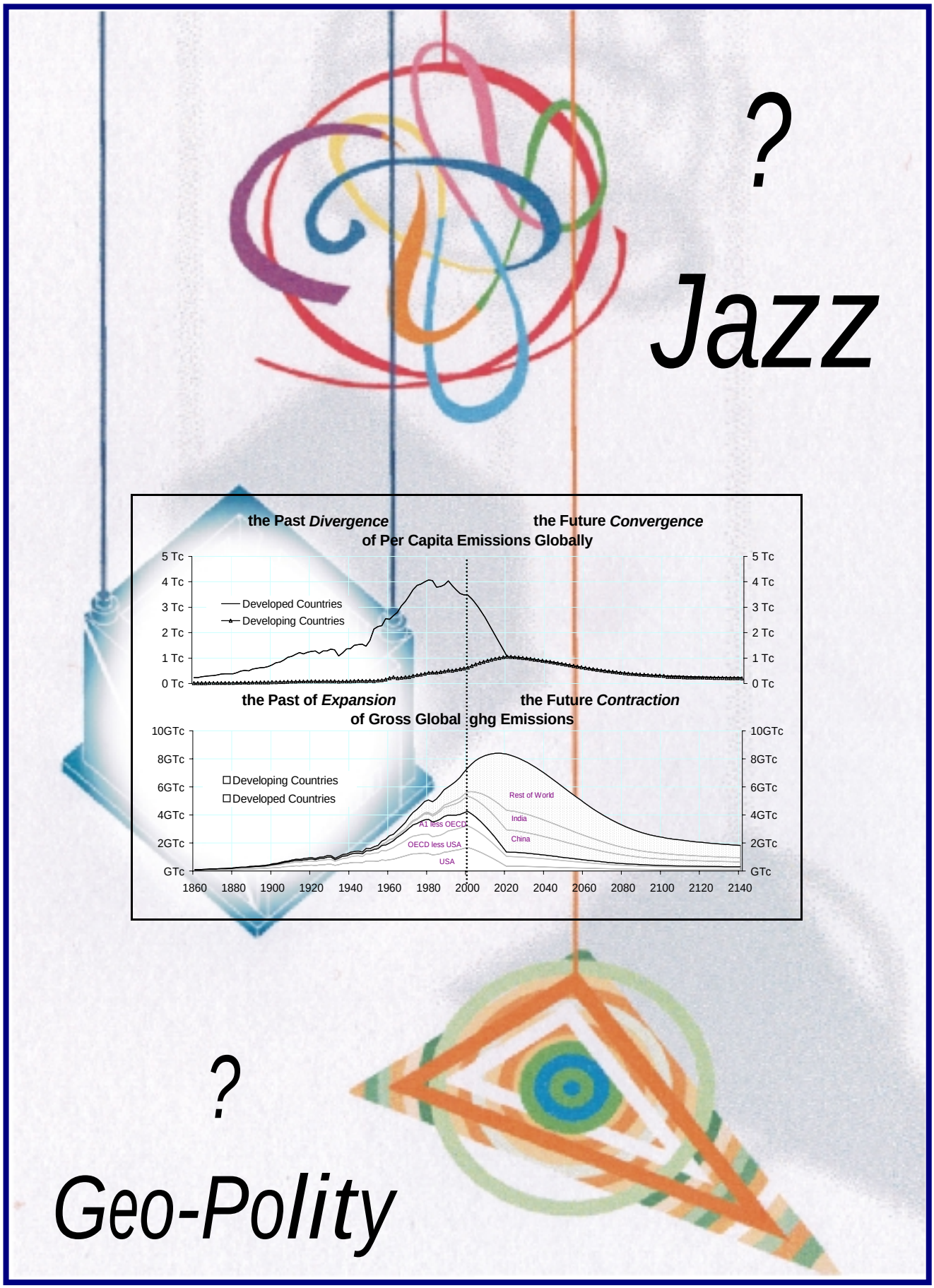
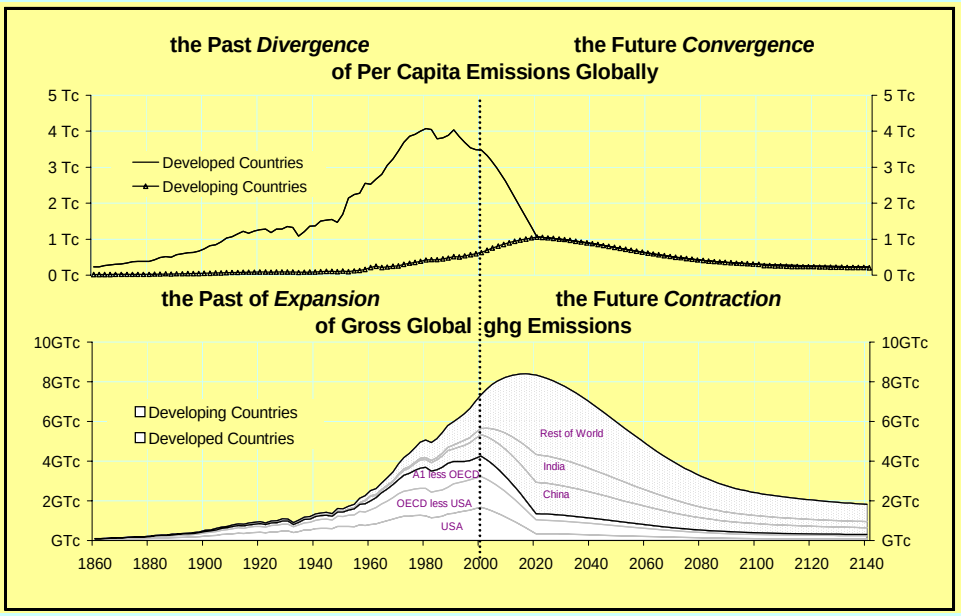

?
Jazz
the Past Divergence
the Future Convergence
of Per Capita Emissions Globally
5 Tc
4 Tc
3 Tc
2 Tc
1 Tc
0 Tc
Developed Countries
Developing Countries
the Past of Expansion
the Future Contraction
of Gross Global ghg Emissions
10GTc
8GTc
6GTc
4GTc
2GTc
GTc
Developing Countries
Developed Countries
Rest of World
India
China
All less OECD
OECD less USA
USA
1860
1880
1900
1920
1940
1960
1980
2000
2020
2040
2060
2080
2100
2120
2140
?
Geo-Polity

FRAME-WORK or GUESS-WORK?
'JAZZ' and 'Geo-Polity' or just-JAZZ?

Academics in **IPCC Third Assessment Report Working Group 3** can explain and answer this fundamental question. The politicians already have.

"I do believe that 'contraction and convergence' provides an effective, equitable market-based framework within which governments can co-operate to avert climate change." **Michael Meacher MP, Environment Minister UK**

"That global partnership to avoid the danger of climate change requires that we start to discuss the arrangements for sharing of both responsibilities and entitlements, based on the principles of precaution and equity, that best defend the aspirations and security of all nations for the future. The approach of 'Contraction and Convergence' is precisely such an idea."
Svend Auken MP, Environment Minister Denmark



These thoughts are addressed to those preparing Working Group Three (WG3) of the Intergovernmental Panel on Climate change (IPCC) Third Assessment Report (TAR).

They are supplied by: -

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FRAMEWORK or GUESSWORK? 'JAZZ' & 'GEO-POLITY' or JUST JAZZ?

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IPCC Third Policy Assessment - General synthesis remarks about draft

Inconsistency internally

So far, the IPCC TAR WG3 mitigation policy drafts have no internal consistency.
In their present state they will may evolve to create confusion for the future authors of the 'Summaries for Policy Makers' and then for the policy makers themselves.

Inconsistency with the UNFCCC

There is no obvious consistency with the already agreed global: -

1. objective and
2. principles of
   - precaution and
   - equity

in the United Nations Framework Convention on Climate Change (UNFCCC).

