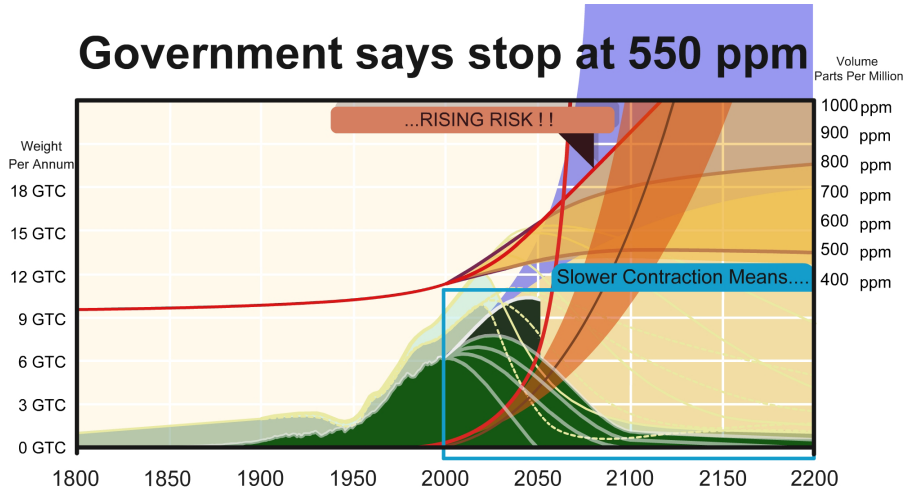
Government says stop at 550 ppm
Volume
Parts Per Million
...RISING RISK ! !
Weight
Per Annum
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
0 GTC
1000 ppm
900 ppm
800 ppm
700 ppm
600 ppm
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400 ppm
Slower Contraction Means....
1800
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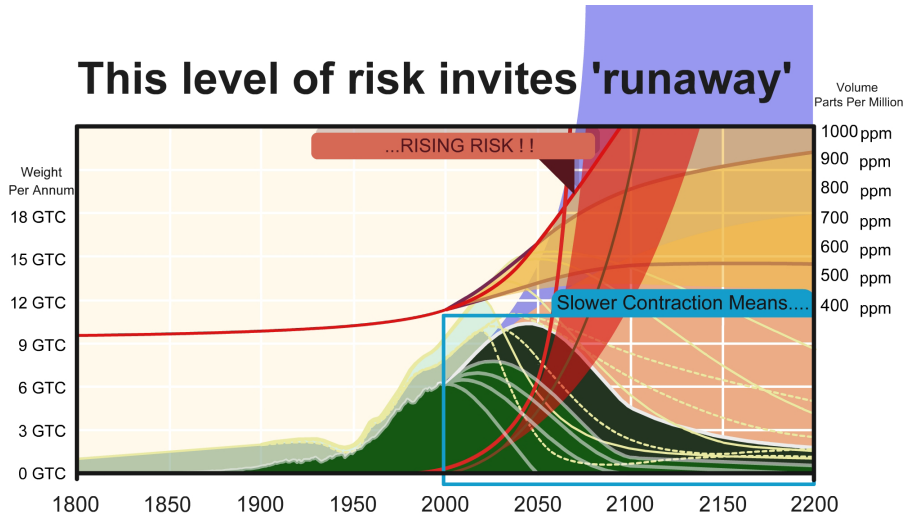
2200


This level of risk invites 'runaway'
Volume
Parts Per Million
...RISING RISK ! !
Weight
Per Annum
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
0 GTC
1000 ppm
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Slower Contraction Means....
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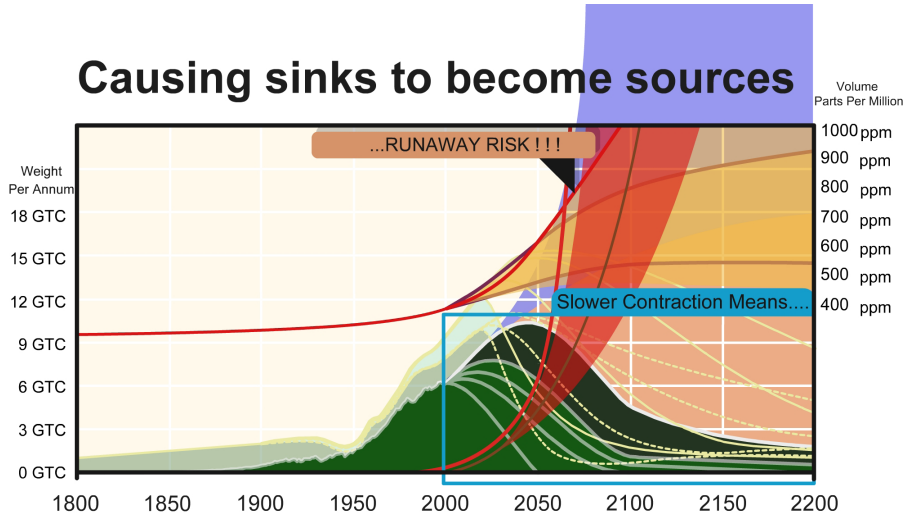
Causing sinks to become sources
Volume
Parts Per Million
...RUNAWAY RISK ! ! !
Weight
Per Annum
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
0 GTC
1000 ppm
900 ppm
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600 ppm
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Slower Contraction Means....
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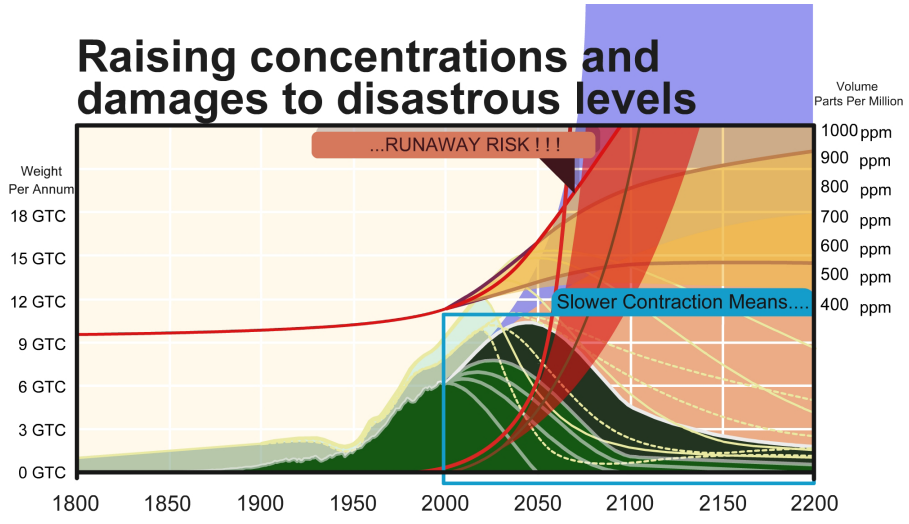
Raising concentrations and damages to disastrous levels
Volume
Parts Per Million
...RUNAWAY RISK ! ! !
Weight
Per Annum
18 GTC
15 GTC
12 GTC
9 GTC
6 GTC
3 GTC
0 GTC
1000 ppm
900 ppm
800 ppm
700 ppm
600 ppm
500 ppm
400 ppm
Slower Contraction Means....
1800
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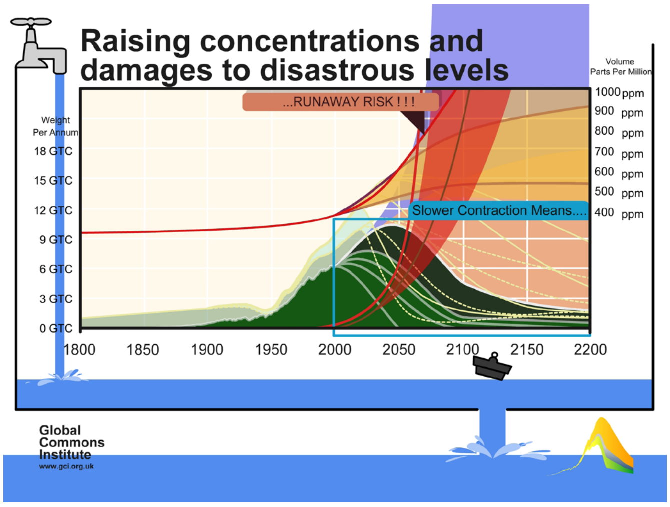
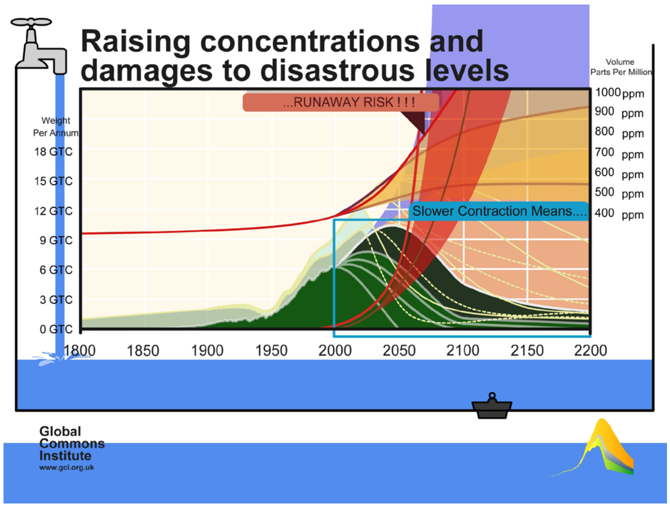
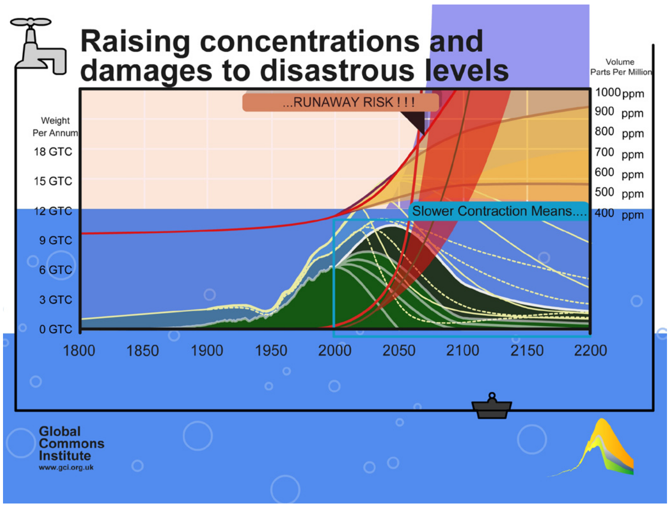
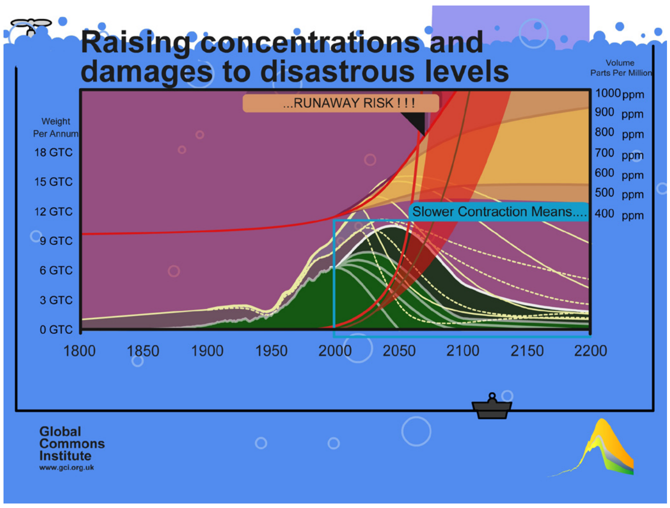
2200

Sinks Become Sources Damages become Catastrophic









Contraction and Convergence:

THE PROPORTIONATE RESPONSE TO CLIMATE CHANGE

AUBREY MEYER
DIRECTOR,
GLOBAL COMMONS INSTITUTE

The United Nations Framework Convention on Climate Change (UNFCCC) was agreed in 1992 with the objective to halt the rising concentration of greenhouse gas (GHG) in the atmosphere. In 2007, efforts to this end remain insufficient and the danger of 'runaway' rates of global climate change taking hold is increasing. The science-based, global climate policy framework of Contraction and Convergence (C&C) offers an equitable solution to cutting carbon emissions in the hope that global collective efforts to reduce emissions can be successful. Three elements are at the core of the C&C campaign: the constitutional concept of Contraction and Convergence (C&C); the techniques and processes developed to focus the debate on rates of C&C that are relevant; the sustained effort to present C&C as the basis of the proportionate response to climate change.

THE BASIS OF C&C

Technically, the C&C model is a coherent and mathematically-stable framework. It holds the science-policy content together as a unity; science-based on the contraction side of the argument and rights-based or 'constitutional' on the 'political' side of the argument. C&C is in effect a bill of rights; it simply plots a full term event for achieving equal *per capita* emissions rights globally (Convergence) but governed by the overall emissions limit over time that stabilises the atmosphere concentration of GHG at a 'safe' value (Contraction).

> **"It becomes possible to go beyond the merely aspirational character of the current debate around the UNFCCC, to communicating the rationale and constitutional calculus of C&C."**

The UNFCCC makes C&C generically true, but C&C specifically embraces a calculus built on this truth that strategically focuses the negotiations at the Climate Convention on two necessarily finite, global assumptions:

- A trajectory to a safe and stable atmospheric GHG concentration limit, allowing for a range of calculations of the global emissions contraction limit to carbon consumption consistent with that.
- The calculation of equal rights to the global total of emissions permits to the global total of people consuming within that limit, again allowing for different rates of convergence and even a population base-year to be considered. This is in preference to the irresolvable complexity of assuming any inequality of rights.

With this calculus, C&C captures the goal focus of the UNFCCC process in a structure of reconciliation. It is a universal first order numeraire. From this it

becomes possible to go beyond the merely aspirational character of the current debate around the UNFCCC, to communicating the rationale and constitutional calculus of C&C.

THE LONG TERM PAST

Figure 1 shows data from ice cores for half a million years before industrialisation. Throughout this period, with natural sinks for CO_2, such as the oceans and the forests in balance with the natural sources, the level of atmospheric CO_2 concentration varied between 180 and 280 parts per million by volume (ppmv) averaging at 230 ppmv.

Since 1800 with the onset of industrialisation and fossil fuel burning, human emissions have caused the concentration of CO_2 to increase by over 40 per cent to 380 ppmv. The rise in ppmv CO_2 is higher and faster than anywhere in the historical record. This rise is because CO_2 emissions from human sources, particularly CO_2 from fossil fuel burning, are going to the atmosphere and accumulating. Furthermore, for the past 200 years, on average 50 per cent of any year's human emissions has remained in the atmosphere while the remaining 50 per cent has returned to the natural sinks.

> "Instead of 100 years, we now realise that to reduce human CO_2 emissions and other GHGs in the atmosphere to zero globally, we have only the next 50 years."

A slowly increasing fraction of these emissions in the atmosphere remain there, accelerating the rise in concentrations even more. Column one in Figure 2 (see overleaf) demonstrates that the average retention over the past decade has increased from 50 per cent to 60 per cent. This recognises that the capacity of the natural sinks for CO_2 capture is now gradually declining. If this continues unchecked as the graphics suggest, the rise in the concentration of atmosphere GHG will accelerate towards the level at which dangerous rates of rise translate to a climate change crisis that becomes unavoidable. To be UNFCCC-compliant, we need to enact C&C now to prevent the chaos that is otherwise inevitable.

THE SHORT TERM PAST AND FULL TERM FUTURE LIMITS

The UNFCCC objective is to avoid dangerous rates of climate change by stabilising concentrations and we are all both circumstantially and legally bound by this. Compliance is governed by the need for a finite answer to the questions: 'what is a safe GHG concentration value for the atmosphere?' and 'what is the scale of the full term emissions contraction event required to achieve it'?

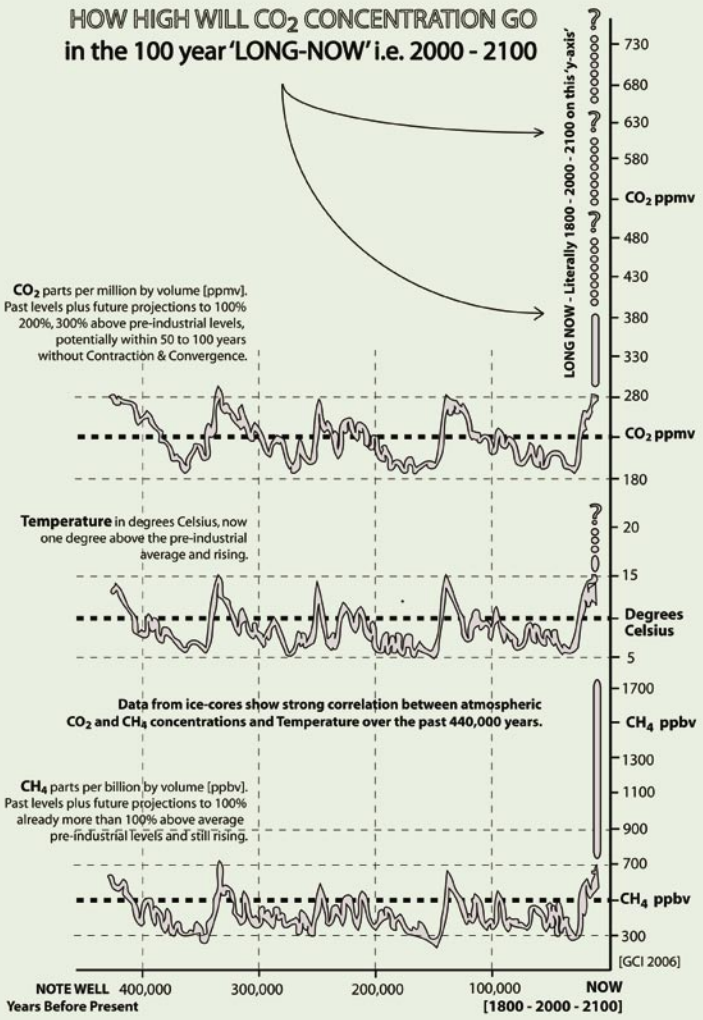


Figure 1: Data from ice cores 500,000 years ago to present day and beyond.

Without answers, traditional evaluation of the economics of abatement and the social consequences is not possible. Because of weakening sinks, analysis now shows that to stabilise GHG concentration in the atmosphere below the level that prevents dangerous rates of climate change taking hold, requires a rate of overall emissions control that is faster than was previously assessed. Instead of 100 years, we now realise that to reduce human CO_2 emissions and other GHGs in the atmosphere to zero globally, we have only the next 50 years [IPCC AR4 and Hadley Centre, 2007].

As activities under the Kyoto Protocol show, unless we are visibly organising globally by a shared commitment not to exceed that safe concentration number, the probability increases that our collective efforts to avoid dangerous rates of climate change will be too little too late.

Already under Kyoto, the slight gain of CO_2 emissions avoided has been more than negated by more carbon accumulating in the atmosphere at an accelerating rate as the result of changes in the climate system as a whole. Consequently, a global arrangement for emissions control in future that is sufficient in the light of this is *sine qua non* for success. As the original authors of the UNFCCC understood at the outset, embracing this primary question of the sufficient, and indeed the proportionate response, is fundamental to the whole global engagement.

Figure 2: Charting the UNFCCC Objective & Principles, the Development Benefits of Growth versus the growth of Climate Change Related Damage Costs. (http://www.gci.org.uk/images/Proportionate_Response.pdf)

Columns one and two address the objective and principles of the UNFCCC. Columns three and four compare the development benefit of growth with the growth of climate damage and costs. The left hand side of each graph shows:

- Expanding fossil fuel emissions of CO_2, measured in billions of tonnes of carbon between 1800 – 2000.
- Rising concentration of atmospheric CO_2 as parts per million by volume (ppmv) between 1800 – 2000.

The key questions for integration are in four columns:

Column 1: Contraction and Concentration: what is a safe level of concentrations and, in the light of sink failure, how rapid must contraction be to avoid GHG concentration going too high in future?

Column 2: Contraction and Convergence: what is the internationally equitable agreement necessary to ensure this level is not exceeded?

Column 3: Contraction and conversion: what is the rate at which we must convert the economy away from fossil fuel dependency?

Column 4: Damage costs and insecurity: what is the environmental and economic damages trend associated with this analysis?

Each Row has a different level of Risk projected across the four columns:

- **C1 (bottom row) Acceptable risk**: global GHG emissions contraction complete by 2050 so concentrations end up around 400/450 ppmv with damages potentially still under control.
- **C2 (middle row) Dangerous risk**: global GHG emissions contraction complete by 2100 so concentrations keep going up through 550/750 ppmv with the illusion of progress maintained, while damages are going out of control.
- **C3 (top row) Impossible risk**: global GHG emissions contraction complete by 2200 so concentrations keep going up through 550/950 ppmv while the illusion of progress is being destroyed, damages costs are destroying the benefits of growth very quickly and all efforts at mitigating emissions become futile.

In each graph, different futures are projected on the right-hand side as scenarios or rates of change that are linked to the objective of the UNFCCC where three levels of risk for stabilising the rising concentration of CO_2 are understood in the light of the rising fraction of emissions that stays airborne.

See pages 55-56 for chart summary and link to animation

DAMAGES

We are still locked into causing global climate change much faster than we are mitigating it. Treating climate change as a global emergency is now long overdue and responding proportionately is vital. Unless the risk analysis is focused by this understanding, our best efforts will be in vain.

According to the reinsurers, the weather-related damages trend is growing at twice the rate of the global economy, see Figure 2, column four. To prevent this damage trend from running out of control, emissions need to contract to zero globally by 2050 if it is to be fast enough to stabilise atmosphere GHG concentrations at a level that prevents change accelerating uncontrollably. This is corroborated by the latest coupled climate modelling results from the UK Government's Hadley Centre, published in the IPCC Fourth Assessment. While the notion of global emissions control is certainly heroic, the only vector of the problem over which we can still posit direct control, is our GHG emissions and thereby the level to which GHG concentrations will rise in the future.

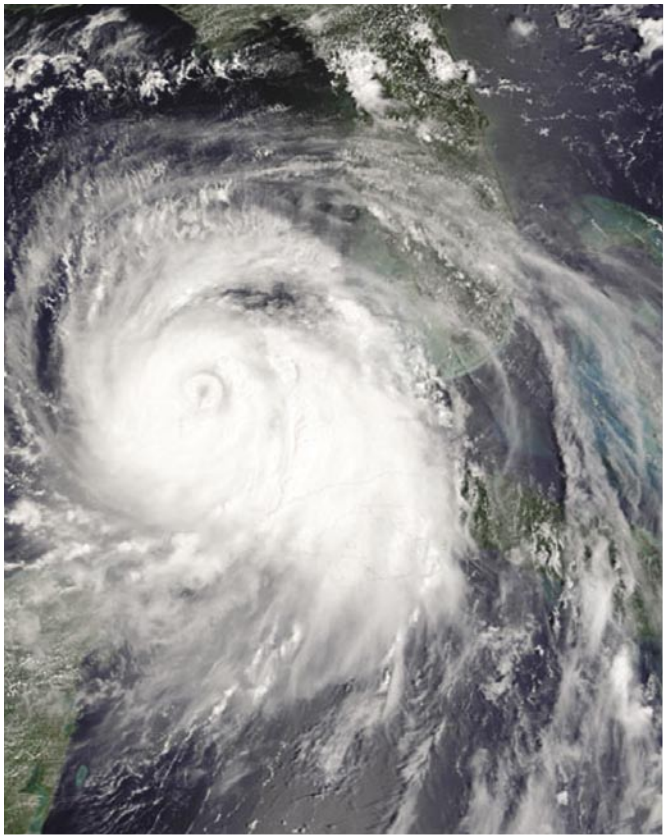
With this integrated approach we can more clearly visualise the challenge within a finite calculus of collective responsibility, and so keep focused on the imperative of solving the problem faster than we are creating it. Communicating and implementing this remains the primary challenge.

A FRAMEWORK-BASED MARKET

With the C&C operational framework, we can compare how much must be achieved globally to avoid dangerous climate change, with the widening margins of error in which we are becoming trapped.

> "Treating climate change as a global emergency is now long overdue and responding proportionately is vital."

There are more complicated 'alternatives to' and 'derivatives from' C&C. While defending the evolutionary nature of the politics, these have also attempted to be non-chaotic. They include for example the Kyoto Protocol, which seeks to interpose a partial and random market-based framework in support of the Convention. But such an evolutionary response to its objective and principles is guesswork by definition, and there is no evidence



Satellite image of Hurricane Katrina, which has cost the south-eastern US billions of dollars. Damages from extreme weather events are increasing with climate change.

supporting claims that merely incremental activity at the margins will collectively generate a sufficient response fast enough to be effective. Until recently, the unguided inertia of evolutionary process under the Kyoto Protocol has been projected as *ne plus ultra*.

“C&C overcomes the stand-off where a one sided agreement is not an agreement and where half an argument is not, nor will ever become, a whole solution. It recognises that separate development is not sustainable development.”

The fact is that this is a lottery where everybody loses. This approach has obscured the global objective of safe and stable concentrations and the obviously urgent need for a trajectory to this objective by design.
C&C starts with an integral response to the Convention's objective and allowing a full term framework-based market to result, where:

- Equity as collateral is the 100 per cent entirety of the emissions contraction event necessary for concentration stability.
- The social equity as the equal per person claim on the same 100 per cent throughout that event but softened by convergence.
- The commercial equity is the shares pre-distributed this way sum to the same 100 per cent and are tradable so as to accelerate the positive sum game for the emissions-free economy that must emerge if we are to prosper in the future.

In a nutshell, this integration puts rational principle ahead of stochastic practice in order that the former guides the latter. In practice this arrangement is flexible and will create a lucrative framework-based market for the zero emissions industries within a future structure that corrects and compensates for the asymmetric consumption patterns of the past while saving us all from dangerous rates of climate change.
In this context C&C overcomes the stand-off where a one sided agreement is not an agreement and where half an argument is not, nor will ever become, a whole solution. It recognises that separate development is not sustainable development.
In September 2007, the German Government recognised this when mediating between supporters and opponents of the Kyoto Protocol with C&C as the basis of the post-Kyoto agreement. Their urgent call for a whole and proportionate solution should be supported vigorously.

Aubrey Meyer grew up studying music in the *separate development* of *apartheid* South Africa. The proportionate response to global environmental limits now imposed by climate change emerged easily as the constitutional logic of Contraction and Convergence or ‘C&C’. As in South Africa, the reality was that separate development was not sustainable development. The C&C model proportions this possibility as justice without vengeance and climate chaos.

In 1990, aged 43, he put brackets around a successful career in music and co-founded the Global Commons Institute (GCI) in London. Since then he has campaigned at the United Nations negotiations on climate change to win acceptance of the management of global greenhouse gas emissions through a framework of scientific truth and political reconciliation, or ‘Contraction and Convergence’ (C&C). The structure, imagery and animations of C&C created by Meyer over the years have been variously described as, *“morally and intellectually coherent”, “beautiful”* and C&C itself as *“the single most elegant and important idea currently awaiting adoption by humanity”.*

UNITED NATIONS FRAMEWORK CONVENTION on CLIMATE CHANGE

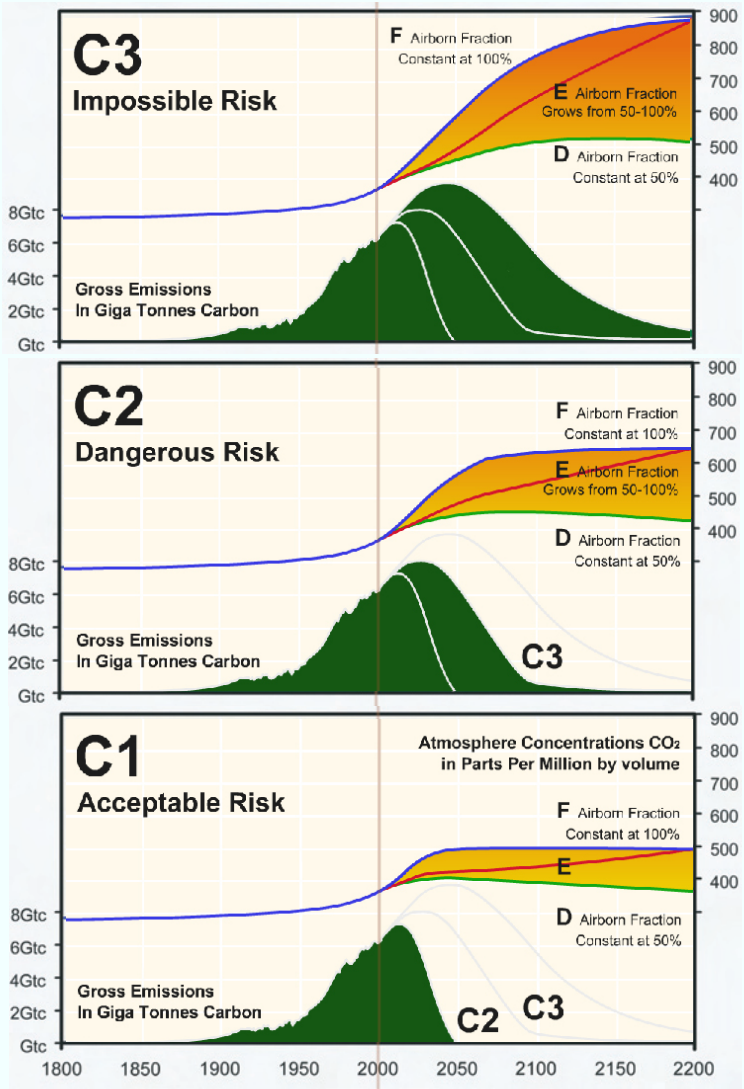
OBJECTIVE

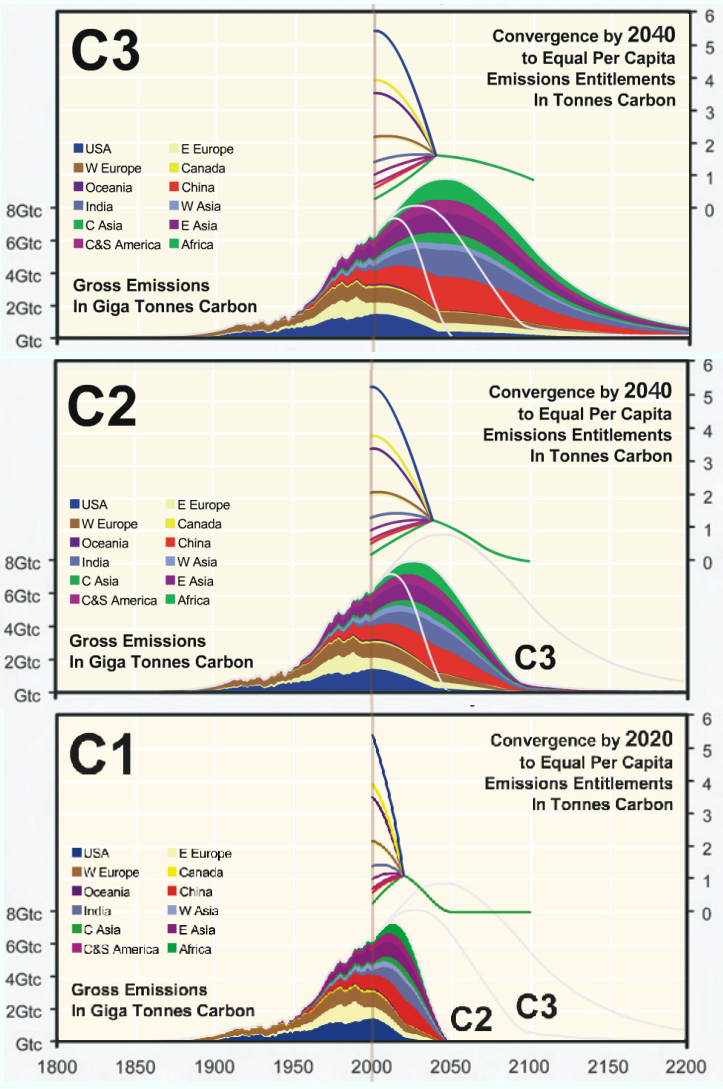
PRINCIPLES

Precaution Equity

Contraction & Concentrations

Contraction & Convergence





This animation is on-line at: - www.gci.org.uk/images/Final_presentation.exe

This summarises Meyer's presentation [2006] to the Royal Institute of British Architect's [RIBA] Conference. *"It was 'the most powerful set of arguments and performance around climate change I have ever witnessed'."*

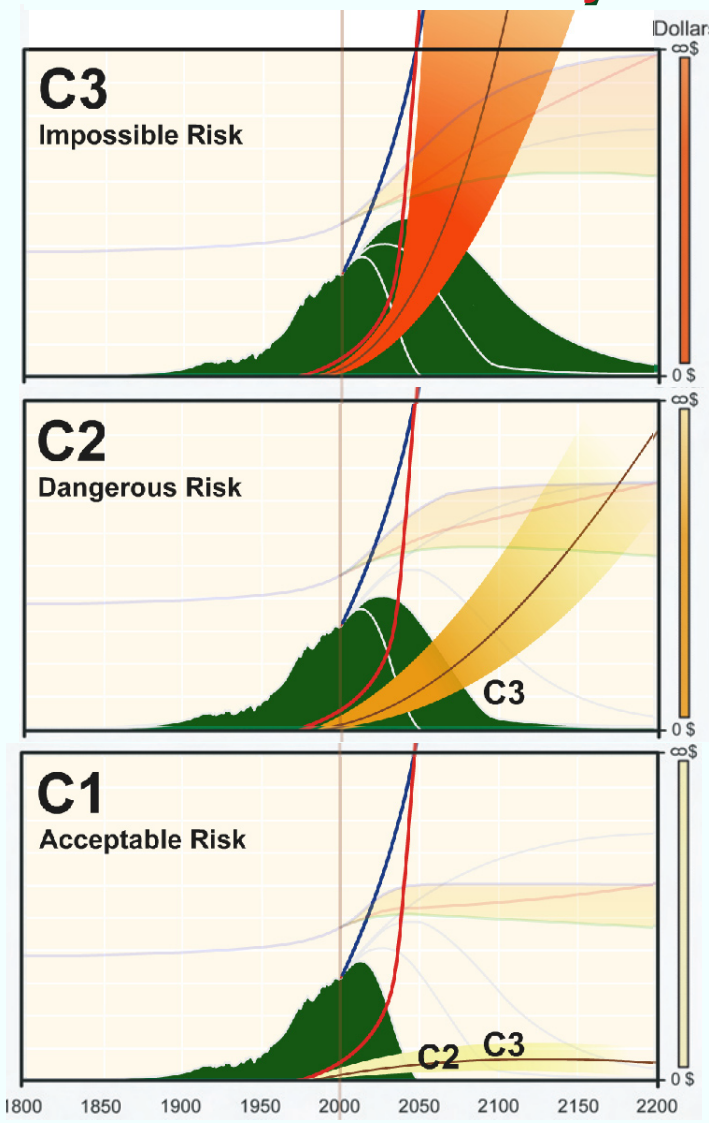
Jon Snow Channel 4 and RIBA fellow

See: - www.gci.org.uk/Movies/Contraction_and_Convergence_Promo.mpg

GLOBAL CLIMATE CHANGE DAMAGE-COSTS/DEVELOPMENT-BENEFITS

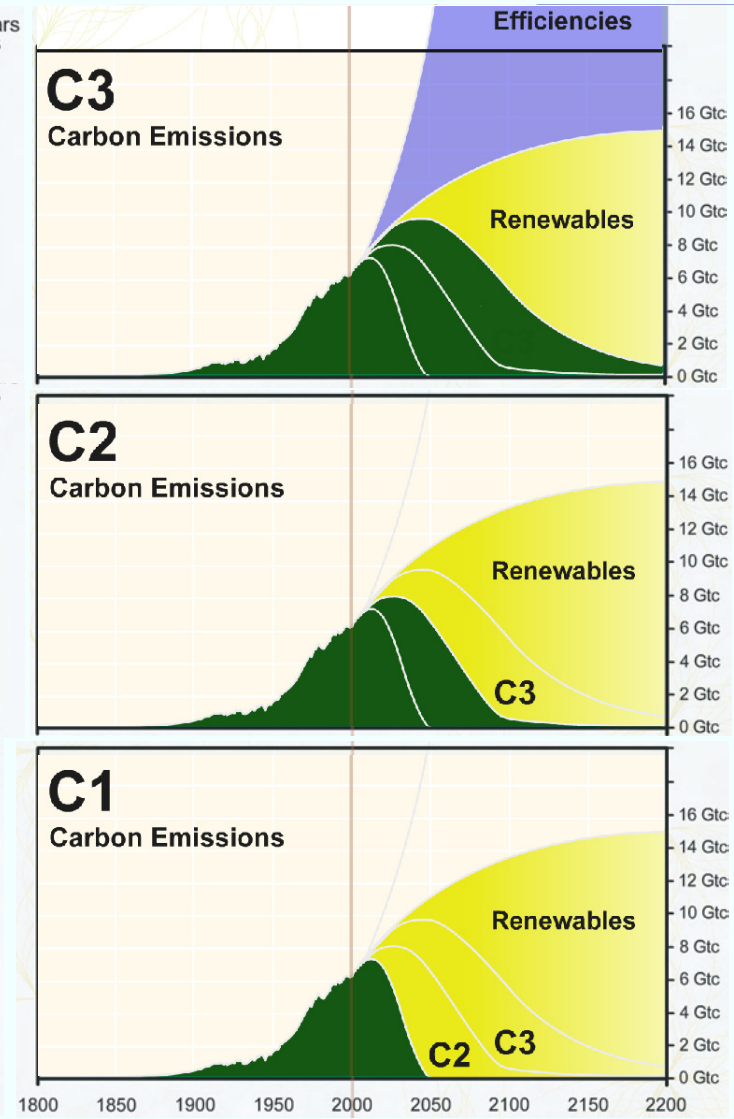
DANGEROUS CLIMATE CHANGE

Damage Costs & Insecurity



UN/SUSTAINABLE DEVELOPMENT

Contraction & Conversion



Touch buttons 1 to advance within scenes and logos between them.

Carbon Countdown

The Campaign for C&C

" 'Carbon Countdown' is an international campaign to avert dangerous rates of climate change. It focuses corporate support for Contraction and Convergence [C&C] on the UNFCCC decision-making process throughout the present critical period of negotiation. Corporate leaders are called on to endorse the campaign on behalf of their organisations and to encourage others to join as well."

1 Approaching the point of no return

The scientific evidence is now overwhelming: global climate change presents very serious social, environmental and economic risks and it demands an urgent global response. This was the message sent by leaders of over one hundred and fifty global business organisations to the United Nations Climate Change Conference in Bali in December 2007.

The International Panel on Climate Change (IPCC) had just published its Synthesis Report, in conclusion of the Fourth Assessment Report (AR4) on the science of climate change. It issued a warning that, with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow and that, without urgent action, anthropogenic global warming could lead to impacts that are abrupt or irreversible

The IPCC has sent a clear and unequivocal message to us all: we are not doing enough soon enough to avoid dangerous climate change and time is of the essence. James Hansen, one of the world's leading authorities on climate change, has warned that the Earth's climate is nearing a point of no return beyond which it will be impossible to avoid climate change with far ranging undesirable consequences.

We must have a global agreement on emissions control that is sufficient to solve the problem faster than we are creating it. Unless we do, sustainable development is impossible. Concentration and emissions reduction targets must be embodied in an international agreement framed to meet the objective of the United Nations Framework Convention on Climate Change (UNFCCC) if the markets and new technology are to become the mainspring of the new low-carbon economy. In the absence of this agreement, we will continue to struggle under the "greatest market failure ever seen" diagnosed in the Stern Review of 2006.

Contraction and Convergence (C&C) is the foundation of a remedy for this failure. With this strategic framework, it will be possible to secure a safe and stable level of GHG concentrations in the atmosphere and avert the greatest threat facing humanity.

Contraction and Convergence
C&C is founded on IPCC climate science and embraces the UNFCCC principles of equity, precaution and sustainability. It has wide international support amongst businesses, professional bodies, academic institutions, faith groups, national, regional and local governments.

C&C schedules a global reduction of emissions (contraction) that keeps CO_2 concentrations from rising beyond an agreed safe level. It proposes emission entitlements for every country and a scheduled convergence to equal per person entitlements by an agreed date. In this way, convergence reduces the carbon shares of the developed over-emitting countries sharply until they converge with the (temporarily rising) shares of developing under-emitting countries. The latter will have the right to sell their surplus carbon shares to wealthier nations. Carbon emissions trading will encourage rapid investment in technology and infrastructure for low-carbon energy.

C&C forms the basis for the comprehensive United Nations agreement that corporate leaders are demanding. It is fully UNFCCC-compliant, giving us the capability to:

- Constrain the level to which GHG concentrations and the consequential damages will rise in the future.

- Bring together developed and developing countries under a common full-term action plan.

- Address the worsening asymmetry of global economic development.

Carbon Countdown campaign

The Carbon Countdown international campaign focuses corporate support for C&C on the UNFCCC decision-making process throughout the current critical negotiations.

The campaign displays the C&C logo and seeks the commitment of organisations carrying the logo to propagate the case for C&C by endorsing the C&C Declaration shown on page two.

The campaign's essential message is that treating climate change as a global emergency is now long overdue and responding proportionately is vital; that it is imperative to go beyond the merely aspirational character of the current UNFCCC debate and focus on the rationale for solving the problem faster than we are creating it. Declaring for C&C demonstrates this.

Corporate leadership and sustainability

The science is clear that the future of our society is at risk. Climate damages are already growing at twice the rate of the economy. This has been described as the biggest market failure in history and our common future security and prosperity are increasingly vulnerable. To correct this we must start making deep cuts in our emissions within the next five to ten years in an internationally coordinated manner and this will see the start of what has been termed the biggest infrastructural change in human history.

However, individual and collective actions to mitigate climate change will remain inadequate unless we enact completely the full-term international agreement proposed by the UNFCCC to which our governments are signatories. There is a real and growing danger that any local successes are hostage to global failure. Our corporate social responsibility and sustainable development programmes, indeed our own organisations and institutions themselves, are compromised by this.

We could have as little as fifty years left to reduce our carbon emissions to net-zero globally to achieve the full-term objective of the UNFCCC. Whatever the rate, this will inevitably require a complete contraction and convergence event for greenhouse gas emissions if we are to achieve the objective. With so little time left, we can no longer afford the aspirational patchwork approach followed so far by many powerful policy-makers, their advisors and others.

Corporate leaders need a clear and rational framework for targets and the enabling measures now needed in order to lead their organisations along the right path. Corporate leaders are justified in demanding a timely and proportionate international response from governments. They understand markets and their potential for driving a low-carbon economy. They are in a strong position to influence government policy-makers and convince them of the need for a global framework within which the markets must operate.

Corporate leaders have a duty of care to act and supporting the Carbon Countdown campaign enables them to demonstrate this collectively. Those who are seen to act now in this way, show international leadership for their organisations. They will set an example with clear insight and strong ethical standards for organisations everywhere.

By supporting the Carbon Countdown campaign the emerging coalition of subscribers focus this influence. In turn, the campaign supports coalition members by giving wide visibility to this competence and their commitment to it. Campaign reports and promotions will display their identities to UN organisations, national governments, trade and professional bodies and many others around the world helping to demonstrate that it is in every one's interest so to act if continuing market failure is to be overcome.

2 Global action on climate change

The United Nations Framework Convention on Climate Change (UNFCCC) was agreed by 165 governments in 1992, with the objective of halting the rising concentration of greenhouse gas (GHG) in the atmosphere to avoid dangerous rates of climate change.

The Global Commons Institute (GCI) has been a contributor to the UNFCCC process since its inception. The Institute is the originator of Contraction and Convergence (C&C), its proposed strategic framework for climate change mitigation. C&C has wide international support amongst businesses, professional bodies, academic institutions, faith groups, national, regional and local governments and others.
Governments who are signatories of the UNFCCC have an obligation to comply with the Convention. As members of the Conference of the Parties, they must determine a safe GHG stabilisation level and the associated emissions reduction pathways.

UNFCCC compliance therefore requires finite answers to the questions: 'what is a safe GHG concentration value for the atmosphere?' and 'what is the scale of the full-term emissions contraction event required to achieve it?'. Unless we accept a globally shared commitment not to exceed that safe concentration number, the probability increases that our separate efforts to avoid dangerous rates of climate change will remain collectively too little too late.

Talks about talks

Today, over fifteen years after the UNFCCC was agreed, efforts to this end are demonstrably inadequate and the danger of 'runaway' rates of global climate change taking hold is mounting. When Kyoto expires in 2012, it must be replaced by a worldwide agreement that solves the problem faster than we are creating it. We are still far from agreeing a safe level of concentrations, from which all else stems. Until very recently, there was no agreement in principle to global emissions reduction on any basis.

The G8 summit in Heiligendamm in June 2007 took a promising step forward. The US and five growing economies, China, India, Brazil, Mexico and South Africa all accepted for the first time the principle of an international agreement to cut greenhouse gas emissions. None of these countries is bound by the Kyoto Protocol.

In September 2007, when mediating between supporters and opponents of the Kyoto Protocol, the German Government went further by proposing the Contraction and Convergence approach as the basis of the post-Kyoto agreement.

At the Bali conference (UNFCCC COP13) in December 2007, the world's nations (apart from one) agreed to sign up to a deal setting out a two year road map to a new treaty to replace the Kyoto Protocol, due to be agreed in Copenhagen in December 2009. Developed countries accepted that deep cuts will be needed in their emissions, while developing countries agreed to undertake "measurable, reportable and verifiable mitigation" of theirs. Although no firm targets or commitments are included, it is the first time that industrialised and developing countries, including the US, China and India, have jointly signed up to an undertaking to act together to control their emissions.

Are we doing enough soon enough?

The Kyoto Protocol, based on the IPCC Second Assessment Report of 1995, does not target a maximum level of concentrations. It includes only six of the world's twelve largest emitting nations and expires at the end of 2012. Any CO_2 emissions avoided under Kyoto have already been outweighed by increases in carbon accumulating in the atmosphere at an accelerating rate, due to changes in the climate system as a whole.

The European Union has gone beyond its Kyoto commitment by targetting 20-30% emissions reduction by 2020 and a 60-80% reduction by 2050. As with Kyoto, these unilateral reductions cannot lead to a safe and stable level of global concentrations.

The UK government's Climate Change Bill [2007/8] targets a unilateral 60% emissions reduction below 1990 levels by 2050. This is based on the science of the IPCC Second Assessment Report of 1995 and a notional level of concentrations of 550ppmv CO_2. The target is under review.

The US did not ratify the Kyoto Protocol, nor has the federal government set any targets for emissions reduction. However, individual states have taken the initiative. California has set a unilateral target of 25% reduction in emissions by 2020 and about twenty other states, along with a number of Canadian provinces, have signed agreements to reduce emissions by various amounts. More than 700 US cities have signed an agreement to meet or beat the Kyoto targets by 2012.

Australia, following the election of a new government in November 2007, has now ratified the Kyoto Protocol.

These planned actions will make no significant contribution to solving the problem without global targets. At best they represent a statement of intent, but urgent further action is required. Meanwhile, the position is deteriorating rapidly. Because of weakening carbon sinks, analysis now indicates that stabilising GHG concentrations in the atmosphere below the level that prevents dangerous rates of climate change, requires a rate of overall emissions control that is faster than was previously assessed. We are now advised that we might have only the next 50 years to reduce human GHG emissions to zero globally (IPCC AR4 and Hadley Centre, 2007).

[See GCI IPCC AR4 http://www.gci.org.uk/Animations/BENN_C&C_Animation.exe]

As the original authors of the UNFCCC understood at the outset, embracing the issue of a sufficient and proportionate response to climate change is fundamental to the whole global engagement. We must have a global agreement on emissions control that is sufficient to solve the problem faster than we are creating it. Unless we do, sustainable development is impossible. The opportunity still exists to create such an agreement for acceptance by the UN meeting scheduled for Copenhagen at the end of 2009, to replace Kyoto in 2012. It must be based on current climate science and have global support.

3 Contraction and Convergence - the proportionate response

Contraction and Convergence is GCI's proposed UNFCCC-compliant climate mitigation strategy for an equitable solution to cutting carbon emissions through global collective action.

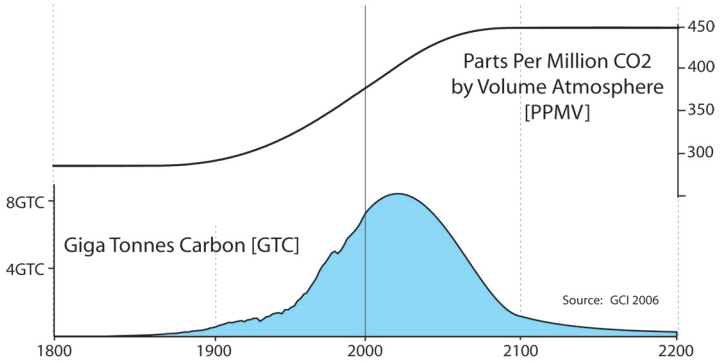
The ultimate objective of the UN climate treaty is safe and stable greenhouse gas concentrations in the atmosphere and C&C starts with this. C&C recognises that subject to this limit, we all have an equal entitlement to emit greenhouse gas to the global atmosphere, simply because continuing its globally unequal use will make it impossible to get the global agreement needed for success. The Kyoto protocol cannot be the basis of this success because it is not science-based and, because of divergent national interests, it does not include all countries.