Paradigm shift from 'no-regrets' . . . .

The fundamental failing at this point in the drafts concerns the failure to explicitly recognise the generically different attitudes that exist towards the existence of the objectives and principles of the UNFCCC.

The dominant perceptions and policy approaches during the 1990's were: -

1. 'contrariansim',
2. 'no regrets' - do it if it makes sense anyway, maybe there's no problem, and
3. 'look & learn' or 'make-it-up-as-you-go-along' or hedging & guess-work.

To the . . . . Precautionary Paradigm

IPCC Working Group One scientists are now clearly on the record affirming the: -

> *'critical situation'* we are in with a *'rapidly changing climate'*, and that we *'must act soon'*. (Ewins and Baker. 24 12 1999 - The Independent, UK).

This affirms the need for action in a precautionary framework, not more guess-work.

'Bolin Dictum'

Former IPCC chairman 'Bert Bolin's Dicutm' was: -

> *"Where differences of approach and perception exist, IPCC's job is to reveal these and to explain them,"* (WG3 SAR Montreal May 1993).

This recognised the sensible way to deal with contentious issues in the IPCC debates.

This dictum has not yet been applied with regard to the most basic difference of approach to the problem of climate change and how to mitigate it. This is the most serious problem in the drafts at this time.

In this paradigm shift, the global policy relationship between: -

- 'evolution' and random guess-work and a
- 'constitution' or evolution within a precautionary frame-work

must be addressed in the TAR.

Global Orientation

JAZZ, FROG and Geo-Polity

We can face this critical situation with a frame-work, or guess-work or chaos.

The scenarios 'Geo-Polity' 'JAZZ' and 'FROG', (see http://www.wbcsd.ch/scenarios/) or 'stories-of-the-future' of the World Business Council for Sustainable Development address this. This material was published under the name of TAR/WG3/SRES Lead Author Gerald Davis of Shell International in late 1997.

To some extent these have informed conceptualization of the draft WG3 Special Emissions Scenarios (SRES) which is the 'non-policy' document. They do not yet inform the content or the conceptualization of the TAR/WG3 itself, which is where mitigation policy and any conflicts about these are supposed to be explained. To help policy makers face this paradigm shift, this omission should be redressed.

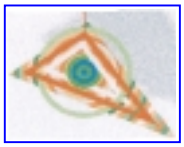
In the light of the warnings from the scientists, the questions arising are these.

1. JAZZ - Do we merely act 'aspirationally' in the culture of 'markets' and 'increased efficiency' (JAZZ) without targets and timetables even as per Kyoto?
   This is the position of David Victor of the CFR, TAR author and Kyoto antagonist (http://www.gristmagazine.com/grist/heatbeat/debates011700.stm).

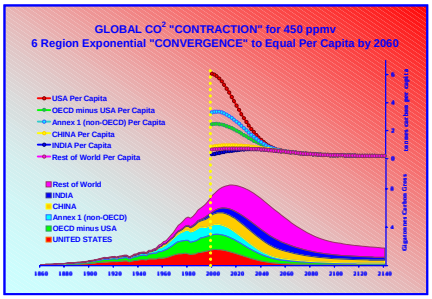
   It is the cultural habit and habitat of some 'progressive' big business and its lobbyists. This position, like the one that follows, effectively defaults to antagonism to the UNFCCC as well as the Kyoto Protocol.

2. FROG - (First Raise our Growth) - Do we just carry on regardless, acting as usual, with contrarianisms, hedging and disagreements until it is too late to do anything effective? This position is advocated by the Global Climate Coalition by default.

3. Geo-Polity - Do we now act collectively and rationally on the already agreed basis of precaution and equity, as the objective of the United Nations Framework Convention on Climate Change (UNFCCC) requires us to do (with GEO-Polity or Global Environmental Organisation)?



This position is advocated by the European parliament for example: - (http://www2.europarl.eu.int/omk/omnsapir.so/pv2?PRG=CALEND&APP=PV2&LANGUE=EN&TPV=DEF&FILE=980917).



4. A fourth question arises as to the 'mix' of these three, where for example Kyoto is a mosaic of one, two and three that - in failure - defaults to either one or two, but without three.

Third Assessment Report (TAR) Structure

Some authors suggested that general discussion around these points at this stage of the evolution of the drafts (February 2000) was as helpful as - even more helpful than - specific proposals line-by-line for textual alternative wording. So here are: -

Some Specific Suggestions

1. This meta-level choice about the future and how to address it - defaults or design - should be spelled out using the WBCSD story lines.
2. Chapters ONE (Scope) TWO (Mitigation Policy) & TEN (Decision-Taking Framework) are the chapters where consistency with the UNFCCC needs to be explained in terms of the choices above.
3. It is from these chapters and the establishment of consistency here with the UNFCCC and the precautionary paradigm that the general internal consistency of the report as a whole needs to be referenced.
4. There is so much discursive and reductionist material in the report at this time, that in parts it appears to take on the character of repudiating WG1 and the UNFCCC. It is diversity as diversion.
5. It is important to keep clear at a headline level that most argue that the objective of the UNFCCC is unachievable without the precautionary imperative of global carbon contraction and the diplomatic imperative of the equity of convergence.
6. And while informal understanding of the need to manifest contraction and convergence by some default, in the view of some represents a possible scenario for being consistent with the UNFCCC . . . . . .
7. formal *"Contraction and Convergence"* represents the basis of being consistent with the UNFCCC on a precautionary basis by design in the view of others.
8. Jazz [as guess-work] and Geo-Polity [as frame-work] should be used to highlight the difference of the informal and the formal way of understanding *"Contraction and Convergence"*
9. Formal *"Contraction and Convergence"* is a widely know global policy concept which is written up not only in peer-reviewed literature (Refs. supplied by the TSU), but also passed as parliamentary resolutions over the last ten years. It represents a rigorous and pre-defined application of the objective and principles of the UNFCCC.
10. So chapters ONE, TWO and TEN of TAR WG3 drafts should reflect the literature that reflects this approach too. For the purposes of internal consistency, the product of this review should be available to authors of the other chapters of the report.

Specific Comments

Equity is the basis of the UNFCCC. The TAR section on 'Equity' [Chapter 1, Page 18, Line 5 onwards], should try to ensure that the language has shared meaning in the inter/intra-national/generational matrix posed [p19 Line 4 onwards].

EQUITY - Resolving the epistemological conflict

Equity has related, varied and in some ways contradictory usage in English.

1. Justice - Natural, Human, Constitutional & Legal i.e. perennial properties (ontology) and the common good.
2. Fairness - Social and Ethical i.e. distributional rights and universal/religious responsibilities - effectively in this context 'rights-by-people'.
3. Shares - Cash-convertible fractions of capital as property rights, or equity as shares of 100% - effectively in this context 'rights-by-income'.
4. Collateral - total of owned cash-convertible fractions of capital, less debts i.e. equity as 100%.

Because of rising atmospheric CO2 concentrations, the global climate crisis represents a condition of increasing negative global ecological equity.
This reflects the incurred conflict in the above uses of the term equity.

Formal *"Contraction and Convergence"*, resolves this conflict, affirming a global 'epistemology of equity' following D. Meadows (The Economist 1995) - as cited in Lovins 1999, as follows: -

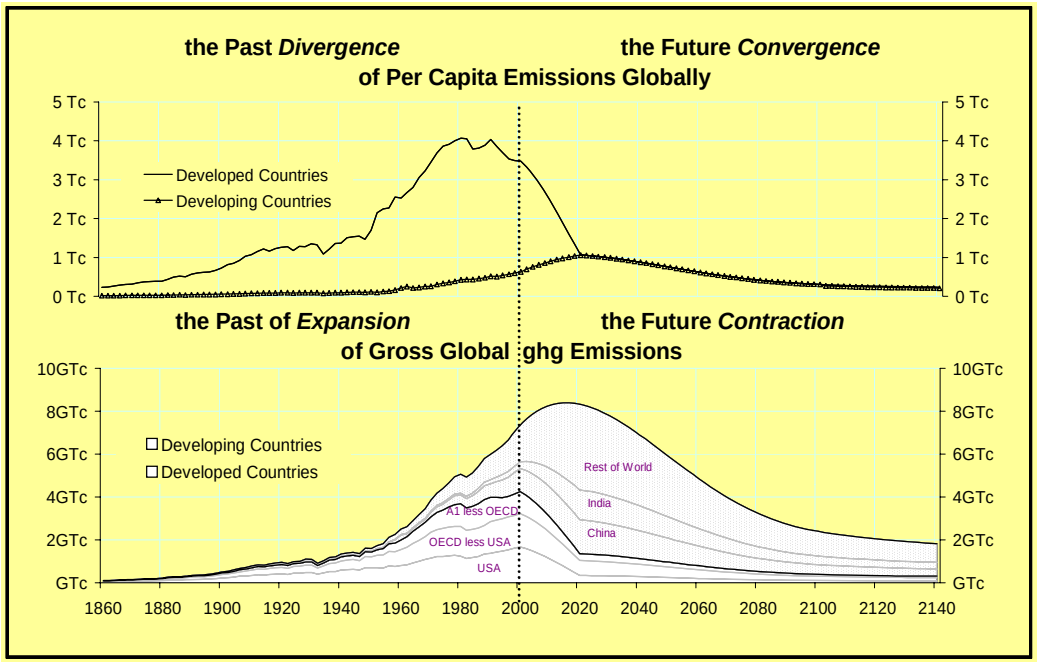
1. The precautionary (pre-determined) emissions 'contraction budget' is the basic collateral for climate stability (natural capital) or the 100% 'green' equity.
2. Since emissions shares globally are currently proportional to income [$s per tonne carbon], the present distribution represents a randomly unsustainable and socially inequitable dominance of 'blue' or commercial equity
3. A global solution to this will only be achievable based on a 'constitution' which agrees to a deliberate convergence by an agreed date to a pre-distribution of this 100% as emissions 'commitment/entitlements' that become proportional to people or 'red' equity within the 100% collateral available.

Expansion and divergence have dangerously embedded these divergent meanings of equity. This growing conflict between the blue, red and green dimensions of equity is deepening the overall condition of negative ecological equity or accelerating loss of natural capital in the form of climate stability. This divergence must be corrected if arrangements and planning for ecological recovery are to be useful and effective.

The present thesis of blue equity and its antithesis with red equity must be re-synthesized within the green equity, i.e. with a controlled decrease of negative global ecological equity or what becomes the *"United Nations Framework Constitution for Contraction & Convergence"(UNFCCC).* The UNFCCC and its objective are based on the principles of 'Precaution' (emissions contraction) and 'Equity' (emissions convergence) where 'Efficiency' (emissions trading) is not a principle as such and therefore cannot sensibly be cast in the role of leading the entire process. It is only meaningful in the context of contraction and convergence, i.e. seen simply as a performance indicator and understood as a *derivative* of the above. On its own it is not an end, so it cannot be 'the means'.

Correcting titles & images - 'Framing the Problem, Framing the Solution'

Chapter 1, Page 4, Line 10 onwards, the following should be resolved in the section presently called *'Framing the Problem'*. Using the title *"carbon trajectories for stabilisation at 450 ppmv,"* authors have introduced contraction and convergence imagery at the outset (called fig 1.1). This early introduction is sensible as the TAR WG3 is fundamentally about mitigation [i.e. about 'solutions' not just about rehearsing problems], and contraction and convergence is about solutions.



<u>'Past Expansion and Divergence' - 'Future Contraction and Convergence'.</u>

So the first suggestion is that this section could sensibly be called and imaged as, *'Framing the Problem, Framing the Solution' or 'Past Expansion and Divergence, Future Contraction and Convergence'* with an image such as above to represent this.

However, the imagery and the subsequent language used to address it, are problematical. Moreover, they - so far - fail to represent the published literature, imagery and political agreements based on contraction and convergence.

With regard to the present image in the draft: -

1. It is arbitrary in its derivation - i.e. it has no source.
2. It appears to have been semi-randomly generated. Its computation is obscure. The implication is that it was 'modeled' but is unclear as to what the integrating assumptions are. <u>In other words, it is entirely unclear as to why the curves are behaving as they do - i.e. so actually achieve an overall contraction consistent with a 450 ppmv outcome - other than in some apparently accidental way</u>.
3. Specifically, it appears to represent the discourse about the contraction and convergence 'trajectories' of Annex One and Non-Annex One that appear later in chapter one (between lines 11 and 55 on page 23 in section 1.4 - 'Alternative Development Pathways'). This 'binary adversarial' approach is politically unrealistic and a sub-optimal recognition of the opportunities in formal *"Contraction and Convergence"*.

This goes to the fundamental question in this report. What is the future with regard to humanity in general and its/our influence on global climate change, and why will this future be whatever it turns out to be? Will it be led by negativistic anti-precautionary guess-work (JAZZ) or a positivistic precautionary framework (Geo-Polity)?

So far the whole TAR WG3 draft report seems largely trapped in the negativistic literature of the 'economics of resistance', written during the 1990s. In other words it draws on the discourse which was generated at a time when the generic character of the (largely but not only, 'economic') commentary regarding policy responses to global climate change was in the 'no-regrets' mode of thinking and not in the 'precautionary' mode.

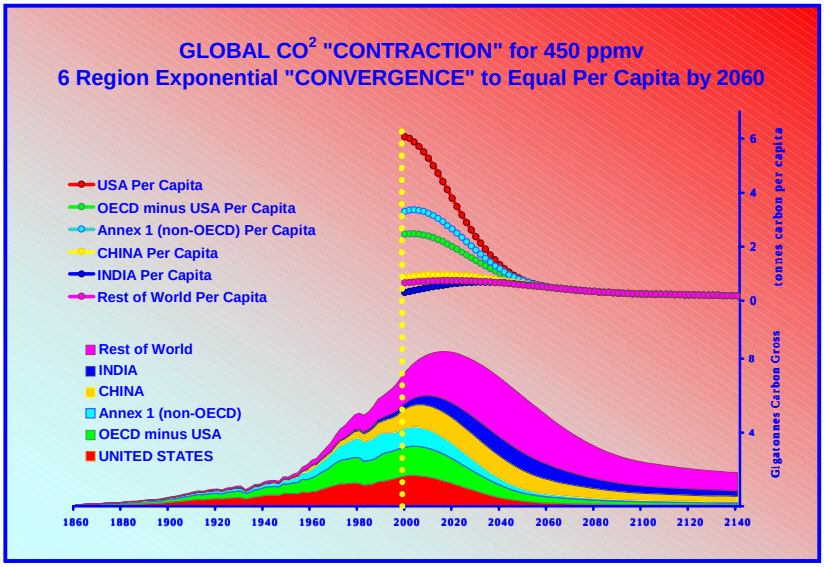
Clearly the situation has now changed. Scientists in IPCC WG1 (Ewins, Baker) have taken initiatives in public (23 12 1999) using language regarding the urgency of responding in a precautionary way to human-induced global climate changes.