Scientists have advised on the safe concentration of CO_2 in the atmosphere and on the global cap on emissions necessary to achieve it. A level of 450 parts per million has until recently been regarded as the upper limit for keeping under the maximum global temperature increase of 2 degrees centigrade above the pre-industrial average. A science-based limit must be set by international agreement within the UNFCCC process.

C&C basics

From inception of a global agreement, C&C schedules the mandatory annual global contraction (reduction of emissions) that keeps CO_2 concentrations from rising beyond the agreed safe level. This rate of contraction must be periodically adjusted to take account of the increasing release of greenhouse gases caused by climate warming that accelerates the reduction of sinks and collapse of the planet's ecosystems, such as old-growth rain forests and peat-lands.

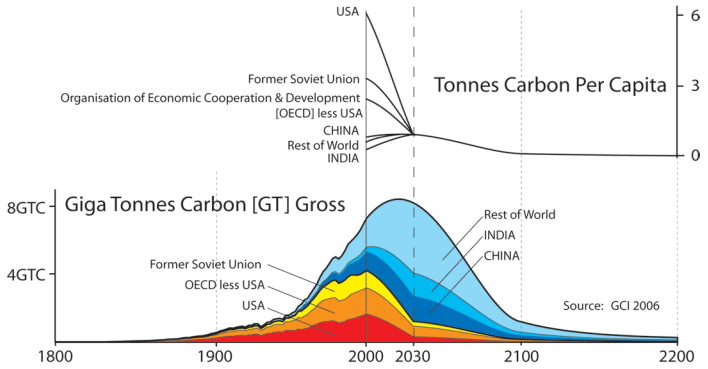
Contraction & Concentrations



This example shows an Emissions Contraction Budget for 450ppmv Concentrations

C&C also proposes emission entitlements to every country. While starting with current emissions, it proposes a scheduled convergence to equal per person entitlements for everyone on the planet by an agreed date. This way, convergence reduces the carbon shares of the developed over-emitting countries sharply until they converge with the (temporarily rising) shares of developing under-emitting countries. The latter will be able to sell their surplus carbon shares to wealthier nations. With emissions trading subject to this, rapid investment in renewable energy will be encouraged.

Contraction & Convergence



This example shows regional rates of Contraction and Convergence [C&C] i.e.- the same Contraction Budget Converges on shares equal to population by 2030.

The date by which this equal per person entitlement is achieved is negotiable. However, justice suggests the sooner the better as the poorer countries, which are most immediately vulnerable to and least responsible for creating climate change, need a mechanism that addresses both climate change and poverty.

C&C is founded on IPCC climate science and embraces the UNFCCC principles of sustainability, equity and precaution. It holds the science-policy content together as a unity; science-based on the contraction side of the argument and rights-based or 'constitutional' on the 'political' side of the argument. C&C is in effect a bill of rights; it plots a full-term event for achieving equal per capita emissions rights globally (Convergence), governed by the overall emissions limit over time that stabilises the atmosphere concentration of GHG at a 'safe' value (Contraction). It is the proportionate response to climate change.

C&C captures the UNFCCC process in a structure of reconciliation. From this it becomes possible to go beyond the merely aspirational character of the current UNFCCC debate, to communicating a rationale and a constitutional calculus. A fuller technical definition of C&C is given on Pages 18-21.

Enabling global collective action

C&C overcomes the stand-off where a one-sided agreement such as Kyoto is not an agreement that will yield a complete solution. It recognises that separate development is not sustainable development. It provides the foundation for unifying developed and developing countries under a common plan to contract and converge on equal per capita emissions. They will meet in the middle, as developed countries' emissions reduce and developing countries' emissions rise, along a path to a safe and sustainable level of GHG concentrations.

With the integrated C&C approach, we can more clearly define the challenge within a finite calculus of collective responsibility, and stay focused on the imperative of solving the problem faster than we are creating it.

Equity and survival

It is clear that the global majority most damaged by climate change are the poor in developing countries who bear least responsibility for damaging emissions. C&C addresses this worsening asymmetry of global economic development, or "Expansion and Divergence", at the same time as helping us mitigate climate change. It creates a sustainable basis on which to resolve this inequity.

Preventing rising climate damages

According to the re-insurers, the weather-related damages trend is growing at twice the rate of the global economy. It is possible that we may need to contract emissions to zero globally by 2050 if we are to stabilise atmosphere GHG concentrations at a level that prevents change accelerating uncontrollably. This is projected by the latest climate modelling results from the UK Government's Hadley Centre, published in the IPCC Fourth Assessment. With C&C, we have the opportunity to exercise direct control over our GHG emissions, and thereby constrain the level to which GHG concentrations and the consequential damages will rise in the future.

A framework-based market

The Kyoto Protocol seeks to interpose a partial and random market-based framework in support of the UN Convention. But such an evolutionary response to its objective and principles is guesswork by definition. There is no evidence to support claims that incremental activity at the margins will collectively generate a sufficient response fast enough to be effective. This approach has obscured the global objective of safe and stable concentrations and the urgent need for a trajectory to this objective by design. We must put rational principle before expedient practice in order that the former guides the latter. This will make possible the framework-based market that is required, with the potential for a zero-emissions economy in a structure of convergence. It corrects and compensates for the asymmetric consumption patterns of the past, while averting dangerous rates of climate change.

C&C forms the basis for the ambitious international and comprehensive, legally-binding United Nations agreement that corporate leaders are demanding. Under this agreement, it will be possible for governments to introduce enabling measures for a low-carbon economy, with the ability to manage our performance against integral emissions targets. We will then have a clear and reliable path towards a safe and sustainable level of GHG concentrations.

4 Corporate action on climate change

Public awareness of the threat of climate change is increasing rapidly through media exposure, public meetings and events and the work of many dedicated campaigning organisations and groups, both local and national. This enlightenment is set to continue indefinitely, reinforced by behavioural change in energy use, recycling and other practical initiatives.

In 2006, the G8 Roundtable of Business Leaders at the World Economic Forum issued a memorandum stating: "Companies cannot determine the scale of needed investment without a stabilisation threshold for greenhouse gas concentrations. The short-term "patchwork" of the Kyoto Protocol is not cost-effective. A global long-term, market-based policy framework in a new partnership with China, India, Brazil, South Africa and Mexico is needed".

More recently, the Corporate Leaders Group on Climate Change, including leaders of over 150 global companies, has called for a sufficiently ambitious international and comprehensive, legally-binding United Nations agreement to reduce greenhouse gas emissions that will provide business with the certainty it needs to scale up global investment in low carbon technologies (Financial Times 30 November 2007).

Current sustainability policy and practice

Many organisations are committed to rigorous environmental policies addressing climate change, in response to growing public awareness and through a sense of public duty. They have also discovered that there are new opportunities arising from these good practices.

Some have been following voluntary codes of practice since the 1990's, as part of Corporate Social Responsibility (CSR) and Sustainable Development programmes. Guidance is available from government, trade and professional bodies. There are more specialised services addressing carbon footprint reduction, carbon disclosure and auditing.

The practice of off-setting is in common use, although its contribution to emissions reduction is uncertain. There are as yet few standards and further regulation will probably be required.

New methods and techniques are being developed to deal with embedded carbon. Product life cycle assessments are being developed on a pilot basis. These are intended to make it possible to account for carbon through complex supply chains, including the crossing of national or market boundaries. They could make an essential contribution in future to carbon accounting and attribution.

The immense corporate effort being made to reduce emissions is evidenced by the published records of the Global Reporting Index (GRI), the Carbon Disclosure Project (CDP) and others like them.

These initiatives are bringing new opportunities and improved competitiveness for those engaged in them, but are they helping to solve the climate problem?

Do the numbers add up?

There are serious limits on the contribution to global emissions reduction by these means. We cannot know the impact of our efforts without having an ultimate global target for GHG concentrations and mutually agreed emissions reduction trajectories for achieving this. The Stern Review emphasised that a target range of concentrations would crucially anchor a global price for carbon that will provide markets with the necessary price signal. This signal would reflect our progress against global emissions targets.

These targets must be embodied in any international agreement framed to meet the UNFCCC objectives if the markets and new technology are to become the mainspring of the new low-carbon economy.

Under this agreement, governments will be able to legislate for meaningful national targets that aggregate to common global targets. They will also be able to introduce appropriate measures, such as taxation, regulation and cap and trade, to help us achieve them. This will provide the level playing field we need for our individual and collective efforts to count.

What more can be done?

More and more organisations are recognising the need for an internationally agreed global framework. Their leaders understand that we cannot solve the problem without one. They are concerned that their sustainability policies might be compromised and their considerable efforts to reduce emissions could count for nothing in the long run.

Their concern will be the greater for IPCC's warning that the shortfall in current climate change mitigation policies and related sustainable development practices could lead to damaging climate impacts that are abrupt or irreversible. However, there are signs of a more pro-active approach being urged by organisations who are leaders in their field.

Calls by the G8 Roundtable and the Corporate Leaders Group on Climate Change for a legally-binding United Nations agreement were a promising start.

The FTSE organisation has announced that from 2008, eligibility for inclusion in the FTSE4Good series of indices will be expanded to include climate change. FTSE4Good is designed to measure the performance of companies that meet globally recognised corporate responsibility standards. Its constituents number about seven hundred major enterprises worldwide. FTSE have recognised that the previous criteria were not set at a level compatible with the substantial emissions reductions expected to be necessary to stabilise atmospheric GHG concentrations at a sustainable level. Instead, they reflected what was possible for leading companies within the then-current regulatory and business environment. In future, as international agreements, governments' policies and corporate responses mature, the criteria will re-align with the demands of long-term sustainability.

A key principle of the new criteria is that companies should participate in strengthening public policy frameworks to address climate risk and reduce GHG emissions. Further, they are urged to demonstrate public policy leadership by "active advocacy of public policy initiatives, including binding national and international targets, to reduce GHG emissions over the appropriate time frame in order to achieve an acceptable atmospheric CO_2 concentration".

As long ago as 2002, the UN Environment Programme (UNEP) declared that the international political process had been slow to grapple with the climate change issue, and the business community could legitimately seek to influence policy-makers towards more courageous decisions. The UNEP Finance Initiative was formed to work with the financial sector in addressing this problem along with other environmental and social considerations. UNEP FI called for higher priority to be given to long-range emissions targets "through the adoption of an approach like Contraction and Convergence".

Since then, support for C&C has continued to grow strongly whilst the political process has hardly moved on. The 2007 Bali agreement is little more than a statement of intent by policy-makers to make some of those "courageous decisions" by 2009. They will need all the help and encouragement they can get.

5 Carbon Countdown campaign

GCI is conducting a global campaign for adoption of Contraction and Convergence as the UNFCCC-compliant strategic framework for combating dangerous climate change. The campaign will display the C&C logo and will seek commitment on the part of organisations carrying the logo to propagate the case for C&C. We believe that corporate leaders have an important part to play in determining how the global community addresses climate change. Moreover, government will depend on the organisations those leaders represent to contribute greatly to achievement of the ambitious national and international objectives that will follow.

The campaign is open to a wide range of organisations including: business, professional bodies, academic institutions, local government, health services, NGO's and many others.

Objectives of the campaign

The global community continues to generate dangerous rates of global climate change faster than it acts to avoid it. The international challenge is to reverse this.

The campaign supports the overall GCI objective of establishing C&C at the core of government climate change strategy in the UK and internationally, leading to formal adoption by the UN and its members.

The specific objectives are to:

- Promote awareness of C&C, extending and formalising the constituency of support
- Enlist and support organisations that commit to campaigning for C&C
- Encourage those organisations to adopt the highest standards of carbon reduction
- Support GCI's on-going research in climate change risk assessment and mitigation, as part of the UNFCCC process.

Corporate leaders are invited, on behalf of their organisations, to display the C&C logo and sign the C&C Declaration shown below.

Carbon Countdown licence

The term "Contraction and Convergence" and the C&C logo are the trademark of GCI. This is to protect the integrity of concept of Contraction and Convergence and prevent dangerous compromise that places irrational aspiration above rational principle. The pressure to compromise in this way will increase as negotiations proceed. The Kyoto Protocol is an example; it has obscured the global objective of a clearly quantified safe and stable level of concentrations and the need for a trajectory to this by design. What follows in 2012 must be fit for this purpose.

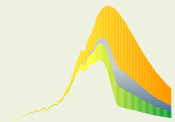
The C&C logo is offered for display on licensed-entity house media, subject to agreement with the licensing body. The licensed entity will agree to:

- Support Contraction and Convergence as the formal basis of UNFCCC negotiations for a global agreement on climate beyond 2012,
- Be entered on an open global C&C register,
- Undertake and publish regular carbon-audits by GCI approved organisations to best practice standards,
- Informally advocate C&C and the C&C Declaration to others within a sector-relevant community,
- Exhibit the C&C logo on house media, indicating the above agreement,
- Supply executive level signature endorsing these conditions and the C&C Declaration.

The C&C licensing authority will: -

- Maintain a public register of licensees
- Maintain a register of approved independent organisations to carry out best practice carbon audits, where appropriate including those already appointed by the licensee
- Publish periodic research and survey materials related to climate change issues and the campaign

- Keep the UNFCCC and other relevant bodies periodically updated with progress
- Inform elected political representatives, forming cross-party consensus on climate change policy, of progress in developing the C&C constituency.



The C&C Declaration

1. The United Nations Framework Convention on Climate Change (UNFCCC) has the objective of safe and stable greenhouse gas concentrations in the atmosphere based on the principles of precaution and equity.

2. Contraction and Convergence (C&C) is the rights-based, global climate mitigation framework, proposed to the United Nations by the Global Commons Institute (GCI) to achieve that objective.

3. C&C enables greenhouse gas scenarios for a safe climate to be calculated and universally shared by negotiation, enabling policies and measures to be organised internationally at rates that avoid dangerous global climate change.

4. Rates of contraction and convergence may be revised periodically as scientific understanding of the relationship between rising concentrations and their impacts on our world develops.

5. C&C proposes: -

[a] A full-term contraction budget for global emissions consistent with stabilising atmospheric concentrations of greenhouse gases (GHGs) at a pre-agreed concentration maximum deemed to be safe by the UNFCCC

[b] The international sharing of this budget as a pre-distribution of entitlements that result from a negotiable rate of linear convergence to equal shares per person globally by an agreed date.

6. These entitlements will be internationally tradable.

7. We, the undersigned, are licensed to exhibit the C&C logo as an endorsement of the above and as an encouragement to members of the international community to do likewise so that adoption of the Contraction and Convergence strategic framework is achieved as soon as possible.

6 The Global Commons Institute

Participation in the UNFCCC process

The Global Commons Institute is a London based not-for-profit organisation founded after the UN's Second World Climate Conference in 1990. Since then it has contributed to the work of the United Nations Framework Convention on Climate Change and the Intergovernmental Panel on Climate Change.

GCI made significant contributions to the original development of the UN Convention which was eventually agreed at the Earth Summit in Rio de Janeiro in June 1992. Its objective was defined as stabilising the rising greenhouse gas concentration of the global atmosphere. Its principles of equity and precaution were established in international law. Climate scientists had previously shown that a deep overall contraction of GHG emissions from human sources is a prerequisite to achieving the objective of the UNFCCC.

Negotiations to achieve this contraction began in 1995, administered by the specially created UNFCCC Secretariat. At the request of the IPCC, from 1992 to 1995 GCI contributed analysis highlighting the worsening asymmetry, or 'Expansion and Divergence', of global economic development. It became clear that the global majority most damaged by climate change were not those who were causing the damaging GHG emissions. GCI developed the Contraction and Convergence model of future emissions to provide a sustainable basis for resolving this inequity.

Negotiations for the Kyoto Protocol to the UNFCCC ran from 1995 until 1997. In December 1997 and shortly before they withdrew from these negotiations, the USA representatives stated, "C&C contains elements for the next agreement that we may ultimately all seek to engage in".

Since then C&C has been widely referenced in the debate on achieving the UNFCCC objectives. However, there has been no significant progress on a global agreement for the prevention of dangerous climate change since Kyoto was first penned over ten years ago.

GCI has continued to gain international support for C&C from UN organisations, national governments, business, academic and professional institutions as well as many others, as a suitable basis for a full-term UNFCCC-compliant agreement (see Section 10, C&C Support).

Climate risk research

GCI is committed to on-going research into climate risk assessment. When the IPCC published its Fourth Assessment Report (AR4) in 2007, it included for the first time 'coupled' modelling for emissions control scenarios alongside the uncoupled modelling that has been shown in its Assessment Reports since 1994.

Coupled Atmosphere-Ocean General Circulation Models (AOGCMs) used by the UK's Hadley Centre are the most complex climate models in use, consisting of an Atmosphere General Circulation Model (AGCM) coupled to an Ocean General Circulation Model (OGCM). Some recent models include the biosphere, carbon cycle and atmospheric chemistry as well. AOGCM modelling introduces the effects of positive feedbacks from carbon sinks and can be used for the prediction and rate of change of future climate.

Following detailed investigation of the modelling results in IPCC AR4, GCI was able to confirm with IPCC and Hadley that the new evidence points to the need for zero emissions globally by about 2050 to keep below 450ppmv atmospheric CO_2 concentration. This level is the most frequently cited maximum within which it may be possible to arrest the rise in global temperature to within a $2^{o}C$ increase above pre-industrial levels. These results corroborate the risk-analysis previously carried out by the GCI for the UK All-Party Parliamentary Group on Climate Change (APPGCC), shown in summary in Section 8 below.

There is now further evidence of increasing carbon sink failure, since publication of IPCC AR4. This is likely to give rise to greater acceleration in growth of GHG concentration levels.

GCI Director

Aubrey Meyer is the Director of the Global Commons Institute responsible for formulation of Contraction and Convergence. His contribution to climate change mitigation has been recognised with awards including the Andrew Lees Memorial Award 1998, the Schumacher Award in 2000, the Findhorn Fellowship in 2004, a City of London Lifetime Achievement award in 2005. In 2007 he was made an Honorary Fellow of the Royal Institute of British Architects (RIBA) and received the UNEP FI Civil Society Carbon Leadership Award.

7 Climate risk assessment

Double-spread on pages 30/31 shows: -

"Charting the UNFCCC Objective & Principles, the Development Benefits of Growth versus the growth of Climate Change Related Damage Costs".
online at: - http://www.gci.org.uk/images/Proportionate_Response.pdf

Columns one and two address the objective and principles of the UNFCCC. Columns three and four compare the development benefit of growth with the growth of climate damage and costs. The left hand side of each graph shows:

- Expanding fossil fuel emissions of CO_2 measured in billions of tonnes of carbon between 1800 – 2000.

- Rising concentration of atmospheric CO_2 as parts per million by volume (ppmv) between 1800 – 2000.

The key questions for integration are in four columns:

- Column 1: Contraction and Concentration: what is a safe level of concentrations and, in the light of sink failure, how rapid must contraction be to avoid GHG concentration going too high in future?

- Column 2: Contraction and Convergence: what is the internationally equitable agreement necessary to ensure this level is not exceeded?

- Column 3: Contraction and Conversion: what is the rate at which we must convert the economy away from fossil fuel dependency?

- Column 4: Damage costs and insecurity: what is the environmental and economic damages trend associated with this analysis?

Each Row has a different level of Risk projected across the four columns:

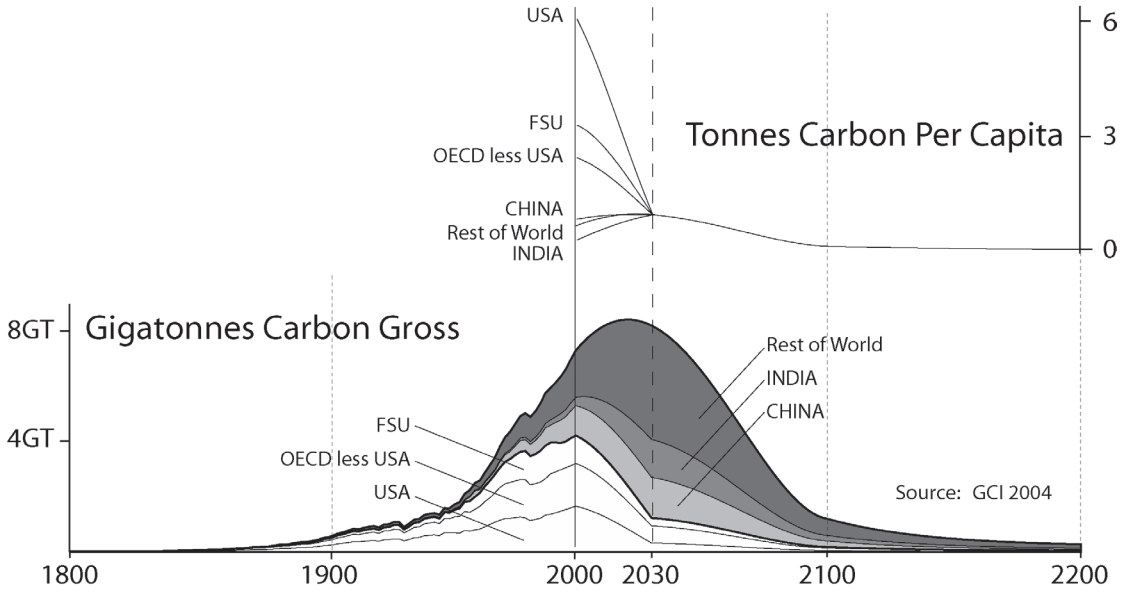
- C1 (bottom row) Acceptable risk: global GHG emissions contraction complete by 2050 so concentrations end up around 400/450 ppmv with damages potentially still under control.

- C2 (middle row) Dangerous risk: global GHG emissions contraction complete by 2100 so concentrations keep going up through 550/750 ppmv with the illusion of progress maintained, while damages are going out of control.

- C3 (top row) Impossible risk: global GHG emissions contraction complete by 2200 so concentrations keep going up through 550/950 ppmv while the illusion of progress is being destroyed, damages costs are destroying the benefits of growth very quickly and all efforts at mitigating emissions become futile.

In each graph, different futures are projected on the right-hand side as scenarios or rates of change that are linked to the objective of the UNFCCC where three levels of risk for stabilising the rising concentration of CO_2 are understood in the light of the rising fraction of emissions that stays airborne.

GCI BRIEFING: "CONTRACTION & CONVERGENCE"



This example shows regionally negotiated rates of C&C.
This example is for a 450ppmv Contraction Budget, Converging by 2030.

The Global Commons Institute [GCI] was founded in 1990. This was in response to the mainstreaming of global climate change as a political issue. Realising the enormity of the climate crisis, we devised a founding statement on the principle of "Equity and Survival". [1]

In November 1990, the United Nations began to create the Framework on Climate Convention [UNFCCC]. GCI contributed to this and in June 1992 the Convention was agreed at the Earth Summit in Rio. Its objective was defined as stabilizing the rising greenhouse gas [GHG] concentration of the global atmosphere. Its principles of equity and precaution were established in international law. Climate scientists had showed that a deep overall contraction of GHG emissions from human sources is prerequisite to achieving the objective of the UNFCCC. In 1995 negotiations to achieve this contraction began administered by the specially created UNFCCC secretariat.