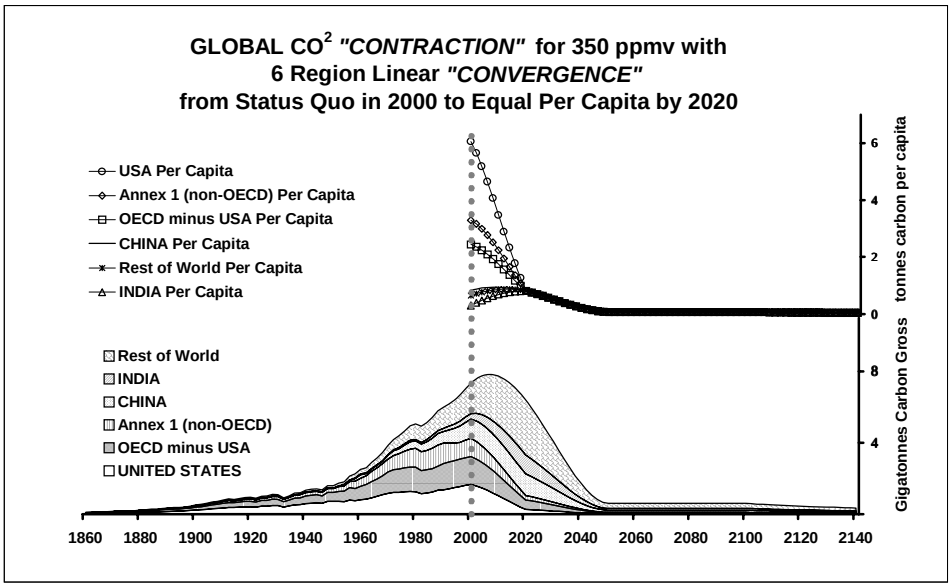
It is vital that the TAR and especially its 'scene-setting' chapter - The scope of the Assessment' - responds to these changed circumstances by drawing on the literature and imagery that has responded to - or indeed anticipated - these changed circumstances.

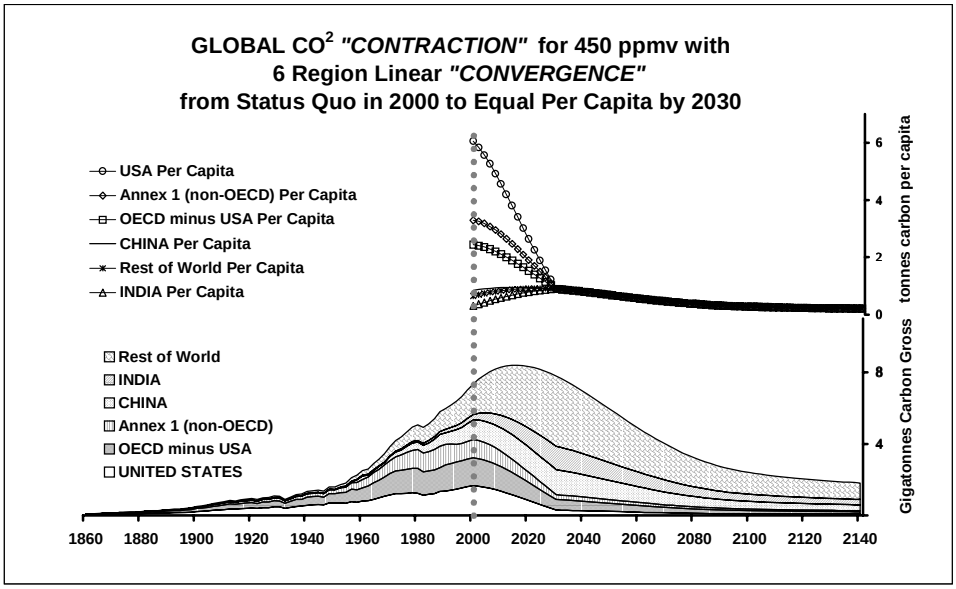
We propose that the imagery used at present is either accompanied by or preferably replaced by published imagery from specifically computed contraction and convergence budget runs (see http://www.gci.org.uk/ccweb/test/cac.html) such as those which follow since they demonstrate clearly: -

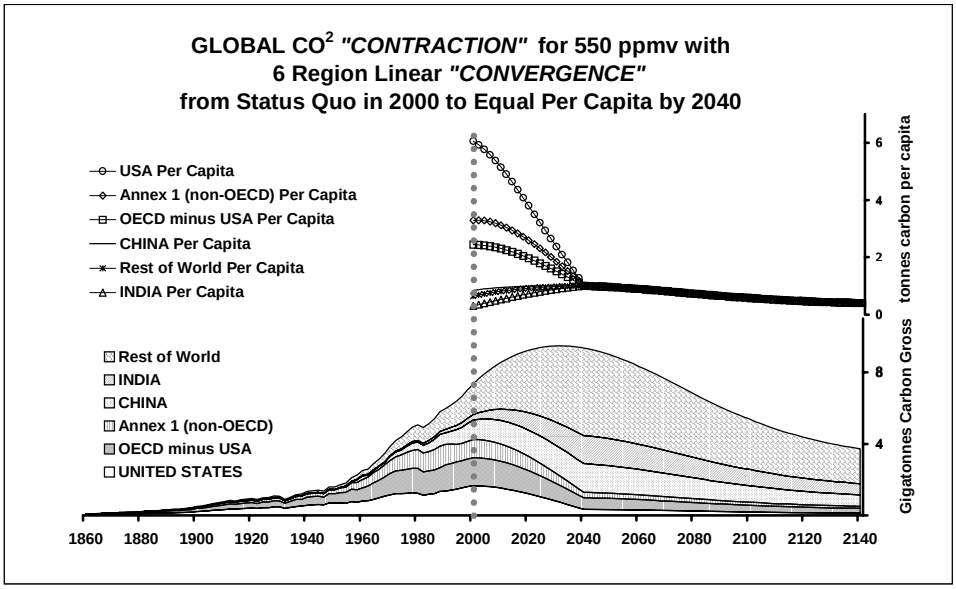
1. the 100% 'contraction' budget or equity or collateral (the global budget) computed consistent with a pre-specified outcome value (in the e.g. chosen here and the TAR drafts with the IPCC SAR 450 ppmv integral), and the
2. the derived equity of per capita 'convergence ', from initial shares [that are proportional to income] to future shares [that are proportional to population or a base year thereof], showing different rates of convergence, and the
3. shares of this equity (as shares of the 100%) to emphasize that it is emissions 'rights' that are so created that are also tradable if desired.

Published Imagery

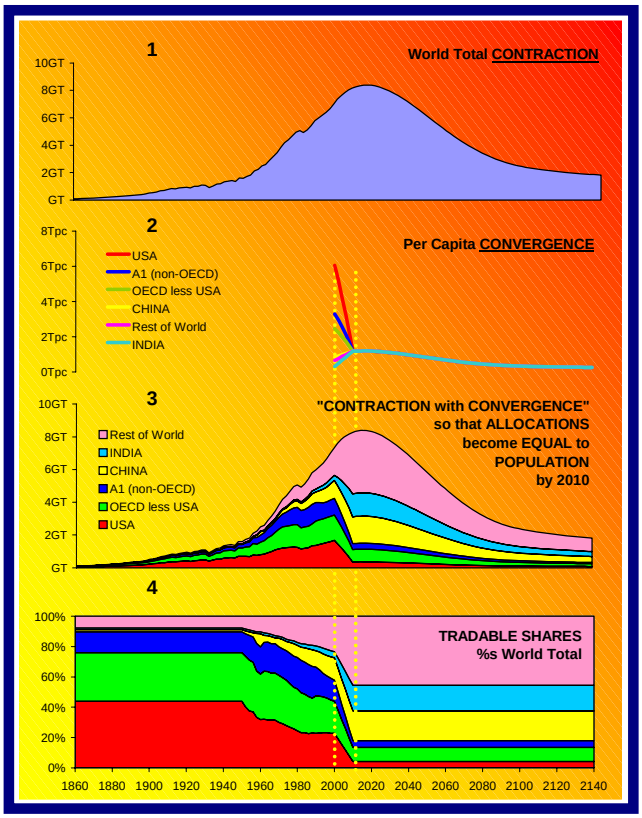


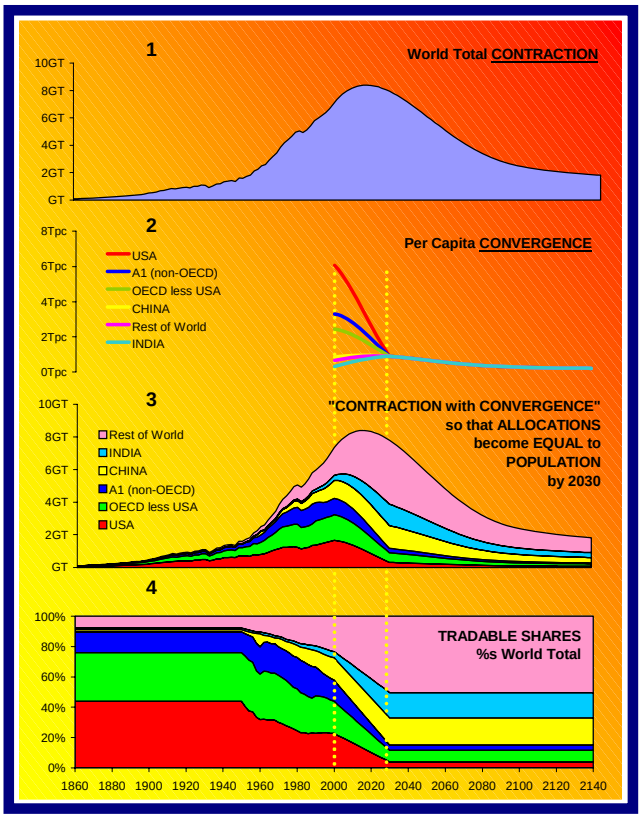

GLOBAL CO2 "CONTRACTION" for 350 ppmv with
6 Region Linear "CONVERGENCE"
from Status Quo in 2000 to Equal Per Capita by 2020
USA Per Capita
Annex 1 (non-OECD) Per Capita
OECD minus USA Per Capita
CHINA Per Capita
Rest of World Per Capita
INDIA Per Capita
Rest of World
INDIA
CHINA
Annex 1 (non-OECD)
OECD minus USA
UNITED STATES
tonnes carbon per capita
Gigatonnes Carbon Gross
1860 1880 1900 1920 1940 1960 1980 2000 2020 2040 2060 2080 2100 2120 2140

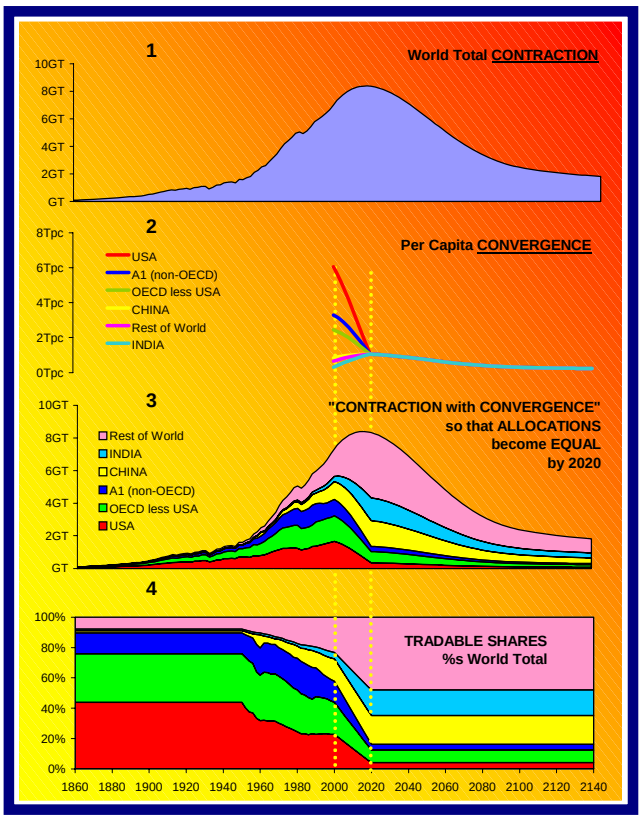

GLOBAL CO2 "CONTRACTION" for 450 ppmv with
6 Region Linear "CONVERGENCE"
from Status Quo in 2000 to Equal Per Capita by 2030
USA Per Capita
Annex 1 (non-OECD) Per Capita
OECD minus USA Per Capita
CHINA Per Capita
Rest of World Per Capita
INDIA Per Capita
Rest of World
INDIA
CHINA
Annex 1 (non-OECD)
OECD minus USA
UNITED STATES
tonnes carbon per capita
Gigatonnes Carbon Gross
1860 1880 1900 1920 1940 1960 1980 2000 2020 2040 2060 2080 2100 2120 2140

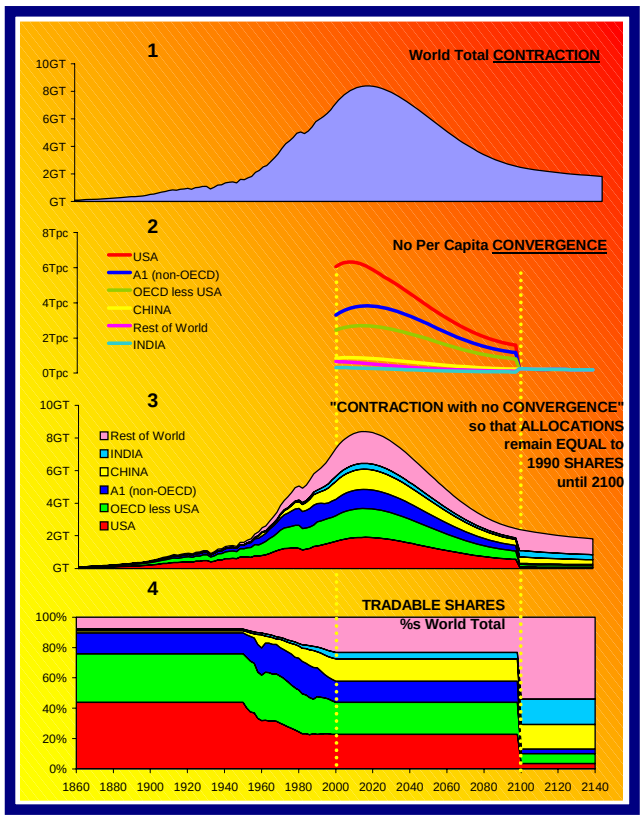

GLOBAL CO2 "CONTRACTION" for 550 ppmv with
6 Region Linear "CONVERGENCE"
from Status Quo in 2000 to Equal Per Capita by 2040
USA Per Capita
Annex 1 (non-OECD) Per Capita
OECD minus USA Per Capita
CHINA Per Capita
Rest of World Per Capita
INDIA Per Capita
Rest of World
INDIA
CHINA
Annex 1 (non-OECD)
OECD minus USA
UNITED STATES
tonnes carbon per capita
Gigatonnes Carbon Gross
1860 1880 1900 1920 1940 1960 1980 2000 2020 2040 2060 2080 2100 2120 2140

In the use of such imagery it is important to stress the independently variable and revisable rates of *"Contraction and Convergence"* that are possible.