Between 1992 and 1995 and at the request of the Intergovernmental Panel on Climate Change [IPCC], GCI contributed analysis highlighting the worsening asymmetry, or "Expansion and Divergence" [E&D] of global economic development. It became clear the global majority most damaged by climate changes were already impoverished by the economic structures of those who were also now causing the damaging GHG emissions. [2]

To create a sustainable basis on which to resolve this inequity, GCI also developed the "Contraction and Convergence" (C&C) model of future emissions. In 1995 the model was introduced by the Indian Government [3] and it was subsequently adopted and tabled by the Africa Group of Nations in August 1997. [4]

Negotiations for the Kyoto Protocol to the UNFCCC ran from 1995 until 1997. In December 1997 and shortly before they withdrew from these negotiations, the USA stated, *"C&C contains elements for the next agreement that we may ultimately all seek to engage in."* [5]

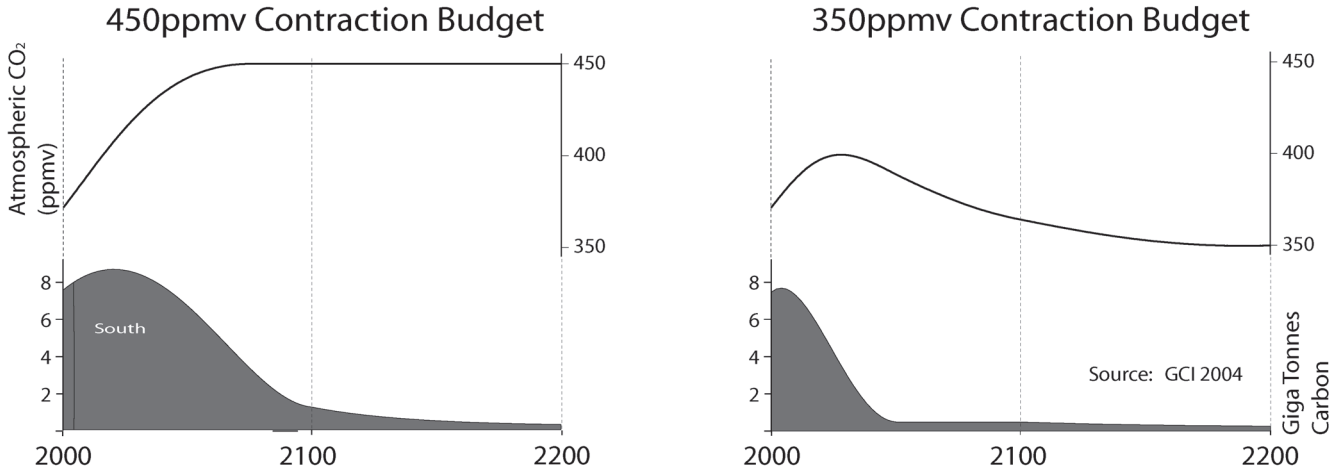
Since then C&C has been widely referenced in the debate about achieving the objective of the UNFCCC. In 2000 C&C was the first recommendation of the UK Royal Commission on Environmental Pollution in its proposals to government. [6] In December 2003 C&C was adopted by the German Government's Advisory Council on Global Change in its recommendations. [7] In 2003 the secretariat of the UNFCCC said the objective of the UNFCCC, *"inevitably requires 'Contraction and Convergence'."* [8] The Latin America Division of the World Bank in Washington DC said, *"C&C leaves a lasting, positive and visionary impression with us."* In 2004 the Archbishop of Canterbury took the position that, *"C&C thinking appears utopian only if we refuse to contemplate the alternatives honestly."* [9] In 2002, the UK Government accepted GCI authorship of the definition statement of C&C, recognising the need, *"to protect the integrity of the argument."*

This statement follows and is available in thirteen languages. [10] It has been adopted by the House of Commons Environmental Aundit Committee and in part in the UN's forthcoming "Millennium Assessment." In 2005, the UK Government will host the next G-8 summit. The Government has already committed this event to dealing strategically with the problems of Africa and Climate Change. Numerous civil society and faith groups are now actively lobbying the Government to have C&C adopted as the constitutional basis for avoiding dangerous future climate change.

[1] http://www.gci.org.uk/signon/OrigStatement2.pdf
[2] http://www.gci.org.uk/articles/Nairob3b.pdf
[3] http://www.gci.org.uk/Archive/MegaDoc_19.pdf [p 116]
[4] http://www.gci.org.uk/nairobi/AFRICA_GROUP.pdf
[5] http://www.gci.org.uk/temp/COP3_Transcript.pdf
[6] http://www.gci.org.uk/Endorsements/RCEP_Chapter_4.pdf
[7] http://www.gci.org.uk/Endorsements/WBGU_Summary.pdf
[8] http://www.gci.org.uk/slideshow/C&C_UNFCCC.pdf
[9] http://www.gci.org.uk/speeches/Williams.pdf
[10] http://www.gci.org.uk/translations.html

"CONTRACTION & CONVERGENCE" - DEFINITION STATEMENT

Negotiating Rates of Contraction



Annual Carbon Emissions contract over time to a sustainable level. This is the "Contraction Event".
The Choice of a "safe" CO2 stabilisation level determines the total tonnage of carbon to be burnt during the contraction event.
Two examples of CO2 stabilisation levels are shown above, with thier coresponding contraction budgets.

1. "Contraction and Convergence" (C&C) is the science-based, global climate-policy framework, proposed to the United Nations since 1990 by the Global Commons Institute (GCI). [1,2,3,4]

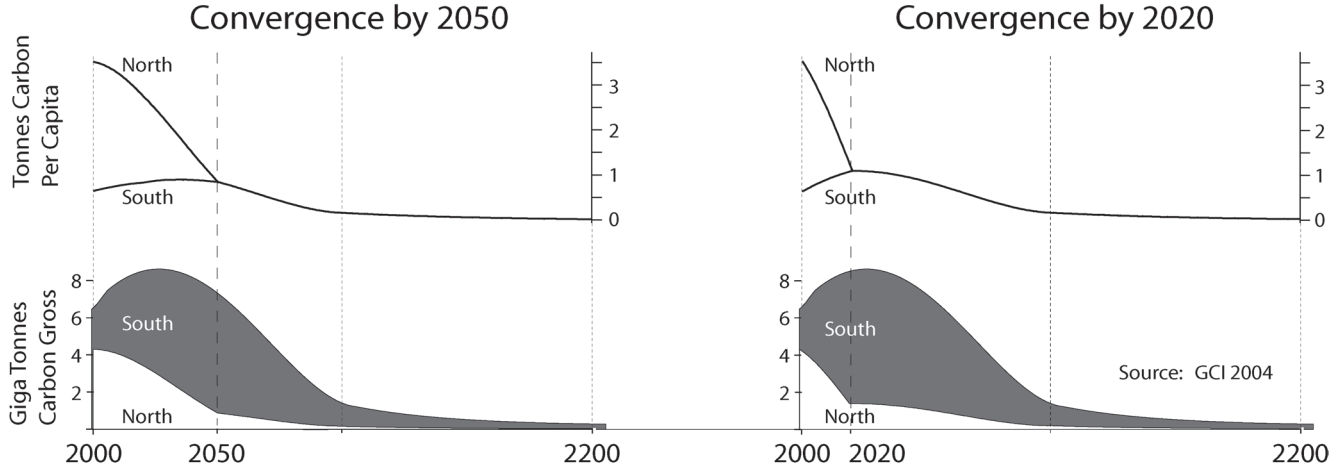
2. The objective of safe and stable greenhouse gas concentrations in the atmosphere and the principles of precaution and equity, as already agreed in the "United Nations Framework Convention of Climate Change" (UNFCCC), provide the formal calculating basis of the C&C framework that proposes:

   * A full-term contraction budget for global emissions consistent with stabilising atmospheric concentrations of greenhouse gases (GHGs) at a pre-agreed concentration maximum deemed to be safe, following IPCC WG1 carbon cycle modelling. (See Image Two on page two - GCI sees higher than 450 parts per million by volume [ppmv] CO2 equivalent as 'not-safe').

   * The international sharing of this budget as 'entitlements' results from a negotiable rate of linear convergence to equal shares per person globally by an agreed date within the timeline of the full-term contraction/concentration agreement. (GCI suggests [a] between the years 2020 and 2050, or around a third of the way into a 100 year budget, for example, for convergence to complete (see Image Three on page two) and [b] that a population base-year in the C&C schedule is agreed).

   * Negotiations for this at the UNFCCC should occur principally between regions of the world, leaving negotiations between countries primarily within their respective regions, such as the European Union, the Africa Union, the US, etc. (See Image One on page one).

Negotiating Rates of Convergence

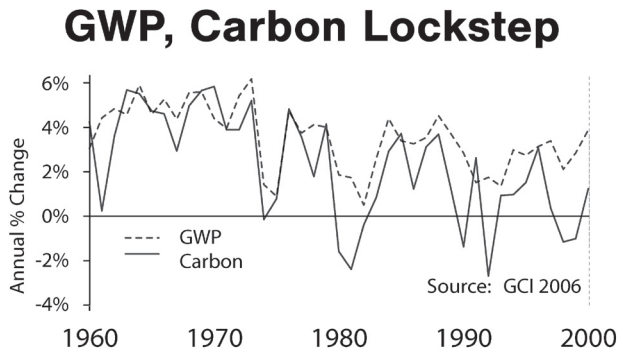


Per capita emissions around the World converge on equality by a negotiated "Convergence Date".
Two examples of convergence are shown here, each within a 450ppmv contraction budget.

* The inter-regional, inter-national and intra-national tradability of these entitlements in an appropriate currency such as Energy Backed Currency Units [5] should be encouraged.
* Scientific understanding of the relationship between an emissions-free economy and concentrations develops, so rates of C&C can evolve under periodic revision [6].

3. Presently, the global community continues to generate dangerous climate change faster than it organises to avoid it. The international diplomatic challenge is to reverse this. The purpose of C&C is to make this possible. It enables scenarios for safe climate to be calculated and shared by negotiation so that policies and measures can be internationally organised at rates that avoid dangerous global climate change.

4. GHG emissions have so far been closely correlated with economic performance (See Image Four Page Three). To date, this growth of economies and emissions has been mostly in the industrialised countries, creating recently a global pattern of increasingly uneconomic expansion and divergence [E&D], environmental imbalance and international insecurity (Image 4 p 3).



Year to year percentage change of Gross World Product, GWP (measured in US$) and Global Carbon emissions

5. The C&C answer to this is full-term and constitutional, rather than short-term and stochastic. It addresses inertial argument about 'historic responsibilities' for rising concentrations recognising this as a development opportunity cost to newly industrialising countries. C&C enables an international pre-distribution of these tradable and therefore valuable future entitlements to emit GHGs to result from a rate of convergence that is deliberately accelerated relative to the global rate of contraction agreed (Image 3 p 2).

6. The UK's Royal Commission on Environmental Pollution [7] and the German Advisory Council on Global Change [8] both make their recommendations to governments in terms of formal C&C. Many individual and institutional statements supporting C&C are now on record. [9,10] The Africa Group of Nations formally proposed it to the UNFCCC in 1997. [11] It was agreed in principle at COP-3 Kyoto 1997 [12]. C&C meets the requirements of the Byrd Hagel Resolution of the US Senate of that year [13] the European Parliament passed a C&C resolution in 1998 [13] the UK Parliament has reported on C&C [15, 16, 17].

7. This synthesis of C&C can redress the increasingly dangerous trend imbalances of global climate change. Built on global rights, resource conservation and sustainable systems, a stable C&C system is now needed to guide the economy to a safe and equitable future for all. It builds on the gains and promises of the UN Convention and establishes an approach that is compelling enough to galvanise urgent international support and action, with or without the Kyoto Protocol entering into force.

[1] http://www.gci.org.uk
[2] http://www.gci.org.uk/model/dl.html
[3] http://www.gci.org.uk/images/CC_Demo(pc).exe
[4] http://www.gci.org.uk/images/C&C_Bubbles.pdf
[5] http://www.feasta.org/events/debtconf/sleepwalking.pdf
[6] http://www.gci.org.uk/Animations/BENN_C&C_Animation.exe
[7] http://www.rcep.org.uk/pdf/chp4.pdf
[8] http://www.wbgu.de/wbgu_sn2003_engl.pdf
[9] http://www.gci.org.uk/Archive/1989_2004
[10] http://www.gci.org.uk/consolidation/Sasakawa.pdf
[11] http://www.gci.org.uk/papers/zew.pdf [appendix C, page 16]
[12] http://www.gci.org.uk/temp/COP3_Transcript.pdf
[13] http://www.gci.org.uk/briefings/C&C&ByrdHagel.pdf
[14] http://www.gci.org.uk/consolidation/UNFCC&C_A_Brief_History_to1998.pdf [pp 27 - 32]
[15] http://www.gci.org.uk/EAC/Climate_C&C_Report.pdf
[16] http://www.gci.org.uk/links/detail.pdf
[17] http://www.gci.org.uk/briefings/Consensus_Report.pdf

The charts on page 47 are stacked one above the other on the same horizontal time axis [1800 - 2200]. This helps to compare some of what is known about existing rates of system change with an underlying assumption in favour of a C&C arrangement being put in place.

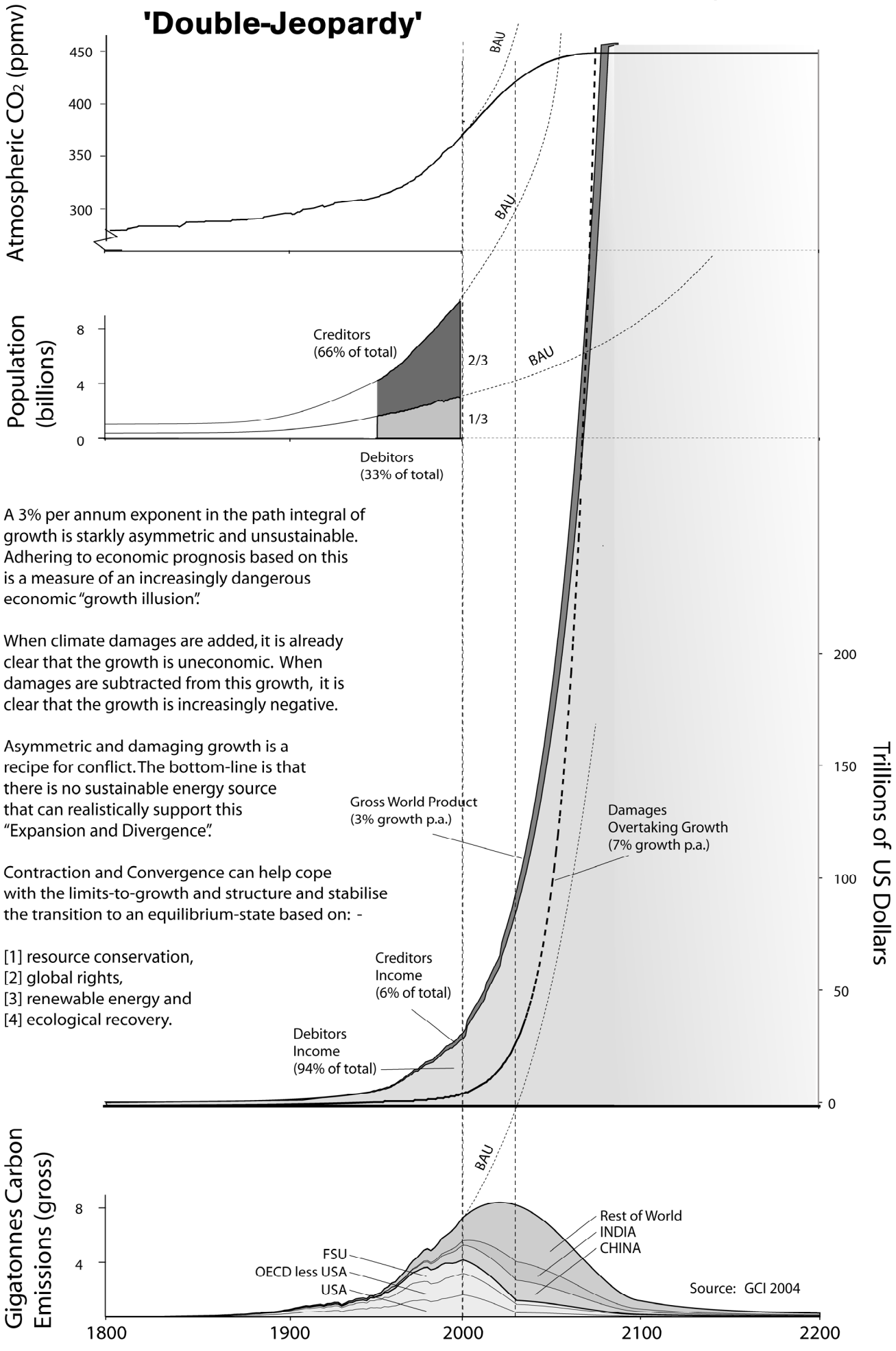
A new feature shown is the rate of economic damages from increasingly 'unnatural disasters' (measured as 'uninsured economic losses' by Munich Re) now rising at 7% per annum, twice the rate of global growth. Another is the devastating and worsening economic asymmetry of "Expansion and Divergence" (E&D). This shows a persistent pattern of increasingly dysfunctional economic growth. One third of population have 94% of global purchasing power and cause 90% of GHG pollution. [We call these 'debitors']. The other two thirds, who live on less than 40% of the average global per capita income, collectively have 6% of global purchasing power and a 10% share of GHG pollution. [We call these 'creditors'].

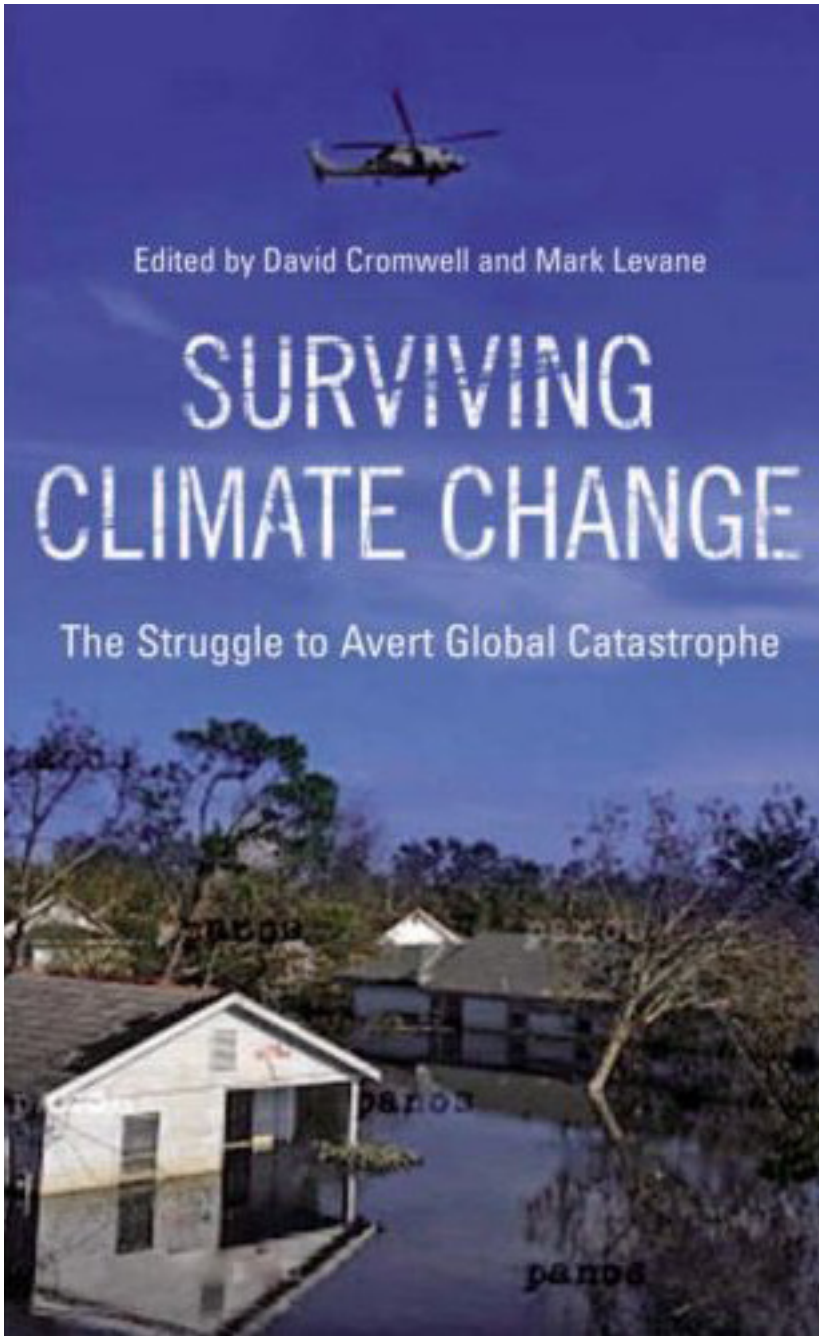
To escape poverty, it is creditors who embody the greatest impulse for future economic growth and claim on future GHG emissions. But this group also has the greatest vulnerability to damages from climate changes.

Most institutions now acknowledge that atmospheric GHG stabilization, *"inevitably requires Contraction and Convergence".* However, some of the response to C&C, sees it merely as 'an outcome' of continued economic growth with only tentative acknowledgement of the damages and little comprehension of E&D.

While C&C is not primarily about 're'-distribution, it is about a 'pre'-distribution of future tradable and valuable permits to emit GHGs. Its purpose is to resolve the devastating economic and ecological imbalance of climate change. GCI's recommendation to policy-makers at the United Nations is for the adoption of C&C globally for ecological and economic recovery as soon as possible.

Asymmetric Growth & Climate Damages 'Double-Jeopardy'




Edited by David Cromwell and Mark Levane
SURVIVING
CLIMATE CHANGE
The Struggle to Avert Global Catastrophe

1
The Case for Contraction and Convergence

Aubrey Meyer

I was born in the UK in 1947. I grew up in South Africa in the 'apartheid era' after the Second World War. 'Unity is Strength' was the motto of the then White Nationalist Government of the country yet 'Separate Development' was their decreed strategy. Even to a child, the segregation – or 'apartheid' – under this unity was a political oxymoron. This divided and asymmetric state made the Beloved Country weak for the lack of unity. This lesson now applies to our beloved but divided planet. Change is inevitable. May it be moderated for the better, even as we integrate cost and benefits of 'development' in the struggle to avoid the worst of global warming and climate change.

Early on my interest was focused by music. By the time I was 21, I was making my living playing and writing music in Europe. Still under this influence by the age of 40, I had become a parent and also very scared by the deeply asymmetric politics of global warming and climate change. There was nowhere to escape this. I became involved in efforts to correct these trends and twenty years on I am still.[1]

To musicians integration is everything. How music and musicians fit together, how we make the shared energy work to make music, is all about intelligent time measurement and design. Though creatively alive, music is very precise about counting. Timing and tuning to shared reference points are fundamental to the power of live music. It was not obvious to me when I was younger that principle precedes practice, and that this has both timeless stability and political relevance.

A current example of this is the East West Diwan Orchestra.[2] It was started in 1999 by the late Edward Said and Daniel Barenboim for children of Arab and Jewish families in the conflicts of the Middle East. The young players' attraction to music makes it possible for them to come together as equals from two sides of a conflict into the shared framework of music making. The Diwan Orchestra sets a global

standard of peaceful cooperation, based on the musical principles of measuring and common reference points, and of working together despite differences, to produce something beautiful.

CONTRACTION AND CONVERGENCE LEADS PRACTICE WITH PRINCIPLE

The contemporary example of the East West Diwan Orchestra actually suggests a model for a global framework of reconciliation and ecological recovery in the years ahead. If, as a species, we are to avoid dangerous climate change and survive, we need to start counting from fundamentals with the core resonance of reconciliation. In practice this means keeping within the precautionary limits and using the pragmatic rationale of counting people's rights under these limits as equal.

This does not mean we are all equal. It means that to survive, we are all equally and collectively rationed by the limits that preserve us. The resonance of this in the text of the United Nations Framework Convention on Climate Change (UNFCCC) is 'common but differentiated responsibilities'.

Thus, the objective of the UNFCCC is to stabilise rising greenhouse gas concentration in the atmosphere at a value that is safe, based on principles of both precaution and *equity*. The UNFCCC necessarily adheres to contraction and convergence, first proposed by the London-based Global Commons Institute (GCI) in 1990 (see below). Contraction and convergence is a policy framework that combines the precautionary principle and the principle of equity. The framework was explicitly approved by the UNFCCC Secretariat in 2003 with the statement that 'the objective of the UNFCCC inevitably requires Contraction and Convergence'.

We can restate the above key causes of the UNFCCC as follows. Let us regard humanity, crudely, as being composed of two groups: high-energy users and low-energy users.The use of energy is directly related to carbon dioxide emissions (and that of other greenhouse gases). All of us share the common goal of atmospheric stabilisation, but some of us need to do more than others. Hence 'common but differentiated responsibilities'. Since the low carbon emitting nations can still increase their emissions before they reach the sustainable average, 'the share of global emissions originating in developing countries will grow to meet their social and development needs'. By implication, then, the high-carbon emitting nations must contract fastest and greatest: 'the developed country Parties must take the

Key Clauses in the United Nations Framework Convention on Climate Change

Parties to the UNFCCC, 'acknowledge that change in the Earth's climate and its adverse effects are a common concern of humankind'. They are 'concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind' (Preamble).

The Convention's objective – The Convention 'is to achieve … stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (Article 2). In other words, greenhouse emissions have to contract.