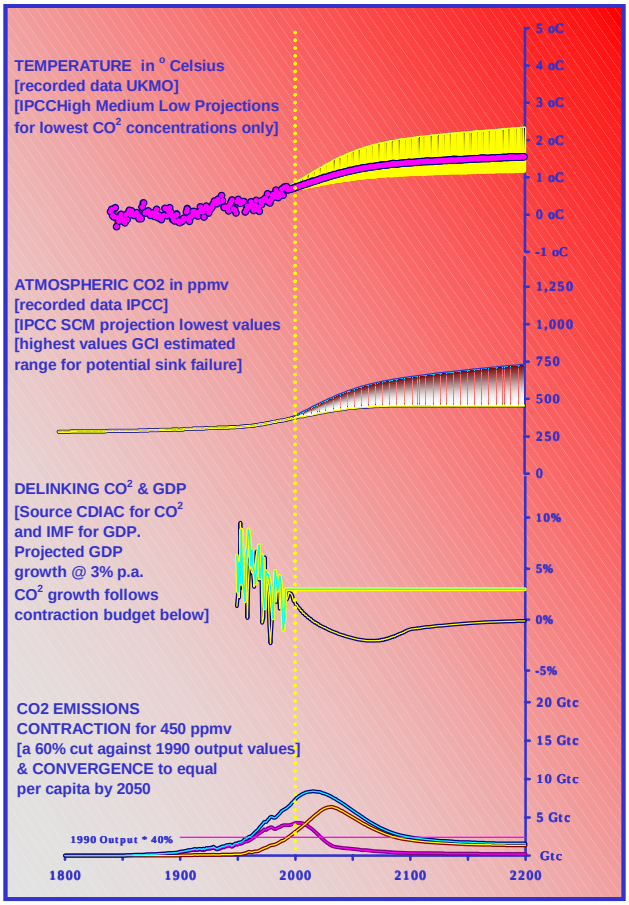


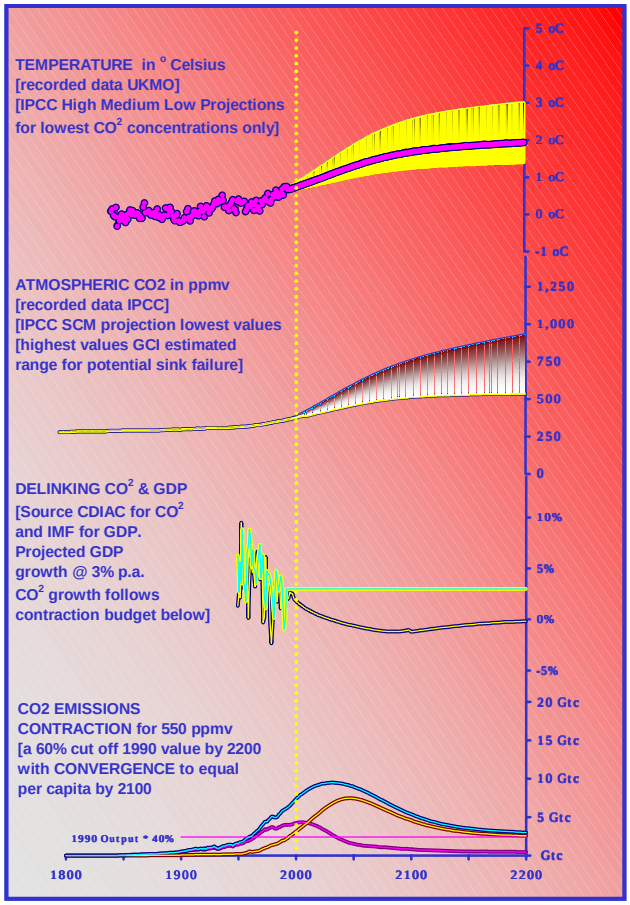






Linking these images to projections of temperature and concentrations is also required. Moreover, if the section page 4 line 18 section 1.1.1 continues to dwell on 'Emissions and Economic Growth', then it would be appropriate to have composite imagery that potrays CO2:GDP delinkage as well. The following images were published by GLOBE International in 1997.





International 'Efficiency/inefficiency' comparison

Composite imagery that includes comparative representation of international GDP:CO2 (or 'efficiency/inefficiency') de/linkage is required as well. The reality that the biomass-based economies are more effiecient that the fossilmass-based economies has been obscured by propaganda coming from the industrial countries.

Indicators are: -

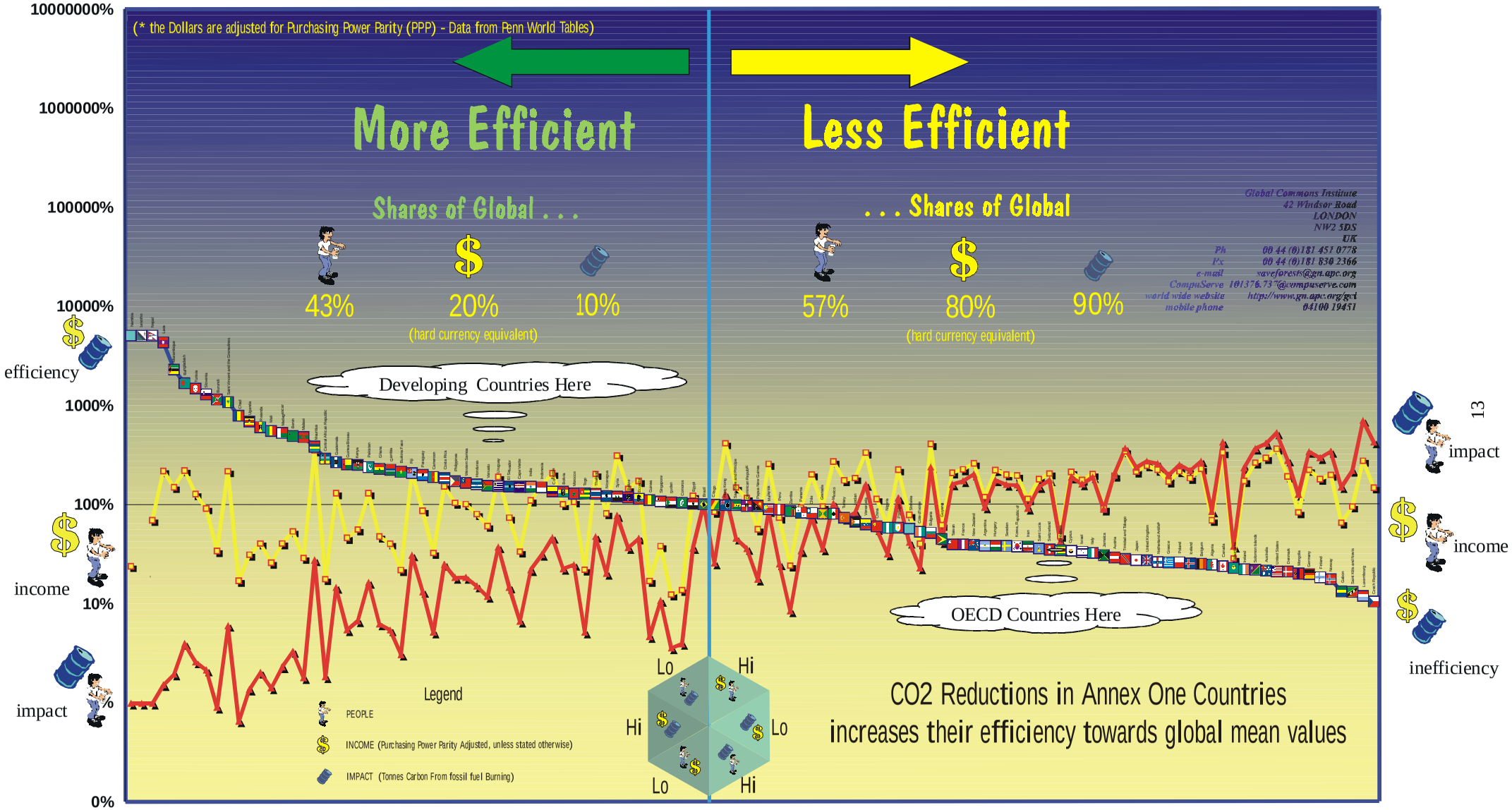
- per capita impact (as tonnes of carbon from fossil fuel consumption)
- per capita income (as national currency units adjusted for international purchasing power disparities or exchange rate distortions)
- 'carbon-efficiency' as the number of dollars per tonne

The ratio between averages for per capita income and carbon impact, go from: -

- Low per capita income/impact at high efficiency at one end to
- High per capita income/impact at low efficiency at the other.