The Principle of Global Equity – The Parties 'should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity.' (Article 3.1). They note that, 'the largest share of historical and current global emissions of greenhouse gases has originated in developed countries and that per capita emissions in developing countries are still relatively low' (Preamble). They therefore conclude 'that in accordance with their common but differentiated responsibilities and respective capabilities the developed country Parties must take the lead in combating climate change and the adverse effects thereof' (Article 3.1), while 'the share of global emissions originating in developing countries will grow to meet their social and development needs' (Article 3.3). In short, the Convention covers Convergence and a system of emissions allocation.

The Precautionary Principle – The Parties 'should take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures' (Article 3.3).

Achieving global efficiency – 'taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at lowest possible cost' (Article 3.3). In the past, cost-effective measures have been used to target pollutants, notably CFCs, in the form of trading via markets under a global maximum limit or 'cap'. More generally, the point to note here is that the idea of a framework based on precaution and equity had been established, with efficiency introduced in a subsidiary role purely to assist it.

lead in combating climate change'. Obviously the goal is sustainable emissions levels – so these two sides of the discussion inevitably lead to convergence. The lock opens and the water rushes out until both sides are level.

Many individuals, organisations and, indeed, nations have concurred that Contraction and Convergence (C&C) is the necessary policy framework that stems from the UNFCCC agreement, structured so that we are all in tune with each other, and in time to save the planet. What then does C&C exactly propose?

THE PRINCIPLE OF CONTRACTION AND CONVERGENCE

C&C is a global climate policy framework, formulated on the basis of equal rights, and has been proposed to the United Nations ever since 1990 by the Global Commons Institute (GCI), as a means to achieving the UNFCCC climate change objectives.

C&C calculates a global carbon budget for what is deemed a 'safe' climate, e.g. limiting global temperature rise by 2°C. This enables greenhouse gas reduction scenarios to be calculated in the process of contraction. The global carbon budget can be shared by international negotiation, along a timeline with the final goal of achieving equal rights: this is the process of convergence. The commitment to a global treaty based on this negotiation can enable policies and measures to be organised at rates that avoid dangerous global climate change (see Figure 1).

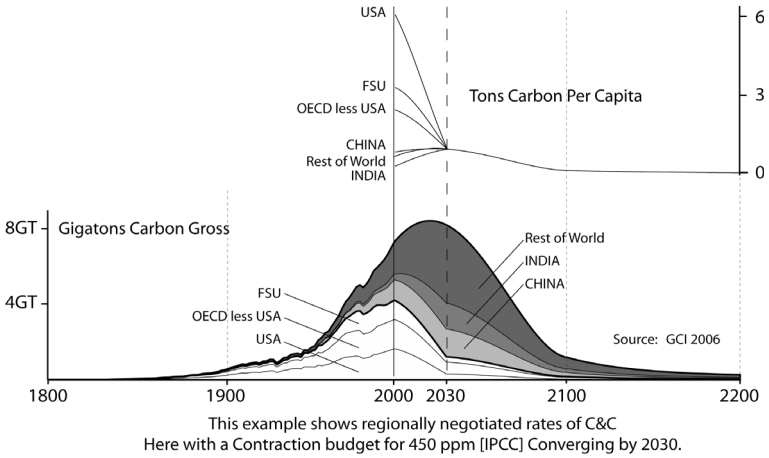
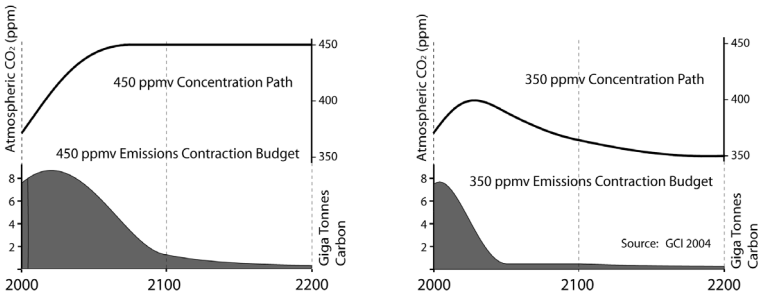


Figure 1 Contraction & Convergence.

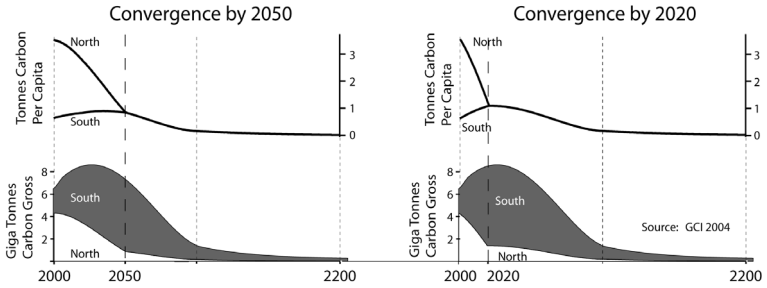
Rates of contraction (Figure 2) and convergence (Figure 3) may be revised periodically as scientific understanding of the relationship between rising concentrations and their impacts on our world develops.

To get agreement to arrive at this juncture we need to concur with what Tony Blair has correctly called 'a rational science-based unity rather than more rounds of division'.[3] With the C&C definition closely based on the text of the UNFCCC which formalises into international law what must by definition be a numerate process,



Annual Carbon Emissions contract over time to a sustainable level. This is the "Contraction Event". The "safe" CO_2 stabilisation level determines the total of carbon burnt during the contraction event. Two examples of CO_2 stabilisation levels are shown with thier corresponding contraction budgets.

Figure 2 Negotiating Rates of Contraction.



Per capita emissions entitlements converge on equality by a negotiated "Convergence Date". Two examples of convergence are shown here, each within a 450ppmv contraction budget.

Figure 3 Negotiating Rates of Convergence.

The Contraction and Convergence framework proposes:

(a) A full-term contraction budget for global emissions consistent with stabilising atmospheric concentrations of greenhouse gases (GHG) at a concentration maximum deemed safe by the UNFCCC.
(b) The international sharing of this budget as a pre-distribution of entitlements that result from a negotiable rate of convergence to equal shares per person globally by an agreed date (for example, 2030).
These entitlements will be internationally tradable.

the issue thus unavoidably turns on the global measurement of GHG concentrations.

The C&C approach enables the UNFCCC process to be constitutionally numerate. It makes it possible to define a budget

from a GHG concentration target and a convergence date by when per capita entitlements to emit have become equal, whatever rates of C&C are negotiated. Its calculus is first and foremost tied to the carbon limit and the people consuming within it, that is, before it is tied to any gain or loss of money or Gross World Product (GWP) arising. The tradability of the entitlements predistributed this way creates equilibrium between future carbon consumption and future climate.

'DOUBLE JEOPARDY' – ASYMMETRIC GROWTH AND CLIMATE DAMAGES

In stark contrast, the world at large is increasingly now haunted by the growth, divisions and conflicts of separate development. Money and power pursue each other and in this 'expansion and divergence' the 'disconnects' are discordant and dangerous. On the left side of Figure 5, we see the global asymmetry of dollar-based purchasing power: two-thirds of moneyless people routinely share 6 per cent while the other third spend the remaining 94 per cent, thus primarily causing the GHG emissions accumulating in the global atmosphere and driving climate changes.[4]

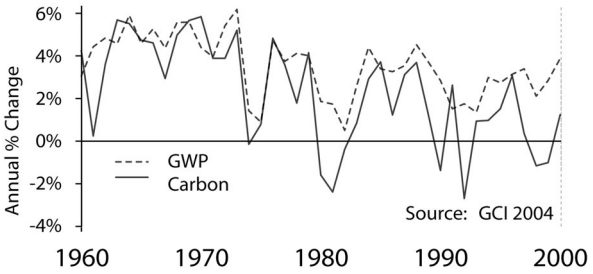
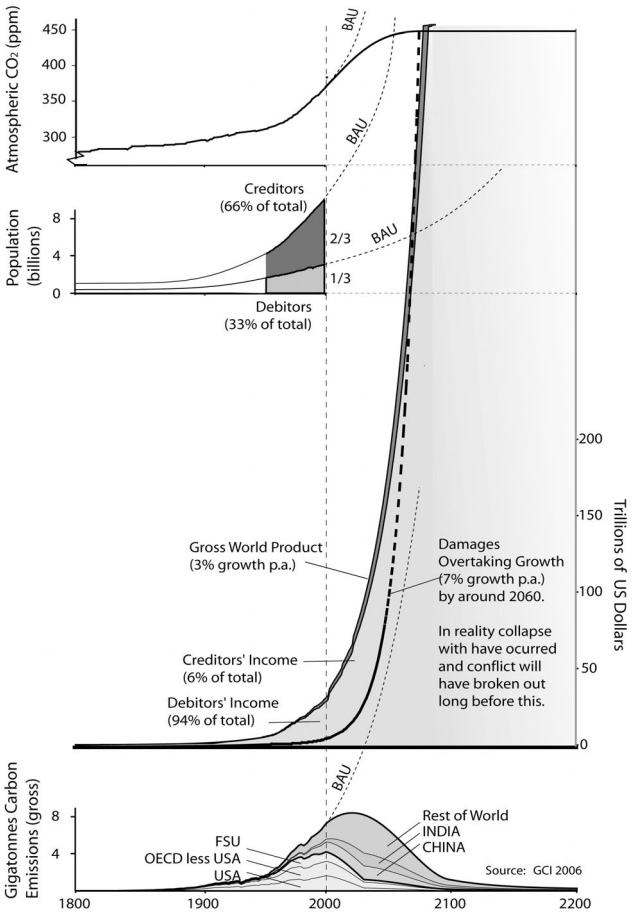


Figure 4 GWP, Carbon Lockstep.

As Figure 4 shows, this money – or Gross World Product – is a close proxy for pollution, namely global carbon emissions. The growth of these emissions over the last two hundred years of fossil fuel dependency has raised global temperature by one degree Celsius and triggered a rate of damages from an increasingly unstable climate that is twice the rate of growth in the economy (shown in Figure 5). The situation is critical. These trends are worsening and the poorest, particularly in small islands and Africa, are most vulnerable to the impacts of climate change.



A 3% per annum exponent in the path integral of growth is starkly asymmetric and unsustainable. Adhering to economic prognosis based on this is a measure of an increasingly dangerous economic "growth illusion".

When climate damages are added, it is already clear that the growth is *un*-economic. When damages are subtracted from this growth, it is clear the net-growth is increasingly negative.

Asymmetric and damaging net-negative growth is a recipe for conflict. The bottom-line is that there is no sustainable energy source that can realistically support this "Expansion and Divergence".

Contraction and Convergence can help cope with the limits-to-growth and structure and stabilise the transition to an equilibrium-state based on: -

[1] resource conservation,
[2] global rights,
[3] renewable energy and
[4] ecological recovery.

Figure 5 Asymmetric Growth & Climate Damages 'Double-Jeopardy'.

The injustice is acute. Many suffer great hunger or thirst. Many are forced to migrate as their lives are threatened. Many already die. This climate change induced mortality of innocent third parties is largely ignored; the poor and disadvantaged are discarded at the margins of the current system of expansion and divergence.

And while the monetary economy is compulsively force-focused on the 'benefits of growth', it is de-linked from the 'costs of climate damages'. As the right-hand side of Figure 5 indicates, climate-related damages increasing at a yearly rate of 10 per cent will overtake economic growth of 3 per cent per annum by the year 2065.

But, as the damage costs are subtracted from the benefit of economic growth, the benefits of growth are thus relentlessly deleted. For now, the accounts still disguise this as the necessarily cost-free discards of 'progress'.

THE RELATIONSHIP BETWEEN THE EMISSIONS AND ATMOSPHERIC CONCENTRATIONS OF GREENHOUSE GAS ON A GEOLOGICAL TIMESCALE OF 400,000 YEARS

Thanks to ice-core sampling, data for atmospheric concentration of CO_2 and temperature go back about half a million years before the present.[5,6] Throughout the ice-core record, up until the Industrial Revolution, temperature and greenhouse gas concentration moved up and down closely in step as shown in Figure 6. They oscillated because of natural change processes, between clearly defined upper and lower limits, but never went outside these boundaries. For CO_2, those limits were 180 and 280 parts per million by volume (ppmv); for methane (CH_4), 300 and 700 parts per billion by volume (ppbv); and for temperature, 5 and 15 degrees Celsius.

The leap in CO_2 concentration from 280 to 380 ppmv and CH_4 concentration from 700 to 1700 ppbv in the last two hundred years is faster and higher than anywhere in the geological record and has been accompanied by a one degree rise in global average temperature.

The rates of change in the human economy, since industrialisation began in the West around 1800, have had an impact on the atmosphere that is very different from the geological record. The ice-core records suggest very strongly that further global warming is to come.

Understanding this is fundamental to devising and being guided by a rational and strategic framework of GHG emissions for the purpose of restraining dangerous human-induced rates of climate change on the biosphere.

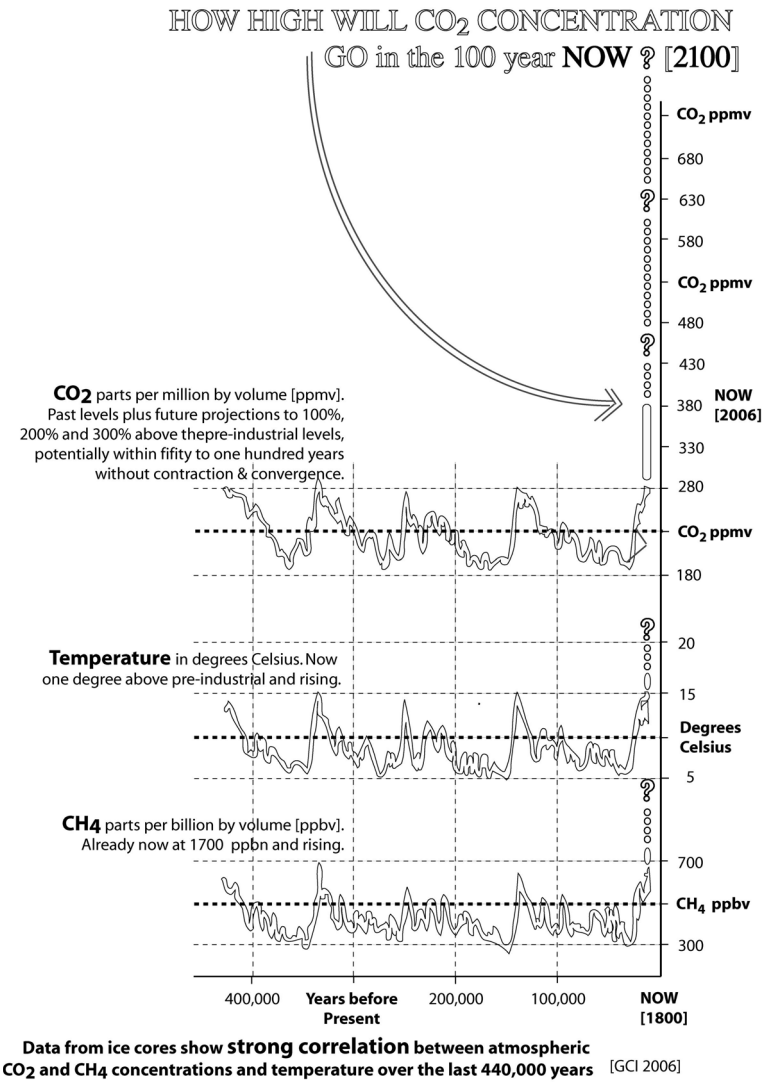


Figure 6 How high will CO_2 concentration go?

This chapter, and indeed this book, offers some insights into this, guided by the notion that to solve a problem you have to solve it faster than you create it. This is 'the battle of the rates' and we have to win it to survive.

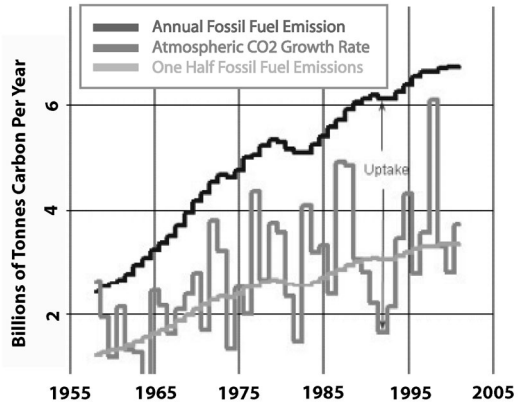


Figure 7 Atmospheric Growth Rate of CO_2.

THE RELATIONSHIP BETWEEN THE EMISSIONS AND ATMOSPHERIC CONCENTRATIONS OF GREENHOUSE GAS EMISSIONS FROM 1800 TO NOW AND BEYOND

The battle of the rates

Over the last two hundred years, human behaviour has disturbed the equilibrium of the natural carbon cycle and the balance of climate stability. CO_2 emissions from fossil fuel burning have raised atmospheric concentration by 40 per cent (see left half of curves plotted in Figure 9) until now, resulting in close to a one degree Celsius rise in global temperature.

Yet, in spite of the clear and present danger of increasingly dangerous rates of climate change beginning to take hold, uncertainty still surrounds the policy debate around how much to modify this behaviour in future. Over the next two hundred years (see the right half of Figure 9), the uncertainties about what the overall systemic reaction to this 'policy' will be can be reduced to 'the battle of the rates'.

The questions are: what will the rate of atmospheric accumulation of greenhouse gas emissions from now on actually be, or how high will atmospheric greenhouse gas concentration be allowed to rise? In other words what does it really take to solve this problem faster than we are creating it?

To answer this it is necessary to look at the relationship between human source GHG emissions to the global atmosphere and the

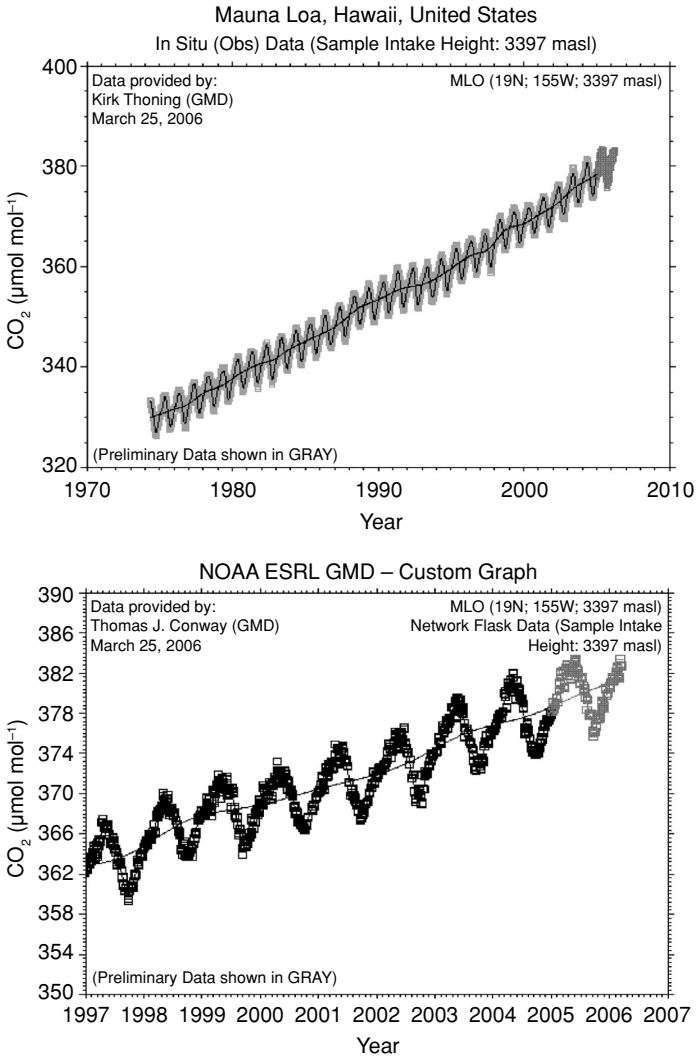


Figure 8 CO_2 measured at Mauna Loa Observatory.

now varying extent to which these are increasingly retained there. The relationship between emissions and atmospheric concentration over this period has seen on average a constant fraction of each year's emissions remaining airborne. This so-called 'Constant Airborne Fraction' has until recently, been 50 per cent; i.e. 50 per cent of

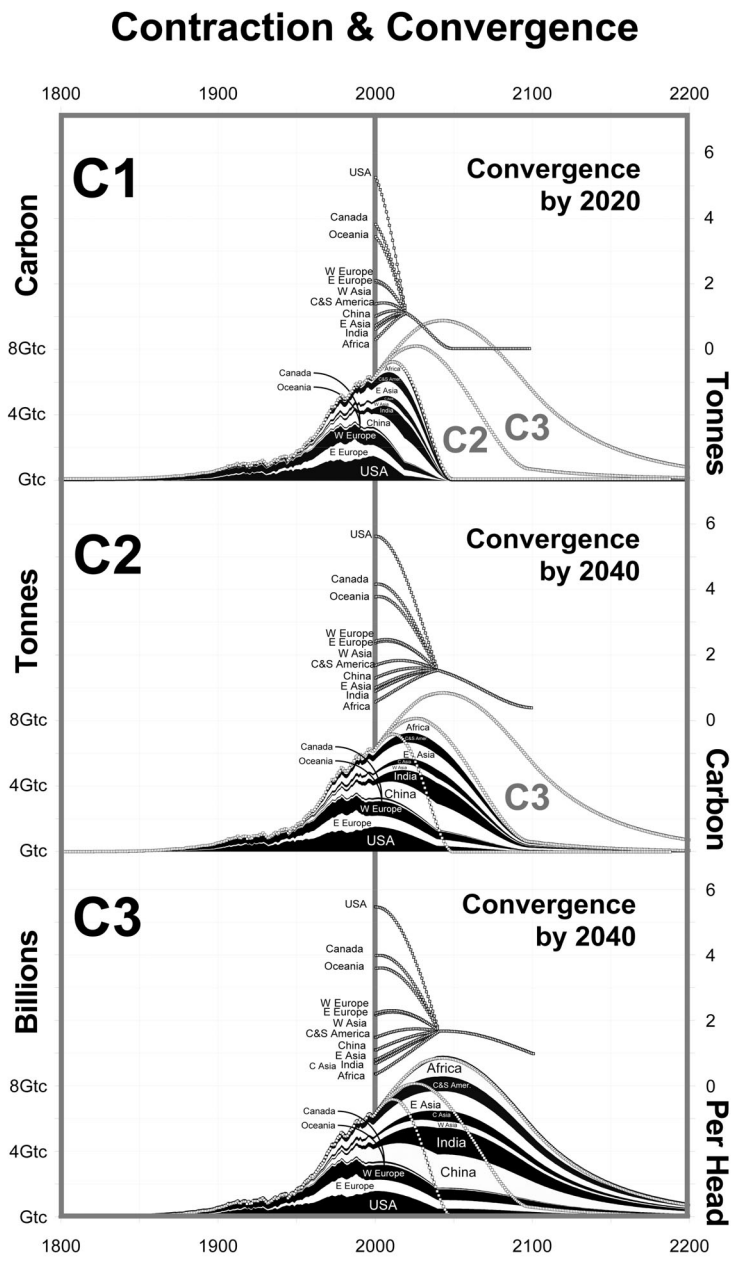
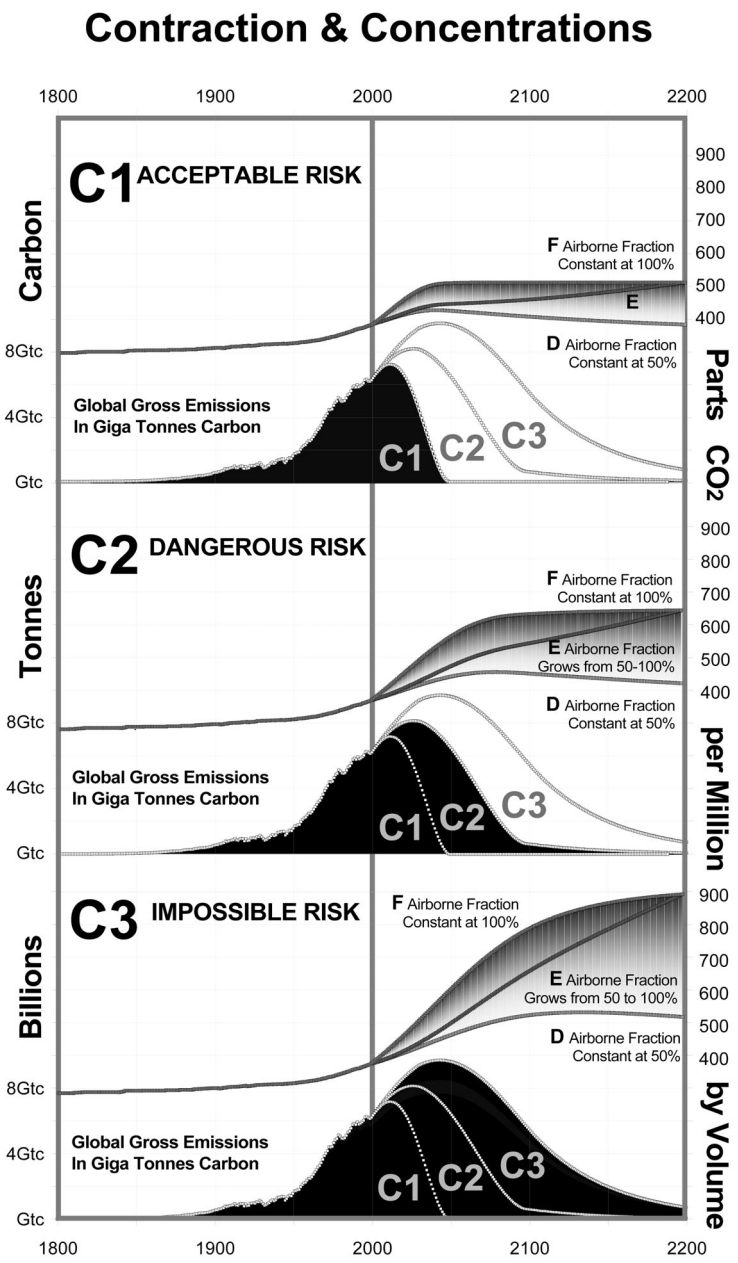


Figure 9 Comparing risks from emissions budgets C1, C2, C3.


Contraction & Concentrations
1800
1900
2000
2100
2200
C1 ACCEPTABLE RISK
F Airborne Fraction Constant at 100%
E
D Airborne Fraction Constant at 50%
Global Gross Emissions In Giga Tonnes Carbon
C1
C2
C3
Carbon
8Gtc
4Gtc
Gtc
C2 DANGEROUS RISK
F Airborne Fraction Constant at 100%
E Airborne Fraction Grows from 50-100%
D Airborne Fraction Constant at 50%
Global Gross Emissions In Giga Tonnes Carbon
Tonnes
C3 IMPOSSIBLE RISK
F Airborne Fraction Constant at 100%
E Airborne Fraction Grows from 50 to 100%
D Airborne Fraction Constant at 50%
Billions
900
800
700
600
500
400
Parts CO2
per Million
by Volume

each year's emissions has been retained in the atmosphere, and 50 per cent has been returned to apparently enlarging 'sinks' for the gas in the biosphere.

A tap flowing into a bath provides a familiar analogy for this all-important relationship.

'Bath tap' analogy

The dominant greenhouse gas from human sources is CO_2. The relationship between atmospheric CO_2 concentrations and the emissions of CO_2 from human sources is a 'stock-flow' relationship and can be thought of as a 'bath–tap' analogy. Just as the bath accumulates the flow of water to it from the tap, the atmosphere accumulates the flow of emissions to it from sources such as the burning of fossil fuels. Emissions are the short-term flow to the atmosphere which slowly accumulates a fraction of these as long-term stock.

On the flow side, the bath–tap analogy extends further by introducing the 'plug hole' through which water is drained away. The tap represents the various sources of carbon emissions in the real world; the plug hole represents their natural 'sinks'. Sinks in the real world are, for example, oceans and forests in which some of the 'extra' CO_2 in the atmosphere is 're-absorbed'.

If the plug hole is open while the tap is on, the level of water in the bath (the stock) may only slowly rise. In other words, the water level of the bath is the net balance of the rates of flow into the bath through the tap and out of the bath through the plug hole. If the tap water runs in at twice the rate that it drains away through the plug hole, the net rate of water accumulating in the bath is 50 per cent, or half the rate, of the flow from the tap into the bath.

If the bath approaches the point of overflowing, the tap needs to be turned off completely to avoid overflow. The bath level however, continues to rise even while the tap is being turned off and at least until it is turned off. That is, it takes time to turn the tap off, and during that process there is a risk that the bath could spill over. The analogy refers here, in the real world, to the possibility of climate runaway, where we would no longer have any control over global warming, as positive feedbacks (self-reinforcing effects) would take over from human impacts.

In the case of the present atmosphere the danger of the overflow is increasing, not decreasing. Emissions are increasing, while sinks are failing due to increased forest combustion, warming and acidification

of the oceans. Consequently the airborne fraction of emissions is increasing too.

In the analogy, the tap is opening wider, the pressure behind it is increasing, the plughole is blocking up, the rate at which the bath is filling is accelerating and there are more and more people in the bath wanting to fill it. The likelihood of the bath overflowing is itself rapidly growing.

PRESENT CO_2 'PATH INTEGRALS' – EVIDENCE OF 'AGGRAVATED RATES OF ACCUMULATION' OF ATMOSPHERIC CO_2

Covering the last two hundred years, good data exist for both CO_2 emissions from burning fossil fuel and atmospheric CO_2 accumulation, or concentrations in parts per million by volume (ppmv) and weight in gigatonnes (GTC). One part per million by volume of CO_2 in the global atmosphere equates to a weight in carbon of 2.13 billion tonnes (gigatonnes).

Observed data from the Mauna Loa Observatory (MLO) of the US Government[7] shows that the 'Constant Airborne Fraction' (CAF) of emissions now appears to be changing.

On average the fraction of emissions from fossil fuel burning being retained in the atmosphere is growing, as is shown in Figure 4. The more recent trend in the raw data are shown in the two panels of Figure 5.

These data make it possible to determine the effect of having the higher – or 'aggravated' – rates of atmospheric CO_2 retention persist into the future. These are shown in the projections from the C&C model in the charts C1 (convergence by 2020), C2 (convergence by 2040) and C3 (convergence by 2040) that are in Figure 9. The rate of increase in atmospheric CO_2 until recently has been 1.5 ppmv per annum: the carbon weight of this annual increase is therefore approximately 3.3 GTC. This is around half the weight of annual emissions which is currently about 6.5 GTC.

The point of great concern here is that over the period 2003–5, the rate of atmospheric increase has jumped to nearer 3 ppmv per annum. This gives a loading of the atmosphere by weight that is roughly equal to, not half, but all the emissions from fossil fuel burning. This suggests that roughly the equivalent of 100 per cent of emissions were retained in the atmosphere in these years. This is 'aggravated accumulation'.

This was not foreseen in the carbon cycle modelling within the Intergovernmental Panel on Climate Change (IPCC) in the first three of its assessment reports between 1990 and 2001. These reports on the science of climate change, and the carbon contraction budgeting linked to different levels of GHG stabilisation in the atmosphere, did not as a result engage with the issue of 'aggravated accumulation'.

FUTURE CO_2 'PATH INTEGRALS'

The charts in Figure 9 project three scenarios for future rates of CO_2 stabilisation in the atmosphere. These 'path-integrals' are carbon consumption added up over time.

They project the contraction budgets for carbon emissions published by the IPCC in the 1995 Second and 2001 Third Assessments, for: (1) 350 parts per million by volume (ppmv), (2) 450 ppmv and (3) 550 ppmv. These IPCC reference curves are shown by line D in each case against the emissions contraction budgets also quoted by IPCC.

In each of these three reference cases, the curves for atmospheric accumulation are projected using the C&C model to show the aggravated path-integrals of rates of CO2 accumulation in the atmosphere into the future at:

a) 50 per cent CAF, as given with the original IPCC determined rates and integrals of emissions contraction budgets (path 'D' in the three examples shown);
b) 100 per cent CAF, in other words the theoretical maximum rate of atmospheric retention of GHG emissions from human sources (path 'F' in the examples shown); and
c) a rate of GHG retention in the atmosphere that gradually increases from 50 per cent to 100 per cent over the next two centuries (paths 'E' in the three examples shown).

The scenarios shown are 'pairs' of emissions budgets and atmospheric concentrations that should have been stable at IPCC given values, but can rise faster along paths 'E' (combined in first chart of Figure 9):

C1. An emissions budget for 350 ppmv as determined by IPCC, may well rise through 500 ppmv (here called 'acceptable risk').
C2. An emissions budget for 450 ppmv as determined by IPCC, may well rise through 650 ppmv (here called a 'very dangerous risk').

C3. An emissions budget for 550 ppmv as determined by IPCC, may well rise through 900 ppmv (here called an 'impossible risk').

The justification for doing this relies on the data already returned (and quoted above) showing that the aggravated rate of emissions accumulation in the atmosphere is already occurring intermittently. The purpose of doing this is to highlight the much greater extent of risk with which we are already confronted as the likelihood of aggravated rates of accumulation persisting into the future is real. The point of concern is that conditions of runaway rise climate change will take hold if preventive action is not urgently taken.

These 'aggravated rates of accumulation' are a fundamental strategic consideration as we try and determine a stable future over the next few decades since

- the future, obviously, has not yet occurred;
- governments are still caught in poor understanding and indecision about 'policy' to modify human fossil fuel consumption beyond 2012 when the Kyoto Protocol to the UNFCCC expires;
- politicians are operating under the increasingly challengeable assumption that there is still time to stop dangerous rates of climate change from taking hold.

Some commentators, notably scientist James Lovelock, already take the position that it is all too late; in the 'bath–tap' analogy, the bath is inevitably now going to overflow. The priority test to keep in mind for policy to prevent this catastrophe is to compare path integrals for:

(a) the rate at which we cause the problem with our global emissions total where this rate is understood as the possible and likely rates of atmospheric accumulation and,
(b) these rates against the rates at which we are organising globally to stop triggering dangerous rates of climate change by contracting our global emissions total fast enough to avoid catastrophe.

We can reasonably measure the rate at which we presently still continue to cause the problem much faster than we act to avoid it by reference to the Kyoto Protocol. In its given time period of 2008–12, the Kyoto Protocol will theoretically and at best have avoided emitting a few hundred million tonnes of CO_2 (measured as carbon)

to the atmosphere. During the same period we will have added several billion tonnes of carbon to the atmosphere from emissions: virtually business-as-usual. As soon as we factor aggravated accumulation into this it is clear that the end result will be that by 2012 we will be more, not less, deeply committed to the accelerating rate at which we are causing the problem than the response rates of C&C that are necessary to avoid it.

CAN WE SOLVE THE PROBLEM FASTER THAN WE ARE CAUSING IT?

As comparison of the three scenarios laid out here demonstrates, the risks of GHG concentrations rising faster and higher than has been suggested, and potentially completely beyond the ability of human decision taking to mitigate, are already clearly great and worsening. What is shown in the graphics of Figure 9 narrows and compares the ranges of uncertainty about concentrations to being between bands D (lowest) and F (highest) in each case.

This makes it possible to draw some very obvious conclusions about (1) the risks of acceleration in what we face and (2) what the accelerated rates of C&C are that it may take to avert these risks, in other words to solve the problem faster than we are causing it.

If the bath is not to overflow we need to be working more for scenario-type C1, not giving in to C3 as is the case with Sir David King, the government's chief scientist.[8]

Very much with an eye on the unresolved tension between the world's major GHG polluters – the US, India and China – King has taken the view that the *real politik* driving this expansion of consumption now overshadowing the entire global community, is to aim for a cap of 550 ppmv CO_2 atmospheric concentrations. This, said King, was a 'reasonable' target. Anything less would be 'politically unreasonable'. Indeed, if King recommended a lower limit 'he would lose credibility with the government'.[9] But setting such a high limit means that the likelihood of preventing more than a two degree rise in global temperature is just 10–20 per cent. As Guardian columnist and green campaigner George Monbiot noted: 'Two degrees is the point beyond which most climate scientists predict catastrophe: several key ecosystems are likely to flip into runaway feedback; the biosphere becomes a net source of carbon; global food production is clobbered, and 2 billion people face the risk of drought. All very reasonable, I'm sure.'[10]

The truly alarming implication of King's stance is that his understanding of the contraction requirement to stay below this 550 ppmv maximum is based on IPCC carbon cycle modelling where the airborne fraction of emissions was assumed constant at around 50 per cent. When we allow for the aggravated rates of accumulation discussed above, King's 550 ppmv CO_2 prognosis is more probably headed to 1,000 ppmv and, hence, a runaway acceleration towards climate catastrophe. King, like many of the experts, appears either not to have understood the implications of aggravated accumulation in the C2 and especially the C3 scenarios. Or perhaps for political reasons he is ignoring this for now.

This is more than alarming. King has posed climate change as a greater threat than terrorism. But by saying, in effect, that the politically acceptable solution is to aim for 550 ppmv CO_2, his use of the word 'threat' is wholly misleading. It is certainly possible and almost inevitable that the aggravated rates of retention will increasingly become the norm if we persist with emissions control as envisaged in the Kyoto model. There is a point beyond which they certainly will become the norm, and on our present trajectory we are closing on it dangerously.

Avoiding this outcome means the underlying programme of global carbon emissions C&C must be agreed and internationally implemented at rates faster than those shown for 550 ppmv CO_2 . The alternative is the slope of atmospheric concentration of CO_2 and other greenhouse gases, and temperature, running away out of control. To make the relevant comparison, contrast 'Acceptable Risk' C1,D with 'Impossible Risk' C3,F.

The contraction profile for C3 is three times the 'weight' (i.e. the total area under the curve) of the C1, but the concentration trajectories cited are virtually the same.

WAR ON ERROR: TRANSCENDING FALSE DICHOTOMIES

The circumstances in which the next few decades of human development take place are inevitably going to be profoundly reflexive. The implications of failing to prevent dangerous rates of global climate change are almost too dreadful to contemplate. As argued by palaeontologist Michael Benton, mass extinction events such as the Permian 251 million years ago were almost certainly the result of rapid non-linear climate changes, triggered by sudden greenhouse gas loading of the atmosphere and temperature increases.[11] The

difference is that then there were no human beings; now there are – us. Against this background, political integration of people on the left and on the right into a consensus-backed rationale for action is urgently required and already long overdue.

The economics of 'expansion and divergence' brings 'omnicide'

This globally 'separate development', just as in South Africa, is neither moral nor, since it has triggered a global security crisis, is it sustainable. Indeed a creeping madness inhabits this 'economic growth' and dealing with this is now fundamental to resolving our global dilemma. The very future of humanity as a whole is relentlessly deleted, when one third of people are unwittingly attached to a false accounting which, in the words of Colin Challen, the Chairman of the all-party climate group of UK MPs, operates like the Third Reich as 'the economics of genocide'.[12] Uncorrected, this future increasingly warms to become how the rich finally commit suicide by continuing to rob the poor. As the historian Mark Levene puts it, this is the 'economics of omnicide' as all are inevitably vulnerable to the effects of climate changing out of control.[13]

In 1995 the IPCC Second Assessment Report was published. After bitter battles over the 'value-of-life' during its preparation, this intergovernmental 'consensus' report openly repudiated the global cost-benefit-analysis of climate change carried out by economists who claimed to have demonstrated that it was cheaper or more cost-effective to adapt to climate than to mitigate and prevent it. It was not the procedure per se that was condemned, it was the assumptions behind the valuation of the assets at risk. These said valuation was proportional to income, so the climate-caused death of a poor person was one fifteenth the value of a dead rich person. When the climate mortality was summed globally, the net effect was to demonstrate that adaptation to climate change was the 'efficient' or cheaper option.[14]

It is this which demands a change in the accounting. Thus, we need a war on error, on the fixation with 'efficiency' and what former World Bank economist Herman Daly has called 'uneconomic growth'. It requires amnesty with the actuality of ecological limits and with each other as people. Success is possible if 'efficiency' is understood as at best a derivative of the principles of the UNFCCC, namely 'precaution' and 'equity'. Success is governed by the safe and stable limits that preserve us all and the global constitutional norm that values the right to life, regardless of income, as equal. This is a security

proposition, more than any ethical construct. The alternative: to share the proceeds of unsustainable growth unequally, with conflict and failure the inevitable consequence.

SEQUENCING PRINCIPLE AND PRACTICE IN THE BATTLE OF THE RATES

The 'ultimate objective' of the UNFCCC (see box on page xxx) is to stabilise the rising atmospheric concentration of greenhouse gases at a level that prevents dangerous anthropogenic interference with the earth's climate system. The Convention declares 'qualitatively' that this must be done based on the principles of precaution and equity. Quantitative guidance however, remains vague. It is expressed as aversion to danger by noting the per capita emissions differentials and 'differentiated responsibilities' of 'parties' for the historic contributions to the atmospheric build-up of GHG. Subject to the limit that saves us, a quantitative methodology is required to reconcile the process to the limit. Without this there is the real danger of global failure swallowing local success.

It is said that principle without practice is useless while practice without principle is dangerous. If ever the latter were true it is now and principle must precede and inform practice if we are to have any chance of avoiding dangerous rates of climate change. Specifically, this means that we have to solve the problem of climate change faster than we cause it. So consistency with a principled methodology for measuring the rate at which we cause the problem, against which we can demonstrate the faster rate at which we cause the solution, is a sine qua non for success.

The Convention uses the words 'ultimate objective'. As it stands, this does not sequence principle and practice. So some choose to limit the meaning of the word 'ultimate' to 'eventual', where the words mean merely the eventual future outcome of UNFCCC. Others recognise in 'ultimate' the sense of 'fundamental'. Here, the fundamental, perpetual and pervasive purpose of the Convention, before, during and throughout the process is recognised. It is in this sense that quantitatively principled methodology precedes process. Increasing momentum of human emissions on the atmosphere is already evident. Dangerous rates of climate change and its catastrophic damage effects will occur unless we stop this momentum by rapidly contracting these emissions. For this contraction to be globally effective and sufficient, it must be guided by an international C&C agreement with its practice quantitatively structured on that principle.

As the UN, through the vast majority of its members who were party to the Convention, are still legally committed to its achievement, the claim here thus, is that the UNFCCC *is*, by definition, the 'United Nations Framework Convention for Contraction & Convergence' (UNFCC&C).

PRACTICE WITHOUT PRINCIPLE LEADS TO GLOBAL TRIAGE

The 'Berlin Mandate' was agreed at the first Conference of the Parties (COP-1) to the UNFCCC in Berlin April 1995, to establish a Protocol to the UNFCCC. Between 1995 and 1997, the 'ad hoc group on the Berlin Mandate' (AGBM) was chaired to this purpose by Raul Estrada Oyuela, a distinguished career diplomat from Argentina. In August 1997 the AGBM met for the seventh time, a few months before COP-3 in Kyoto in December 1997 and the creation of what would become known as the 'Kyoto Protocol'.

During this meeting of the AGBM, Chairman Estrada appeared at a very large conference for the press and the NGOs to report on progress and take questions. Emission-trading had come into play and everyone knew that the political argument had come to centre on one question above all others: 'how would the multilateral commitments on emissions control be defined and quantified?' A new word had resulted from the acronym of the point at issue namely 'Quantified Emissions Limitation Reduction Options' or 'QELROS': or put more bluntly, who got how much and why.

By this stage, GCI had established two clear benchmarks in the debate. The first was C&C as the meta-concept for calculating QELROS in a scientific and constitutional manner. The second – considered notorious – was that the so-called Byrd-Hagel Resolution (BHR) of the US Senate in July 1997[15] amounted, in fact, to C&C.[16] The BHR was all or nothing. It embraced QELROS globally, as *quantified reductions* alongside *quantified limitations* of emissions for all of the developed and the developing countries all on the same account. GCI took the view that C&C was the only way to negotiate what the resolution called for, as anything devoid of a concentration target and more complicated than C&C would be rich in contested assumptions and recreate the arbitrary sub-global conditions that the US had been objecting to all along. In other words, the US rejects the notion that only part of the world, the developed nations (listed in Annex I of the Kyoto Protocol), should be made responsible for acting on

climate change. Why, for instance, should the US have obligations to act but not China?

Indeed, whether the Senate had intended it or not, BHR was tentatively seen, by the US climate delegation *inter alia*, as C&C by definition. At a special series of meetings in Washington in July 1997, officials of the US government asked GCI to raise support for this understanding, particularly in India and in China. We did this on visits to those countries during July and when reporting back in August we also secured a collective statement to the UNFCCC from the Africa Group of Nations affirming the need for C&C. As the record would show, all this would feature clearly at the end of COP-3.

As he reported to the AGBM 7 press conference, Chairman Estrada was familiar with all these developments. His news however was desultory. The US continued objecting to the one-sided nature of the negotiations and the commitments on offer; the European governments and NGOs were effectively hostage to this BHR demand for a global solution. At the end of the session I publicly asked Estrada if the QELROS were seen as a function of an atmospheric greenhouse gas concentration target or whether it was the other way around, that the concentration value was simply seen as the result of whatever haggling had taken place in the QELROS negotiation. To much laughter from Greenpeace and its cohorts in the Climate Action Network, who had wrongly interpreted GCI's support for a global solution as support for the US position *per se*, he said, 'Aubrey in this process what happens in practice is what happens and you make up the principles afterwards to explain what happened in practice.' In other words, while Estrada afterwards apologised for the rebuff, what he was actually saying amounted to a case of 'make-it-up-as-you-go-along'.

A few years later Estrada published a paper in which he recalled the exchange thus:

> In a meeting with NGOs during the Kyoto Protocol negotiations, Aubrey Meyer asked me which differentiation criteria were being used in the process. As negotiations were very flexible, I answered that at the end of negotiations I would explain those criteria, and that allowed me to get out of the situation among the laughs of the audience. When the negotiation ended and the Protocol was adopted, Aubrey Meyer asked me again which were the criteria, and since I didn't know the answer, I simply said that with QELROS agreed criteria were no longer relevant.[17]

Candid as he was, the blunt truth is that what Estrada had revealed was an example of the aleatory – a term used in music for elements chosen at random – at the highest level of climate change politics, even more farcical than gesture politics. It is as if someone who waves their arms around believes that by doing so this makes them the equal of a great virtuoso violinist, say, of the ilk of Jascha Heifitz. The simile is harmless but what it illustrates is not. The UN climate negotiations are fundamentally flawed by the evolutionist folly that just plucking 'promising' numbers for QELROS out of a hat will do. The hope is that everyone will fail to notice the difference between the signal of what is required and the noise of what is actually happening. In the final hours of COP-3 the global allocation of tradable emission permits was debated. The US accepted in principle the C&C signal led by the Africa Group, India and China.[18] But when the UK remained silent, Estrada suspended the meeting saying that all the work done was in danger of being lost. The remnant noise became the Kyoto Protocol.[19]

Even 'evolutionists' could see by the end of 1997, however, that dangerous rates of climate change would not be averted by this aleatoric approach. Instead, it would collectively lead us to a kind of global triage – the sorting of the priority order of patients waiting for medical treatment – leaving us increasingly unfit to survive. Indeed, as matters are currently unfolding, such a process of triage has already begun.

A further insight into how this has been happening is provided through the person of James Cameron, an architect of Kyoto and emissions trading and a UK Government advisor turned 'carbon trader'. In 1990 Cameron's 'Centre for International Environmental Law' (CIEL), in association with Greenpeace, encouraged the vulnerable Small Island States of the South Pacific and the Caribbean to form the Association of Small Island States (AOSIS). As the islands are mostly low-lying and very vulnerable to sea-level rise, the group took on the status of 'canary-in-the-mine', a memento mori for us all, if dangerous rates of climate change are not avoided.

By 1995, however, Greenpeace and CIEL had persuaded their clients that salvation lay in them presenting what became known as the 'AOSIS Protocol' to COP-1. Refuting the need for 'globality' defined by common sense and the US Government, this stated that the developed countries should only tighten their emission reduction 'commitments', as in the UNFCCC, in exchange for no control of emissions by anyone else. At COP-2, in 1996, the US rejected this as 'unrealistic'. When the US presented their Byrd-Hagel Resolution

a year later, Greenpeace attacked it as 'Byrd-brained'[20] whilst also arguing that global emissions must be reduced to zero by 2050 to avert a global climate disaster.[21] This was the same as the C1 scenario of 'Acceptable Risk' as defined above, a position GCI had argued since introducing C&C at COP-2 in 1996. As anyone could see that C&C was obviously required to achieve this, from that day to this it remains a mystery why Greenpeace and Mr Cameron have routinely denounced all calls for C&C. All the more peculiar, one might add, given that Greenpeace and others have described the paltry outcome of the COP-3 as 'a farce' and recognised that AOSIS have shifted from being an endangered species to being a certain discard in the emerging reality of triage. Moreover, since then Greenpeace has repositioned itself and the NGOs at the margins of the triage in a process now nearer the C3 scenario of 'Impossible Risk', and with Mr Cameron now operating as 'Carbon Capitalist' and trader par excellence at these lucrative margins. Indeed, Cameron has recently added Africa to the growing pile of discards that the C3 scenario inevitably causes and the economics of genocide inevitably requires:

> The Africans are in a perilous position. They will not be rescued by 20 years of debate about C&C. Nor will they be rescued by the Carbon Market [or] beneficiaries of [it]. They're going to have to really look to the possibilities that do exist in altering their economies to cope with very high fossil fuel prices and Climate Change at the same time . . . some combination of looking at land use and land use change issues; of coping more effectively with the water resources which are there; of growing biocrops; of ensuring that renewable energy technology is made available at low cost.[22]

C&C IS 'QUANTUM' AND IT COUNTERS DESPAIR WITH THE MOMENTUM OF HOPE

It is neither sane nor sanguine to defend the notion of unequal rights and simply discard vulnerable third parties. If we continue this, a growing global apartheid increasingly separates us from each other, sanity and the planet. If, and only if, we correct this 'in-time and 'in-tune', can the really violent and potentially terminal 'corrections' of a changing global climate still be avoided. Let the attractors of right resound.