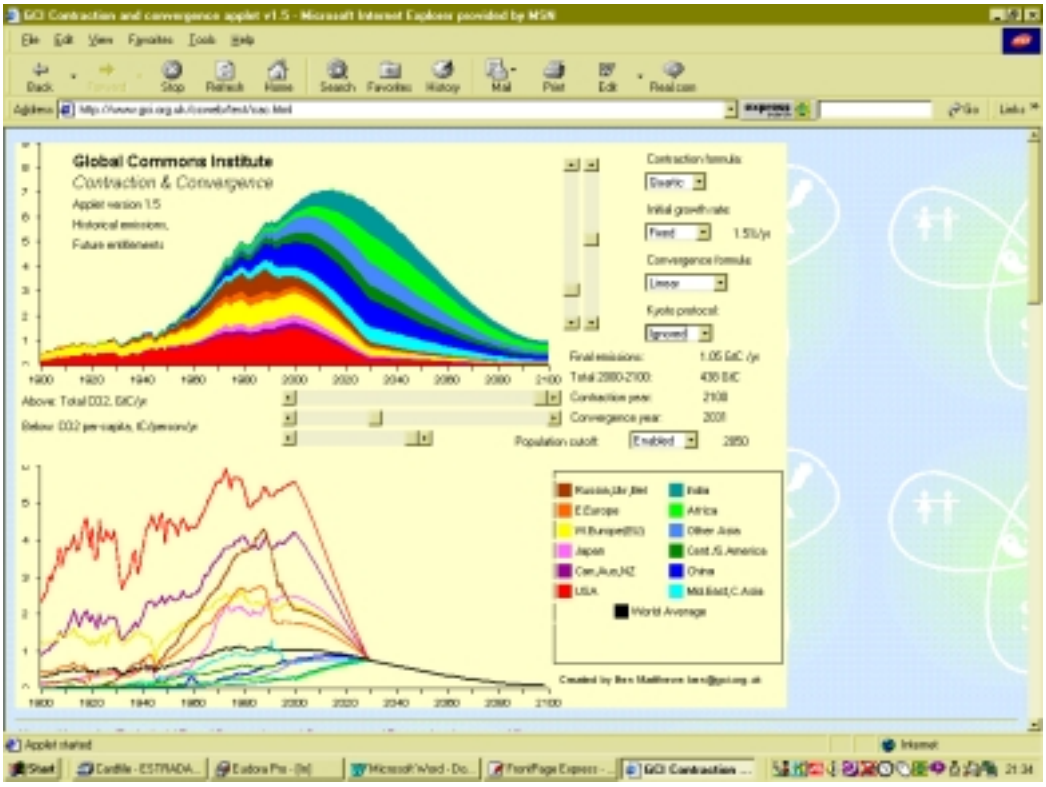
The next graph shows this on a comparative international scale: - this dollar/tonne carbon 'efficiency' decreases proportional to the increase in 'wealth'.

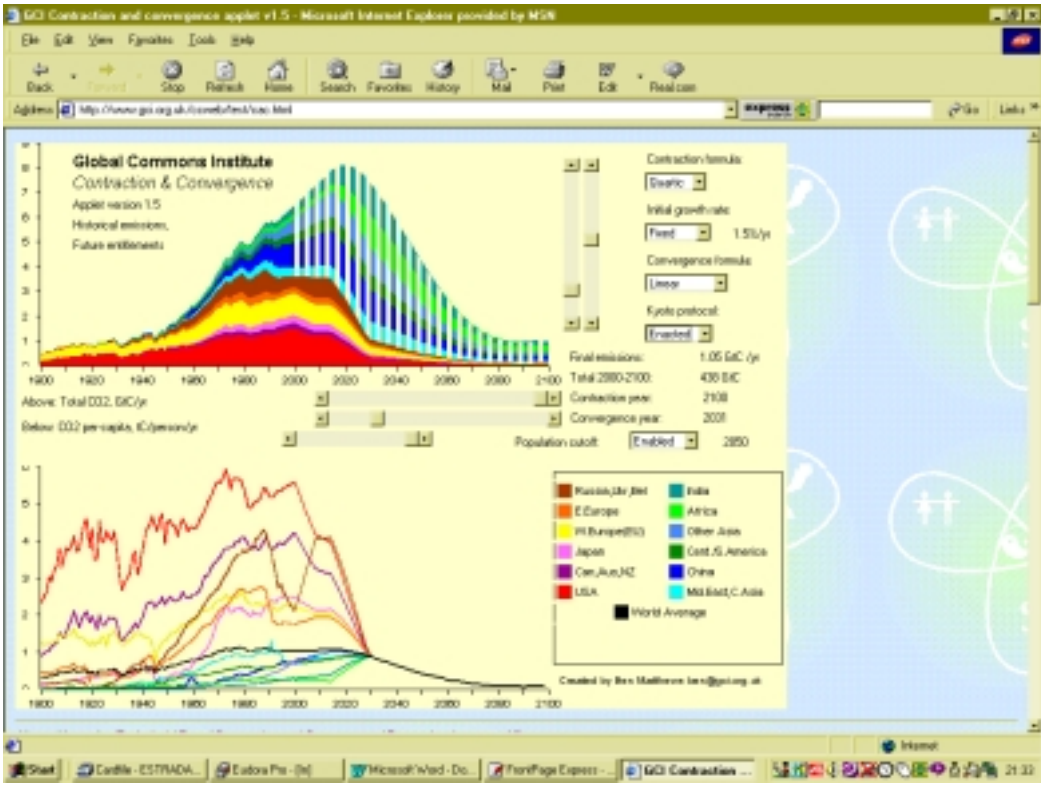
$s*/tonne carbon EFFICIENCY RANKINGS for 1990



This graphic compares the dollar/tonne "EFFICIENCY" for 120 countries in 1990.
Dollars (INCOME) are adjusted to "Purchasing Power Parity" (PPP). Tonnes (IMPACT) are of carbon from CO2 from fossil fuel burning.
INCOME per capita is shown on the yellow line. IMPACT per capita is shown on the red line.
EFFICIENCY is the ratio between INCOME and IMPACT and international rankings are shown in the line of flags.
The trend in the graphic shows that poor countries are much more efficient than rich countries.

Ultimately it would be sensible to draw policy maker's attention to inter-active C&C imagery of the following kind: - **APPLY** ***"Contraction and Convergence" at*** **http://www.gci.org.uk/ccweb/test/cac.html.** This version of the model will shortly have 'responses' to ghg emissions budgets and variable land/sea sink functions set by the user for atmospheric ghg concentrations and temperature with an attempt to portray threshold events to 'nasty surprises'.





WORDING for REASONING BEHIND "Contraction and Convergence"

1. *"Contraction and Convergence"* responds to human caused global climate change as 'a global security interest' that must now be handled on a precautionary global basis.

2. *"Contraction and Convergence"* is a formal and internally consistent framework for sharing greenhouse gas emissions on a global basis that is, consistent with the *already agreed* Objective and Principles of the United Nations Framework Convention on Climate Change (UNFCCC).

   These key features of the UNFCCC and of *"Contraction and Convergence"* are sequenced as follows:

   - The <u>global Objective</u>: - the stabilisation of ghg concentrations in the global atmosphere at a non-dangerous level.
   - The <u>global organising Principles</u> of:
     - *Precaution* and
     - *Equity*
   - The globally *efficient* emissions trading process enabled through the above.

3. The *"Contraction and Convergence"* framework puts the future evolution of climate mitigation policies within a universally consistent set of procedures for internationally distributing future ghg emissions entitlements, as the UNFCCC objective, principles and trading require [see following page]. In other words it provides shared language with shared meaning that integrates these key features within a Constitution.

4. All other types of approach, however sub-globally and locally logical they might seem, cannot be effective at a global level. The endemically random character of the 'evolutionary sub-global' approach will always make specification as well as achievement of its objective impossible, so disabling the UNFCCC.

5. Scientist and politicians have re-emphasised that, as atmospheric concentrations of greenhouse gases continue to rise, the probability of rapid non-linear events - their term for nasty and uncontrollable surprises - in the behaviour of the global climate system increases. Emissions have therefore to be controlled and reduced globally so as to slow their rising accumulation in the atmosphere as rapidly as possible.