The challenge is organising a C&C framework in preference to being further disorganised by structure-less commerce of 'expansion and divergence', triage, conflict and chaos. It is simply not enough

to rely just on more guesswork and patchwork and end up doing 'too little too late'.

Against this, counsels of despair are increasingly being voiced by eminent scientists such as James Lovelock, the creator of the *Gaia* theory.[23] He now suggests that it is already all too late. Although he has good reason to because of the 'aggravated rates' of GHG accumulation, this is nonetheless the 'victim's perception'. This must be weirdly amusing to the people who have said that there is no climate problem, only now to convert to saying that there *is* but there is no solution: it is all just too vast for the intelligence of humanity.

C&C says there still is time to define the goal-driven framework for solutions. However, for this to work, the international politics needs urgently to be freed from the stalemate by division that explains the failure of the Kyoto Protocol. For the last fifteen years one half of the world has felt that it is being asked to do too much too soon in exchange for the other half of the world doing (or what is seen as doing) 'too little too late'. When the US oil industry took the position that 'there isn't a problem and you can't solve it without developing countries' (sic), this was simply the obverse of the juvenile 'green' organisations who took the position that 'there is a problem and you can solve it without developing countries'. The measurement challenges in this daft stalemate made effective negotiation of the UNFCCC impossible. The Kyoto Protocol was the result. Worse, the European Trading Scheme, seen as a gold standard by its 'free-market' advocates, recently descended into bathos as European governments effectively took to bribing polluters to join it. Enron's fraud was mild by comparison but the pork-barrel basis of GHG permits pre-allocation is the problem.

This hastens the danger of runaway climate change. To stop this requires measures that are congruent with the context of what is already an acute time-dependency. Survival for the human species is now a race against time. We have to solve this problem understanding that the 'we' involved is 'global', with all of us fitting into the available space-time that is left.[24] With a clear implication derived from 'do unto others', the context is almost biblical but it also raises fundamental questions of identity and culture as to:

- 'what' is being measured?
- 'how' we are measuring what is being measured?
- 'what' is the time-dependent unit of measurement?

- 'how' is value being assigned?
- 'who' is doing the measurement?

As in love and quantum mechanics, the measurer and the measured are interactive; the observer's observation affects the observed. The strongest reason to deconstruct the inequality in the cost-benefit of expansion and divergence is simply that the economic science of inequality breeds climate failure. Kyoto's defenders unwittingly underwrite this. Though they reject the goal-less model, or guesswork, of pure laissez faire, they also reject the goal-focus of the C&C framework as somehow worse. Interestingly, it is for this reason that even transnational corporate leaders have taken to calling the Protocol an 'ineffective patchwork'. In the absence of a global GHG concentration target, they say they cannot address the drift into climate chaos.[25]

CONCLUSION: C&C DEFENDS ONLY TWO ASSUMPTIONS

The political equivalent of the quantum particle/wave dichotomy has Kyoto knowing where it is but not what its effect is or where it is going. C&C knows what its effect is and where it is going, because it defends only two core assumptions of numeracy (limits and equal rights), it is simple and simply says so. This science-based rationale gets increasing traction while Kyoto loses it to the goal-free poker-economics of 'multi-criteria trade-offs' and third party discards.

Consider again Einstein's vexed riddle as to whether God 'plays dice'. The game could not be played unless the dice existed. Principle simply precedes practice and so informs it. The dice are structured so and the game is programmed by the dice. Avoiding dangerous rates of climate change is the dice game we now play. Only in unity can we be determined not to lose. Contraction and convergence counters despair with the momentum of hope. Without such vision, much of humanity will simply perish.

FURTHER INFORMATION ON CONTRACTION AND CONVERGENCE

C&C definition statement and Bill:
http://www.gci.org.uk/briefings/C&C_Bill_Pledge.pdf
Zoom-able global past/future C&C 'map':
http://www.gci.org.uk/images/C&C_Bubbles.pdf
Animated C&C demonstration:

http://www.gci.org.uk/images/CC_Demo(pc).exe
C&C pledge statement:
http://www.gci.org.uk/kite/pledge-text.pdf
C&C support and background:
http://www.gci.org.uk/links/detail.pdf
C&C history:
http://www.gci.org.uk/Archive/Mega_Doc_1989_2004.pdf
C&C news service:
http://lists.topica.com/lists/GCN@igc.topica.com/read

NOTES

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2. http://en.wikipedia.org/wiki/West-Eastern_Divan
3. Tony Blair, 'Get real on climate change', *Observer*, 30 October 2005
4. http://www.gci.org.uk/articles/Nairob3b.pdf
5. http://cdiac.ornl.gov/trends/co2/graphics/vostok.co2.gif
6. http://www.ncdc.noaa.gov/paleo/icecore/antarctica/vostok/vostok_data.html
7. http://www.mlo.noaa.gov/LiveData/FDataCCG.htm
8. David King, 'The nuclear option isn't political expediency but scientific necessity', *Guardian*, 16 December 2005.
9. George Monbiot, 'The chief scientific advisor has become a government spin doctor', *Guardian*, 25 October 2005.
10. Ibid.
11. Michael J. Benton, *When Life Nearly Died: The Greatest Mass Extinction of All Time*, Thames and Hudson, 2003.
12. Colin Challen, 'We must think the unthinkable and take voters with us', *Independent*, 28 March 2006.
13. Mark Levene, personal communication, 29 June 2006.
14. http://www.ipcc.ch/pub/sarsum3.htm#seven
15. http://www.nationalcenter.org/KyotoSenate.html
16. http://www.gci.org.uk/briefings/C&C&ByrdHagel.pdf
17. http://www.gci.org.uk/briefings/Paper7_EOyuela1.pdf
18. http://www.gci.org.uk/temp/COP3_Transcript.pdf
19. Aubrey Meyer, *Contraction and Convergence: The Global Solution to Climate Change*, Green Books, 2000.
20. http://thomas.loc.gov/cgi-bin/cpquery/T?&report=sr054&dbname=cp105&
21. http://archive.greenpeace.org/climate/arctic99/html/content/factsheets/carbonlogic2.html
22. http://www.gci.org.uk/speeches/Cameron_RSA_150506.pdf
23. http://observer.guardian.co.uk/shellenergy/story/0,,1793042,00.html
24. Challen, 'We must think the unthinkable'.
25. http://www.gci.org.uk/briefings/WEF_Statement.pdf

"Long before the end of the UNFCCC negotiation, GCI presented a proposal on Contraction & Convergence. We all in this room know the model. Level of contraction and timing of convergence should be negotiated on the basis of the precautionary principle. Suggestions for emission eductions are well known and convergence should be achieved at medium term to satisfy legitimacy."

Raul Estrada – Chairman Kyoto Protocol Negotiations

"Achieving the goal of the climate treaty [stabilize GHG concentrations] inevitably requires contraction & convergence."

Joke Waller Hunter UNFCCC Executive Secretary

"Success in the Climate Change negotiations requires a deal between the 'Quad', the USA, China, India and the EU. This is possible around the principle of "Contraction and Convergence". The US insistence on India and China accepting targets was not always merely a negotiating tactic. The idea of per capita equity in the Contraction and Convergence analysis of the Global Commons Institute was seriously discussed in all four capitals in the mid-nineties and the Byrd-Hagel Resolution of the US Senate before Kyoto and the 94 – 0 vote was a statement that such a deal with India and China meant progress."

Tom Spencer Former President GLOBE International

"Equity guides the route to global ecological recovery. Tradable Emissions Quotas will make matters worse unless set as targets and time-tables for equitable emissions reductions overall. This means convergence at sustainable parity values for consumption on a per capita basis globally."

Indian Government COP 1 1995

"When we ask the opinions of people from all circles, many people, in particular the scientists, think the emissions control standard should be formulated on a per capita basis. According to the UN Charter, everybody is born equal, and has inalienable rights to enjoy modern technological civilization."

China State Counsellor Dr Song Jian, COP 3 1997

"We support India and propose Contraction & Convergence of global emissions. You cannot talk about trading if there are not entitlements; Contraction & Convergence comes into play when we talk about issues of equity"

THE AFRICA GROUP Kyoto COP 3 1997

"It does seem to us that the proposals by India and others who speak to Contraction and Convergence are elements for the future, elements perhaps for a next agreement we may ultimately all seek to engage in."

UNITED STATES OF AMERICA COP 3 1997

"A set of common principles must be based on a worldwide binding limit on global emissions consistent with a maximum atmospheric concentration [contraction] with progressive convergence towards an equitable distribution of emissions rights on a per capita basis by an agreed date with across-the-board reductions in emissions rights thereafter."

European Parliament Resolution 1998

Per capita CO2 emissions meet in the middle. "In the final analysis the per capita emissions in emerging economies will meet those of industrialised countries. I cannot imagine the emerging economies will one day be permitted to emit more CO2 per capita than we in the industrialised countries. With this proposal, emerging nations with rapidly expanding economies could be on board the global climate negotiations scheduled for 2009."

Angela Merkel President of Germany 2008

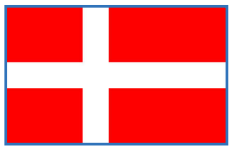
"The international climate regime should be based on legitimate principles of equity, such as long-term convergence of emission levels per capita in the various countries."

Nicholas Sarkozy President of France 2008

Attempts to deny C&C's pure logic - ecological, political, social and human - are ultimately futile. Nature won't be fooled. Acceptance of C&C brings not imprisonment, but new unfound freedom;
'Justice without Retribution,' as Nelson Mandela once demanded.

Dave Hampton Carbon Coach

"Sweden strives for global emissions converging to equal per capita for all.
Kjell LarssonEnvironment Minister 2000
"Emissions should converge towards equal emissions per inhabitant."
3rd National Climate Communication 2001



"Contraction & Convergence secures a regime where all nations join efforts to protect our global commons without the risk that any country is deprived of its fair share of the common environmental emission space."
Svend Auken
Danish Environment Minister 1999

"We are conscious that in the end, we will have inevitably to evolve towards a more equitable partition between the North and the South of the capacity of our common atmosphere to support greenhouse gases by a gradual convergence of levels of emissions on a per capita basis."
Olivier Delouze
Belgian Environment Minister 2000

"If we agree to per capita allowances for all by 2030 [so that global emissions stay below 450 ppm 2o global temperature rise] then assigned amounts for Annex One countries would be drastically reduced. However, because all countries would have assigned amounts, maximum use of global emissions trading would strongly reduce the cost of compliance. In such a scenario Industrial Countries would have to do more, but it would be cheaper and easier."
Jan Pronk COP6 2000
Dutch Environment Minister

"We do not believe that the ethos of democracy can support any norm other than equal per capita rights to global environmental resources."
Prime Minister INDIA COP 8 2002

"To forestall further damage deeper cuts in greenhouse gas emissions than as presently contained in the Kyoto Protocol are urgently required and these must be organised as universal equal entitlements as engraved in the principles of the Contraction & Convergence Framework."
KENYA GOVERNMENT COP 11 2005

"Conference recognises the urgent need for action to mitigate climate change given the potentially disastrous consequences for the planet. We pledge to achieve a low carbon emitting society and commit the SNP to supporting the adoption of the internationally-recognised principle of "Contraction and Convergence"."
Alex Salmond Leader Scottish National Party

Liberal Democrats argue for the principle of contraction and convergence with the long-term goal of equalising per capita emissions globally.
Chris Huhne
Liberal democrats

"I urge the UK Government to provide leadership on climate change by committing itself to Contraction and Convergence as the framework within which future international agreements to tackle climate change are negotiated. I confirm that the party also supports this pledge."
Simon Thomas Policy Director Plaid Cymru

"The Kyoto Protocol says nothing about the future beyond 2012. To address that timescale the Green Party advocates the adoption by the UNFCCC of a framework of Contraction and Convergence (C&C) as the key ingredient in the global political solution to the problem of Climate Change mitigation, and urges the UK and other governments use it as the basis for negotiations in the international fora."
Green Party Real Progress
Climate Policy Statement

"To make provision for the adoption of a policy of combating climate change in accordance with the principles of . . . "Contraction and Convergence" and for connected purposes."

Colin Challen Chair All-Party Group Climate Change

Any framework which involves radical emission reductions would in practice resemble the Contraction and Convergence approach advocated by the Global Commons Institute. Indeed, in terms of domestic policy aims, the UK Government has already implicitly accepted this approach in adopting the 60% carbon reduction target for 2050; and it is therefore inconsistent not to adopt such an approach internationally. We do not see any credible alternative and none was suggested in evidence to our inquiry. We therefore recommend that the UK Government should formally adopt and promote Contraction and Convergence as the basis for future international agreements to reduce emissions.

Environmental Audit Committee House of Commons

"The Government should press for a future global climate agreement based on the Global Commons Institute's "Contraction and Convergence" approach as the international framework within which future international agreements to tackle climate change are negotiated.These offer the best long-term prospect of securing equity, economy and international consensus."

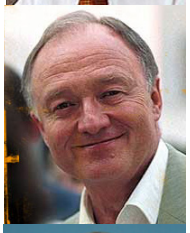
Royal Commission on Environmental Pollution

"Contraction and Convergence helps greatly. It is inclusive and makes clear what needs to be achieved. Without such a shared model, there will not be the necessary relationships that create the new and exciting possibilities and the trust for shared action."

Chris Mottershead Distinguished Advisor Energy & Environment British Petroleum plc

"Almost any conceivable long-term solution to the climate problem will embody a high degree of contraction and convergence. Atmospheric concentrations of GHGs cannot stabilize unless total emissions contract; and emissions cannot contract unless per capita emissions converge."

John Ashton UK Climate Ambassador Pew Report



"The solution to climate change requires a globally equitable model of emissions reductions. The Contraction and Convergence model calls for already large polluting countries to cut their emissions, while newly industrialising countries increase theirs, up to the point that we converge at a sustainable level. That, I hope, will be the ethos that will guide cities around the world."

Ken Livingstone Mayor of London

"I admire GCI's Contraction and Convergence model and their now nearly twenty year crusade by to get it established as the international basis of policy to meet the objective of the UN Climate Treaty.
Their presentation of it is a dauntingly hard act to follow."

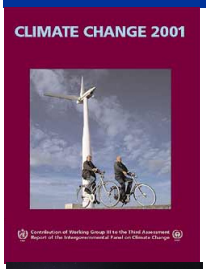
Nick Butler
Director Cambridge Energy Studies

"I support the concept of Contraction and Convergence as does the Environment Agency"

Sir John Harman
Chairman UK Environment Agency

" . . . there is an emerging proposal here that is important and helpful - a broad long-term commitment to equal per capita emissions. It's a tough proposal. If we take it as part of the progressive agenda to move to that it will be helpful in bringing the world together as it brings the developing countries as part of this effort with an ethical and political commitment, not immediate, but towards convergence in terms of per capita emissions."

Kemal Dervis
Chief Administrator UNDP

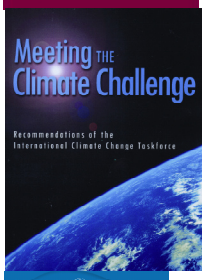


"Business and government cannot solve the problem alone. Solutions must be global and participation of all major emitters is essential. Companies cannot determine the scale of needed investment without a stabilization threshold for greenhouse gas concentrations. The short-term "patchwork" of the Kyoto Protocol is not cost-effective. A global long term, market-based policy framework in a new partnership with China, India, Brazil, South Africa and Mexico is needed. Emissions rights with common metrics that can be adjusted over time to reflect evolving developments will ensure that a truly global solution to the problem is achieved."

G8 Climate Change 2005 Business Leaders

"A formulation that takes the rights-based approach to its logical conclusion is that of Contraction and Convergence" [GCI]

IPCC WG3 Third Assessment Report



"The global framework develops so that CO2 concentration in the atmosphere is held at or below 400 ppmv. This long-term climate objective is met by ensuring that short-term targets are linked to and consistent with it, with a gradual transition towards a system of equal per capita rights to use the absorptive capacity of the atmosphere."

Stephen Byers MP International Climate Task Force

"The Byers report refers to a new basis of equity and common, but differentiated, responsibilities. We need environmental equity with a cap and trade programme. Contraction and Convergence is the name that we must give to it. We must link that battle with the battle against poverty."

UK All-Party Parliamentary Group Climate Change

"Policy-makers need consensus on a global framework for climate stability based on principles of precaution and equity such as Contraction and Convergence."

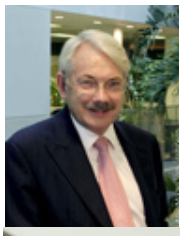
UNEP Financial Initiative

There is no other method of rationally and ethically guiding global reductions in greenhouse gas emissions."

Royal Institute of British Architects 2006

"The UIA commits itself to campaigning for the most effective outcome possible at COP15 through advocacy of an emission limitation agreement based on the principle of contraction and convergence."

International Union Architects Turin Conference 2008



There is a desperate need to create an effective policy for preserving healthy ecosystems by providing incentives and the resources to do so. The Contraction and Convergence approach promoted by UN is a well thought through and potentially powerful approach which also addresses fair distribution.

Peter Head Director ARUP

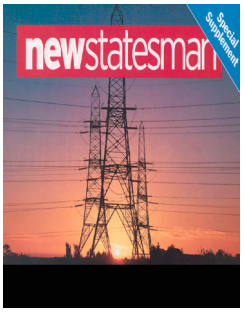
"The per capita approach is generally referred to as 'contraction and convergence' (Global Commons Institute 2000) and has figured in the international debate for some time. It has been promoted by India and has been discussed favourably in Germany and the United Kingdom (German Advisory Council on Global Change 2003; UK Royal Commission on Environmental Pollution 2000). Recent reports have shown increasing support for this approach internationally: see, for example, Stern (2008) and the Commission on Growth and Development (2008).

Ross Garnaut Australian Government Economist

"An international agreement is essential. It must be based on the criteria of effectiveness, efficiency and equity. Effectiveness demands a long-term global goal capping global emissions and providing a long-term trajectory for investment in low carbon technologies. This should be at least a halving of global emissions by 2050. A pragmatic principle of equity would require an equalisation of per capita emissions by then. This will require developed countries to cut by around 80%."

Nicholas Stern UK Government Economist

"Contraction and Convergence - The logic is compelling. It is a formula for future global emissions that could, without exaggeration, save the world. Some environment groups such as Greenpeace see the formula as a dead-end. They are profoundly wrong."



Vote for New Statesman best climate framework

Results January 2008 . . .
2% are saying Kyoto Protocol
81% are saying Contraction and Convergence
12% are saying Kyoto2
5% are saying Greenhouse Development Rights

"A framework involving technology together with social, political and economic change with quantifiable targets is the only way forward. This is why we support the well-known concept of "Contraction and Convergence" (C&C) as proposed by the Global Commons Institute as the basis for the agreement. It satisfies developing countries' demands for equity and US demands that major developing countries such as China and India be involved in any targets."

Scientists for Global Responsibility
Scientists · Architects · Engineers · Technologists

Scientists for Global Responsibility

"The WBGU recommends emissions rights be allocated according to the "Contraction and Convergence" approach."

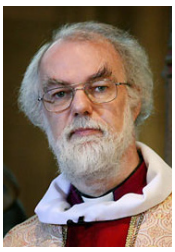
WBGU

German Advisory Council

"I note what you say about Aubrey Meyer's Contraction and Convergence proposal and I agree that in the fight against climate change C&C makes an important contribution to the debate on how we achieve long-term climate stability taking account of the principles of equity and sustainability."

Tony Blair UK Prime Minister

"The Churches can give their backing to Contraction and Convergence publicly and unanimously because at its core, it is just. It appears Utopian only if we refuse to contemplate the alternatives honestly."

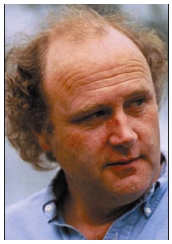


Dr Rowan Williams
Archbishop of Canterbury

"Climate change is likely to impose massive economic costs. The case for being prepared to spend huge resources to limit it is clear as the cost will be repaid many times over by the avoidance of disaster. The developed world does not have the moral right to increase the risk of flooding in Bangladesh. Long term the only sound strategy is that of contraction and convergence cutting greenhouse emissions to the point where they are shared equally, worldwide, on a per capita basis."

Lord Adair Turner
Chairman of Climate Committee

"We believe contraction and convergence is the best way forward because it recognises that growth in energy use in developing countries will happen.Even if we could achieve a reverse in trends of energy use in developed countries, there is not yet anywhere enough alternative and renewableenergy available to get us off of fossil fuels fast enough. For the developing world the situation is even more urgent because that is where most energy intensive industrial and manufacting activity is heading."



Tim Smit
CEO The EDEN Project

"An approach receiving significant attention is Contraction and Convergence, the science-based global climate-policy framework proposed by the Global Commons Institute with the objective of realizing safe and stable greenhouse gas concentrations in the atmosphere. It applies principles of precaution and equity, principles identified as important in the UNFCCC but not defined, to provide the formal calculating basis of the C&C framework."

Bob Watson
Former Chairman IPCCC

"Contraction and Convergence - and its mechanism for financing sustainable development is the only proposal so far which is global, equitable and growth-oriented."

Congressman John Porter Chair, GLOBE USA

"The idea of 'Contraction and Convergence' is destined to be one of the most important principles governing international relations in the 21st century. It is a powerful ethic that incorporates global justice and sustainability and thereby bridges the dominant concerns of the last century and this one. It is the only way to accommodate the interests, ethical and economic, of developing countries and rich countries in the struggle to find a solution to the most important environmental problem facing the world."

Dr Clive Hamilton
The Australia Institute

"The approach of contraction and convergence presents a new economic development paradigm for the twenty first century and beyond."

Mrs. Rungano Karimanzira
Chair, Africa Group

"The most realistic way to bring about the required reduction in ghg emissions (which will have the combined effect of reducing the damage imposed on the insurance industry and encouraging the transition to renewable energy) is that proposed in the concept of Contraction and Convergence."

UK Chartered Insurance Institute

"Any political solution to climate change will need to be based on reductions in emissions, otherwise known as contraction. As the climate is owned by no one and needed by everyone, we will also have to move towards equally sharing the atmosphere, known as convergence. Collective survival depends on addressing both."

World Disasters Report 2000 International Red Cross/Crescent

"The vision of "Contraction and Convergence" combines ecology and equity most elegantly."

Heinrich Boell Foundation

"The assiduous campaigning over the last decade by the Global Commons Institute - based on its idea of' 'contract and converge' - under which the rich nations undertake to reduce emissions even as developing nations are permitted to grow their emissions until such time as per capita emissions converge at the same level, has given this kind of approach some real credibility. So, too, has the readiness of developing countries such as China, Brazil, Indonesia and Argentina to accept emissions targets for their own counties - not least because they are already beginning to feel the impacts of climate change. The real strength of this approach is that it is based upon a trading system, with rich nations needing to purchase additional carbon credits from poorer nations."

Jonathon Porritt
Forum for the Future

"There are a number of measures (of varying scale) that can be used to reduce the amount of CO2 that is being emitted, these include: - Contraction and convergence conceived by the Global Commons Institute (GCI) in the early 1990s consists of reducing overall emissions of GHGs to a safe level, 'Contraction', where the global emissions are reduced because every country brings emissions per capita to a level which is equal for all countries, 'Convergence'."

BMA 2008
"How can the impact of climate change be reduced?"

"CHC advocates a global framework for action with 'contraction and convergence' a favoured option, and seek the means to influence key decision makers."

Climate and Health Council

"Admiration is frequently expressed, regarding the elegance and simple logic of Contraction and Convergence and it has been widely supported by policy makers as a basis that should underlie the next stage of policy formulation."

Sir John Houghton,
Former Chair IPCC Working Group One

"Many governments around the world have accepted the concept of Contraction and Convergence as the only equitable response mechanism to the threat of climate change."

Grace Akumu
Director, Climate Network Africa

In the end, they will need to give much weight to equal per capita rights of emissions. They will need to allow long periods for adjustment towards such positions—within the over-riding requirement to stay within an environmentally responsible global emissions budget. One possible way of bringing these two elements together would be the "contraction and convergence" approach that has been discussed favourably in Germany and India.

Garnaut
CLIMATE CHANGE
REVIEW

Ross Garnault
Climate Strategist Australian Goverment

"I not only support the C&C concept, I find it inconceivable that we will avert climate catastrophe without a regime built on some variation of this approach. In the debate about climate change, an impression has been created that the problem is too daunting and complex to prevent. Contraction and Convergence provides a way forward that is both fair and feasible."

World
Nuclear
Association

John Ritch
World Nuclear Association

"It is absolutely remarkable that the idea of Contraction and Convergence has taken such a firm hold worldwide in such a short space of time."

Tessa Tennant, Chair Association for Sustainable & Responsible Investment in Asia

"Contraction and Convergence is an extermely powerful idea and we are moving remorselessly towards it."

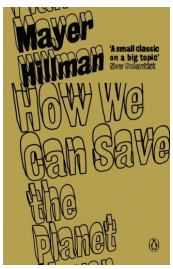
Michael Meacher
Former UK Environment Minister

". . . an approach receiving significant attention is Contraction and Convergence [C&C] - a science-based global framework whereby total global emissions are reduced (contraction) to meet a specific agreed target, and the per capita emissions of industrialized and the developing countries converge over a suitably long time period, with the rate and magnitude of contraction and convergence being determined through the UNFCCC negotiating process. It applies principles of precaution and equity; principles identified as important in the UNFCCC but not defined."

THE WORLD BANK

World Bank on
Contraction and Convergence

"A brilliant, imaginative and simple means of reaching a just global agreement on emission reductions is called Contraction and Convergence (C&C). It was first proposed by the Global Commons Institute (GCI) in 1990. Recognition of its unique qualities as a framework for combating climate change has grown at an astonishing rate since that date."



Mayer Hillman
Author of How We Can Save the Planet

"In the light of the long-term perspective two basic requirements must be met: Stabilisation of greenhouse gases in the atmosphere at a level in accordance with the overall objective of the Climate Change Convention. A fair distribution of rights and obligations, by establishing the concept of percapita emission rights for all countries, as proposed in the 'Contraction and Convergence' scheme."

oikoumene

David Hallman
World Council of Churches

"The Scientific Case for Setting a Long-Term Emission Reduction Target. The framework of this study builds on the RCEP work which uses a contraction and convergence methodology. Contraction and convergence is an international policy framework for dealing with global climate change developed by the London-based Global Commons Institute."

DEFRA on C&C

UK building industry leaders wrote to Mr Blair saying this framework-based market is contraction and convergence. "We highlight the point made by the Corporate Leaders Group on Climate Change that get-tingthe right global climate change framework in place is the most urgent action. The Contraction and Convergence Framework, accepted by the UN and by the Royal Commission on Environmental Pollution (amongst others) could well provide a fair structure for the engage-ment of all nations."

CIBSE and ICE on C&C

"The leading model advocating equal per capita emissions rights globally is 'Contraction & Convergence', to which all equity frameworks and proposals owe their existence."

Christian Aid

Tearfund wrote to Mr Blair saying this framework-based market is contraction and convergence. "The C&C framework is global, long-term, effective, and, importantly, equitable, without which it would stand no chance of being agreed. From the outset develop-ing countries have a guarantee of equitable allocations and assur-ance as to when this would happen."

TEARFUND on C&C

Contraction & Convergence (C&C) provides a simple framework for globally allocating the right to emit carbon in a way that is consistent with the physical constraints of the biosphere. The approach rests on two simple principles contraction: reducing humanity's emissions to a rate that the biosphere can absorb convergence: distributing total emissions so that each person ultimately gets the same portion of the 'global budget'. The extension of C&C to all demands on the biosphere is referred to as Shrink & Share.

Jonathon Loh GFN - WWF on C&C

"To minimise the danger of global temperature rises exceeding 2°C, a level considered dangerous, a concentration of no more than 400ppm of CO2 in the atmosphere is recommended [Byers Report] . . . . and the EU's burden of responsibility to meet this science-based cap should be apportioned on the basis of equal global rights to carbon consumption."

Greenpeace on Byers Report

"A recommendation in the Byers report is to build on the global climate change framework of both the UN Framework convention on climate change. It refers to a new basis of equity and common, but differentiated, responsibilities. We need environmental equity with a cap and trade programme. Contraction and convergence is the name that we must give to it. We must link that battle with the battle against poverty."

Colin Challen MP
Byers Report is C&C

"Thanks very much for passing on the very nice animation of C&C and risk. One of the things we will be looking at in my newly formed group here at Victoria University in Wellington is burden sharing issues, so the new work on C&C in the UK is of interest to me."

Martin Manning
IPCC Technical Support Unit WG1

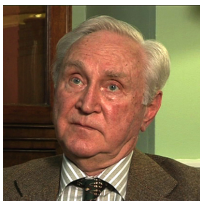
The idea of contraction and convergence is particularly persuasive as it addresses two key threats to humanity, climate change and unequal development, in one framework.

Local Government Information Unit UK

"The commission might have added that contraction and convergence is comprehensive, scientifically based and equitable, unlike the Kyoto Protocol, and that contraction and convergence meets every single objection raised by the United States to Kyoto."

Lord Bishop of Hereford

Aubrey Meyer has done an amazing job and has shown extraordinary persistence and ingenuity in working out a scheme of this kind, and I very much admire him for it. Above all he's laid out a kind of intellectual and legal framework which is what you need if you're going to se global arrangements in place, and these global arrangements should I believe be fully reflected in the Bill that is now before UK Parliament to regulate Climate Change



Sir Crispin Tickell Director of the Policy Foresight Programme James Martin Institute Oxford

Contraction and Convergence includes the identification of a fixed level for stabilisation of greenhouse gas concentrations, and comprehensive global participation. Any framework that incorporates long term targets can offer countries greater certainty about their national targets and provide a clear signal to allow business to plan ahead and help drive investment in new and better technologies.

Number 10 Downing Street Website

"To make sense of our own actions we need to have an overall direction; contraction and convergence provides that direction."

Sunand Prasad President of RIBA

"Long-term convergence of per capita emission rates is an important principle that should be seriously considered in international climate change negotiations."

Prime Minister Gordon Brown and Indian Government on C&C

Any framework which involves radical emission reductions would in practice resemble the Contraction and Convergence approach advocated by the Global Commons Institute. Indeed, in terms of domestic policy aims, the UK Government has already implicitly accepted this approach in adopting the 60% carbon reduction target for 2050; and it is therefore inconsistent not to adopt such an approach internationally. We do not see any credible alternative and none was suggested in evidence to our inquiry. We therefore recommend that the UK Government should formally adopt and promote Contraction and Convergence as the basis for future international agreements to reduce emissions.

Environmental Audit Committee, "The International Challenge of Climate Change"

"My colleagues and I at the Royal Commission on Environmental Pollution would like to express our thanks to you and GCI for your remarkable pioneering work in establishing Contraction and Convergence as it is the basis upon which so much of our own work has been established."

Sir Tom Blundell; Chairman, RCEP

"Contraction and Convergence is the approach with the most merits. It is the buzz phrase now on the negotiator's lips."

Sir David King; "The Hot Topic"

"One approach on the table is contraction and convergence — rich countries contracting their emissions quickly, while developing countries are given some room to grow on condition they make cuts later."

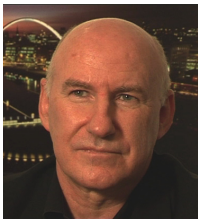
The AGE Reporting on the G8 2008 in Toyako Japan

"The British government has modelling under way in the most favoured method - contraction and convergence - but there is no diplomatic agreement that this is the best way to proceed."

The Guardian Reporting on the G8 2008

C&C represents a far greater departure from business as usual than does Kyoto. It is strong medicine for a dire malaise, and as with all strong medicine there are potential side effects. One is that the scheme might eventually do away with world poverty and the north-south divide. Not all aspects of the proposal should displease the conservatives, for by including every human being in existence under its umbrella it obliterates concern about 'free riders' in the developing world that exists under Kyoto.

Tim Flannery Author of The Weather Makers

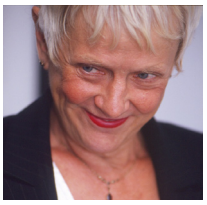


When I was RIBA President we looked at Kyoto and saving 60% by 2050 looked a reasonable start. But the thing that attracted about Contraction and Convergence or C&C was that it looked at the global dimension and what is a 'fair share' of carbon emissions for your country C&C gives a framework within which to address that. We're comfortable supporting C&C and Aubrey Meyer.

Jack Pringle Former President of RIBA

The fundamental attraction of Contraction and Convergence to me is that it's logically based. It's not based on essentially market issues and arbitrary decisions about how many tons of CO2 permits are going to be allowed. It also doesn't have the risk in my view of one of the real issues with trading that some of the poorer nations and poorer peoples of the world will mortgage their future on a futures market of trading permits.

Prof Paul Jowitt President Elect ICE



"We need to go to the United Nations and need to say both to our own citizens, our own communities and global communities through the United Nations, C&C is the only real way forward to ensure a healthy future."

Angela Mawle CEO Public Health Association

"C&C is an excellent virtuous cycle policy tool. There are many benefits to our wellbeing of adopting it. Articulating these benefits, health and other professional groups will offer the hope and inspiration necessary to counter global warming, and so act in accordance with our obligations."

Robin Stott Chair Climate and Health Council

"The C&C framework is very powerful as it addresses two main issues; one is the scientific basis and the rigour, and the other is our intuitive feeling about the moral needs of our community. Scientifically and in terms of equity it gives us targets, timescale and a transparent fairness that through the convergence enables us to leave our children something better than we have now."

Lorna Walker CABE Commissioner

We can empower the UN to deliver C&C as a global policy. As climate change is the greatest threat to mankind, what better vehicle through which to get the UN pulling together again. We need to get our own politicians to press our own governments to do this. We need to get our own government to press Europe to do this. We need to use our formidable clout as Europe to get it delivered by the UN. The great thing about C&C is that it offers the prospect that if you're clever and if you really get to it, you can make this work for you, not just for the world, but for you individually and as a country.

Jon Snow Channel Four TV News

The benefits of the C&C approach in three words are simplicity, economics and international. With a simple international structure, C&C makes economics kick in which is absolutely fundamental to getting the biggest infrastructural change in human history.

Professor Michael Mainelli Director Z/Yen

Fifteenth Summit
South Asian Association for Regional Cooperation (SAARC)
Colombo, Sri Lanka - August 2-3, 2008

"The Heads of State or Government affirmed that every citizen of this planet must have an equal share of the planetary atmospheric space. In this context, they endorsed the convergence of per capita emissions of developing and developed countries on an equitable basis for tackling climate change."

His Excellency Mr. Hamid Karzai
President of the Islamic Republic of Afghanistan,

His Excellency Dr. Fakhruddin Ahmed
Chief Adviser of the Government
The People's Republic of Bangladesh,

His Excellency Lyonchhen Jigmi Y. Thinley
Prime Minister of the Kingdom of Bhutan,

His Excellency Dr. Manmohan Singh
Prime Minister of the Republic of India,

His Excellency Mr. Maumoon Abdul Gayoom
President of the Republic of Maldives,

The Rt. Hon'ble Girija Prasad Koirala
Prime Minister of the Federal Democratic Republic of Nepal

His Excellency Syed Yousuf Raza Gilani
Prime Minister of the Islamic Republic of Pakistan

His Excellency Mr. Mahinda Rajapaksa
President of the Democratic Socialist Republic of Sri Lanka,

Some C&C GCI Links

Publications

http://www.gci.org.uk/briefings/zew.pdf [Springer Verlag]
http://www.gci.org.uk/briefings/UNFCCC&C_A_Brief_History_to1998.pdf [GLOBE]
http://www.gci.org.uk/Book/Surviving_Climate_Change.pdf [PLUTO]
http://www.schumacher.org.uk/schumacher_b5_climate_change.htm [Schumacher]

Briefings

http://www.gci.org.uk/briefings/ICE.pdf
http://www.gci.org.uk/Endorsements/UNEPFI5f.pdf
http://www.gci.org.uk/briefings/CPI.pdf
www.gci.org.uk/briefings/RSA_Occasional_Paper.pdf

Articles/Interviews

http://www.gci.org.uk/articles/LEXUS.pdf
http://www.gci.org.uk/articles/React.pdf
http://www.gci.org.uk/articles/New_Scientist_Interview.pdf
http://www.gci.org.uk/articles/Green_Futures_CandC.pdf
http://www.gci.org.uk/articles/BMJ_Stott.pdf
http://www.gci.org.uk/articles/Actuary_McGuire.pdf
http://www.gci.org.uk/articles/British_Medical_Journal_22_December_2007.pdf
http://www.gci.org.uk/articles/Argus_C&C_Interview.pdf

COP-3 1997 UNFCCC [Transcript] - C&C nearly agreed in 1997
http://www.gci.org.uk/temp/COP3_Transcript.pdf
http://www.gci.org.uk/briefings/AFRICA_GROUP.pdf

The UNFCCC administration has said since 2003, *"Contraction and Convergence is inevitably required to achieve the objective of the convention": -*
http://www.gci.org.uk/UNFCCC/C&C_Janos_Pasztor_UNFCCC.pdf

A C&C Booklet 13 languages from COP-11 12/2005: -
http://www.gci.org.uk/briefings/MONTREAL.pdf

Archives covering twenty year history of this campaign: -
http://www.gci.org.uk/Archive/Mega_Doc_1989_2004.pdf
http://www.gci.org.uk/Archive/All_2000_2007_reduced_file_size.pdf

The C&C framework is supported by manifesto commitments from the Welsh Nationalists, the Scottish Nationalists, the Liberal Democrats, the Greens and the Respect Party.
www.gci.org.uk/presentations/RSA_C&C_G-8_Quotes.pdf

Many individual UK Labour Party MPs advocate C&C, some Conservative MPs do too.
http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=29500&SESSION=875
http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=27350&SESSION=873
http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=27080&SESSION=873

An issue to some is that C&C merely describes generically an 'outcome' of many future aspirational phases of the Kyoto Protocol. This is what the corporations collectively call 'an inadequate patchwork', see slides 20/1 here: -
http://www.gci.org.uk/presentations/RSA_C&C_G-8_Quotes.pdf

To cure this very randomness, C&C formally means the structure a of full-term, concentration-target-based framework endowed by GCI from the outset, as accepted for example by DEFRA:
http://www.gci.org.uk/correspondence/Meacher_15_11_02.pdf
and in 2004 by the House of Commons Environmental Audit Committee and result: -
http://www.gci.org.uk/correspondence/EAC_response_GCI_300904.pdf

House of Commons Environmental Audit Committee and result 2004: -
http://www.gci.org.uk/correspondence/EAC_response_GCI_300904.pdf
http://www.gci.org.uk/briefings/EAC_Final_C&C.pdf

C&C briefing to All-Party enquiry into climate-consensus and result May 2006: -
http://www.gci.org.uk/briefings/APGCCC_Evidence_single_A4_pages.pdf
http://www.gci.org.uk/briefings/Consensus_Report.pdf

The UK House of Commons All Party Parliamentary Group on Climate Change [APPGCC] adopted C&C. A DVD commissioned by the Group presenting Contraction & Convergence was distributed to all UK MPs and Peers. Eminent spokespersons interviewed on the DVD.
http://www.gci.org.uk/images/Contraction_and_Convergence_Challen_et_al.mpg

APPGCC Tribute here: -
http://www.martin-caton.co.uk/news?PageId=4ec8ff91-07dd-e3d4-5d47-57362266c35c

C&C Promotional material is here: -
http://www.gci.org.uk/Movies/Contraction_and_Convergence_Promo.mpg

Key C&C Animation with coupled models/sink-failure here: -
http://www.gci.org.uk/Animations/BENN_C&C_Animation.exe

Meyer CV here: -
http://www.gci.org.uk/AubreyMeyer/CV_Aubrey_Meyer_1.pdf

COMMENTS

2002 Michael Meacher, the UK Environment Minister

"if ever there was an initiative that deserved recognition and support, it is the brilliant and relentless campaign waged by this fiercely independent, creative and apparently tireless individual."

2003 The UN Climate Convention Secretariat

"Achieving the goal of the climate treaty, inevitably requires contraction and convergence".

2003 The Archbishop of Canterbury

"C&C appears utopian only if we refuse to contemplate the alternatives honestly."

2003 Sir John Houghton, Royal Commission Environmental Pollution

"Since the formulation of 'Contraction and Convergence', Aubrey Meyer has tirelessly and selflessly argued for and promoted it with great energy and tenacity in scientific, economic and political fora. Admiration is frequently expressed regarding its elegance and simple logic and it has been widely accepted by policy makers and by NGOs as a basis that should underlie the next stage of policy formulation. There is no other proposal in play that meets so many of the required principles and criteria or that has any real chance of succeeding. It is bound to be strongly influential in the crucial round of international negotiations in the FCCC that is about to begin. The personal dedication of Aubrey Meyer, born of a deep concern for global humanity and its future, is what has brought the Contraction and Convergence proposal to the influential position it holds today."

Independent on Sunday, a UK broadsheet

"Meyer is one of the three most important people in the world."

The New Statesman, a UK Journal

"Meyer is one of the ten people in the world most likely to change it."

UNITAR Seminar

"Meyer is arguably the world's leading carbon strategist" and *"the Mandela of Climate Change"* for demonstrating the end of global apartheid.

Sir Crispin Tickell, former UK Ambassador to the UN

"Aubrey Meyer has done an amazing job and shown extraordinary persistence and ingenuity in working out a scheme of this kind, and I very much admire him for it. Above all he's laid out a kind of intellectual and legal framework which is what you need if you're going to set global arrangements in place."

Dr. Julian Salt Director of Climate Solutions

"Aubrey Meyer is the most courageous and brilliant climate researcher I have ever met.
He is willing to say what other's merely think. He is quite fearless of any audience and the most eloquent of speaker's because he knows that ultimately the concept of Contraction and Convergence [C&C] is indestructible and will in the fullness of time be adopted in some form by the UNFCCC. He has developed his arguments over twenty years with a minimum of funding and has refused to compromise his position in any way for financial gain or glory. He is tireless in his research and quest to understand every nuance of the climate debate. It has been an honour for me to have known and worked with such a brilliant mind and such an honest person as Aubrey. He has much support from very well placed and respectable people and deserves global recognition for his work. He is quite simply a modern-day genius who will one day be respected for his vision and beliefs. He should be considered for the Nobel Peace prize as his efforts ultimately will save the planet from the ravages of man-induced climate change."

Nobel Nomination by UK All Party Parliamentary Climate Change Group

"We have nominated Aubrey Meyer for the Noble Peace Prize 2008 because we believe that it would, now, be right to recognise the man who has done most to provide an international solution to averting the disaster of global warming. He realised that we need a comprehensive climate change framework if we are to protect our planet and founded the Global Commons Institute in 1990 to developed just such a framework known as 'contraction and convergence'. This is the logical way forward. The human race reduces its carbon footprint towards zero at the same time as greenhouse gas emissions on a per capita basis in developed and developing nations converge. If his initiative was recognised now then it would send exactly the right message to world leaders as we consider what comes after the end of the Kyoto round in 2012."

AWARDS

Andrew Lees Memorial Award - 1998

"Aubrey Meyer, almost single-handedly and with minimal resources, has made an extraordinary impact on the negotiations on the Climate Change Treaty, one of the most important of our time, through his campaign for a goal of equal per capita emissions, which is now official negotiating position of many governments, and is gaining acceptance in developed and developing countries alike."

The Schumacher Award - 2000

"Aubrey Meyer set up his Global Commons Institute (GCI) in 1990, with minimal resources, to campaign to bring the threat of global warming to the attention of the public and to policy makers. For over ten years, with great determination and meticulous attention to scientific detail, he has presented his case counteracting the arguments put forward by corporate interests. Of special significance is his formulation of 'contraction and convergence', a strategy for fairly sharing the rights to emit carbon dioxide worldwide. This is increasingly recognised as the most logical and effective way of preventing climatic catastrophe while promoting justice and equity. It has made an extraordinary impact on the Climate Change Treaty negotiations."

A Findhorn Fellowship 2004

"Aubrey Meyer is a professional violinist who has largely bracketed his music career to address the global challenge of climate change. Having attended the first UN meetings on the subject in the early 90's, he has since fully engaged with the issue and developed the 'Contraction and Convergence' model as an antidote to it. He created and directs the Global Commons Institute in London as a vehicle to advance his formula to virtually all who will listen. He presented it here at the Restore the Earth conference in 2002. Its genius lies in its capacity prospectively to reduce greenhouse emissions by the 60-80% that the UN IPCC (International Panel on Climate Change) say is required to minimise the likely devastating effects of global warming. His views are increasingly endorsed by prominent members of the British establishment. I hope you join me in welcoming Aubrey to the Fellowship and in supporting his remarkable, indeed heroic, initiative. Aubrey Meyer is arguably the world's foremost carbon strategist and to global warming what Michael Moore is to the US electoral saga - a delightful maverick who just might 'save the day'."

City of London Life-Time's Achievement Award - 2005

"From the worlds of business, academia, politics and activism, Aubrey Meyer has made the greatest contribution to the understanding and combating of climate change having led strategic debate or policy formation. In recognition of an outstanding personal contribution to combating climate change at an international level through his efforts to enhance the understanding and adoption of the principle of Contraction and Convergence."

Honorary Fellow of Royal Institute of British Architects - 2007

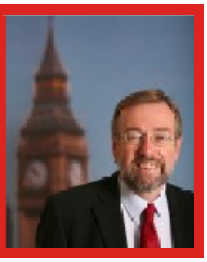
For his challenging and inspirational promotion of environmental issues, in particular his development of the concept of Contraction and Convergence. Architects adopted C&C at RIBA Council in 2006 and asked Aubrey to present C&C at their annual conference in October. There, RIBA's Chairman declared climate change as the dominant agenda for the 21st Century, called for C&C targets and committed RIBA to campaigning for C&C." He was an inspirational speaker at the RIBA's 2006 Annual Conference in Venice and reported the event as follows; *"Meyer, formerly a professional musician, started with a virtuoso performance that was simultaneously moving, terrifying and informative. He played the violin theme to Schindler's List to images of the environmental holocaust he went on to argue that we face."*

The UNEP FI Global Roundtable Financial Leadership Award - 2007

UNEP FI for the first time recognized executives within the financial services who have contributed in a significant manner to the development of financial ideas, innovative products, institutional change and or the carbon markets themselves through the UNEP FI Carbon Leadership Award. Four executive awards were given for each category of financial services: Banking, Insurance/ Reinsurance, Asset Management/Private Banking and Pension Funds. In addition, an award was given for a representative from civil society who had worked towards the same end. Award winners were selected from a large number of entries by a small group of UNEP FI's long term climate change advisors. The civil society category award for the most impressive commitment and innovative thinking around climate change and the financial sector with the UNEP FI Carbon Leadership Award went to Aubrey Meyer of the Global Commons Institute.

HELLO I'm Martin Caton, the Member of Parliament for Gower. Welcome to my website. I hope this will tell you something about me, Gower and my work in Westminster and the constituency and issues that I am giving priority to at present.

http://www.martin-caton.co.uk/news?PageId=4ec8ff91-07dd-e3d4-5d47-57362266c35c



Martin Nominates Meyer for 2008 Nobel Peace Prize

Gower MP, Martin Caton, together with six other Members of Parliament from across the House, has nominated Aubrey Meyer for the 2008 Nobel Peace Prize.

Martin explained, "Aubrey Meyer may not yet be a household name, here in Britain, or indeed, in many other parts of the world. Yet his work is absolutely central to the global fight against climate change.

"The Nobel Institute recognised how important the climate change challenge is to the future of our planet last year, when it awarded the prize jointly to Al Gore and the Intergovernmental Panel on Climate Change for raising awareness about this environmental threat.

"We believe that it would, now, be right to recognise the man who has done most to provide an international solution to averting the disaster of global warming.

"Aubrey Meyer realised that we need a comprehensive climate change framework if we are to protect our planet. He founded the Global Commons Initiative in 1990 that developed just such a framework known as 'contraction and convergence'.

"This is the logical way forward. The human race reduces its carbon footprint towards zero at the same time as greenhouse gas emissions on a per capita basis in developed and developing nations converge.

"If his initiative was recognised now then it would send exactly the right message to world leaders as we consider what comes after the end of the Kyoto round in 2012."

Martin's fellow nominators of Aubrey Meyer are: -

Colin Challen MP	(Labour),
Peter Ainsworth M P	(Conservative),
Chris Huhne MP	(Liberal Democrat),
Michael Meacher MP	(Labour),
Joan Walley MP	(Labour) and
Tim Yeo MP	(Conservative)