6. So great are the hazards presented by global warming that the choice between the evolution of policies and measures with or without the formal framework of *"Contraction and Convergence"* amounts to deciding between control and chaos.

7. However difficult a road it might seem, *"Contraction and Convergence"* could - if adopted with international emissions trading - be the means that enable humanity to escape from its present vicious circle into the virtuous cycles of sustainability.

8. *"Contraction and Convergence"* is moreover, consistent with almost every policy statement on reducing the effects of climate change to have been issued in the past decade by signatories to the UNFCCC. It is therefore the key concept that enables these statements to acquire effective meaning [see following pages].

"Contraction, Convergence, Allocation & Trade"- A Simple Formulation

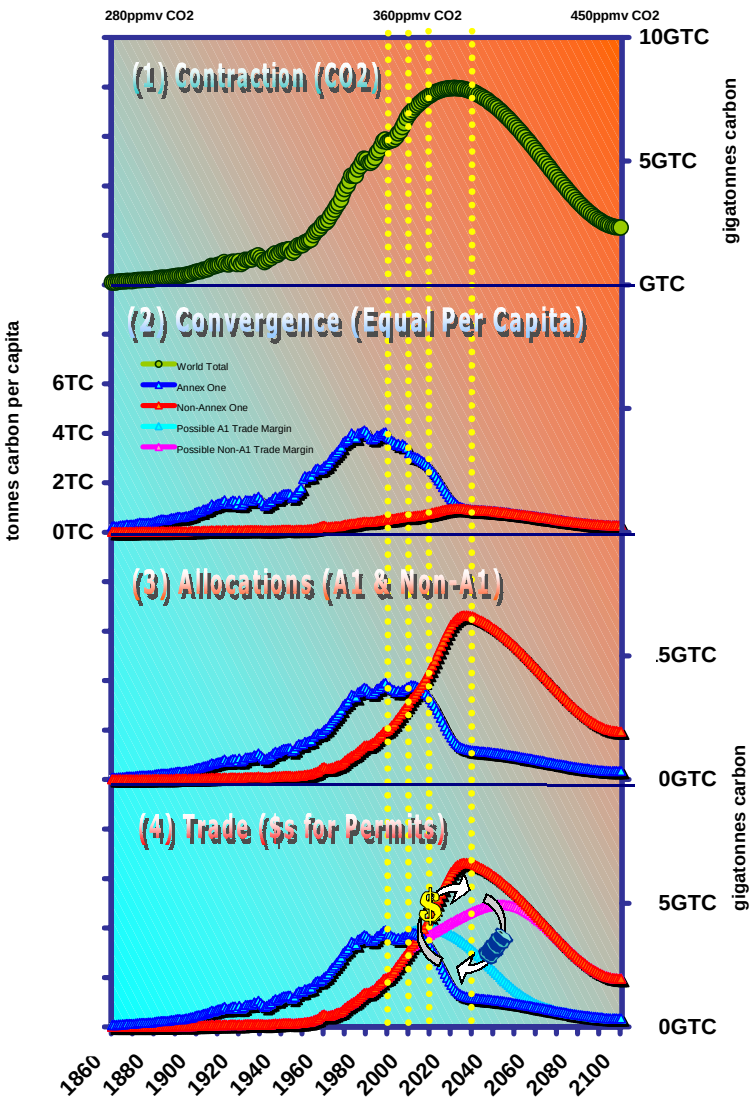
Simply illustrated, here is a global model with two zones and one greenhouse gas, industrial CO^2. Zone One is the Annex One group of the UNFCCC. Zone Two everybody else.

(1) This example has a **Contraction** budget calculated for the goal of stabilising atmospheric concentrations of CO^2 at 450 ppmv by 2100. This means a total emissions budget of 640 billion tonnes of carbon from CO^2 under a global curve progressively limiting and reducing the annual output of global emissions to 2.3 billion tonnes by 2100, or 40% of the value in 1990.

(2) **Convergence** to equal per capita entitlements globally is set to complete by 2030 exponentially.

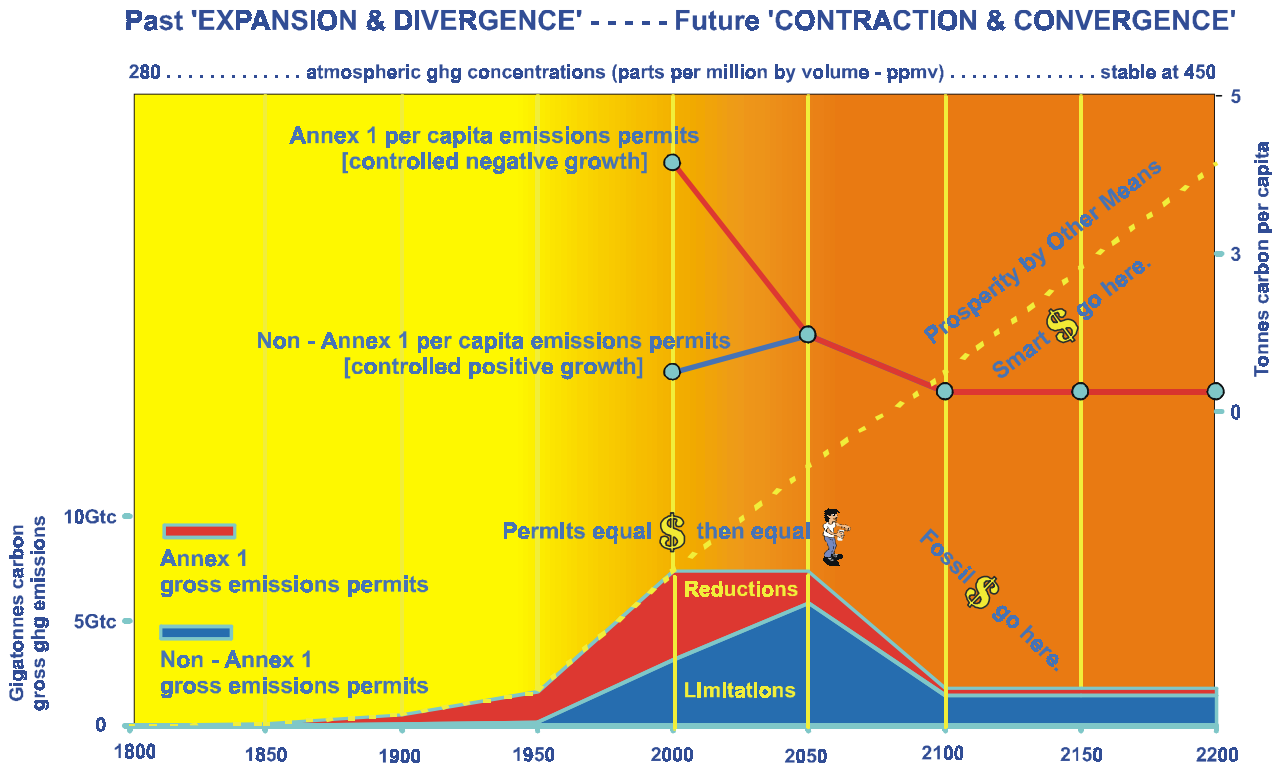
(3) The **Allocation** of the emissions entitlements is the product of the contraction budget and the convergence rate.

(4) Once the first three steps are secure the option of the global **Trade** of the entitlements can be exercised. Only with the global cap secure could it be claimed that this trade would be indexed to the control of atmospheric greenhouse gas concentrations.



In other words without the global calculus of *"Contraction and Convergence"* the trade will be unbounded and useless and probably dangerous.

THE USA and "CONTRACTION & CONVERGENCE"



The US has affirmed:

1. That 'a global solution' to the 'global problem' of climate change is needed.
2. The objective of the UNFCCC [stabilisation of ghg concentration in the global atmosphere] is ghg emissions 'contraction' by definition [here 2000 - 2100].
3. That all countries must be involved in emissions control [here 2000 - 2200].
4. That a 'central organising principle' is applied to distribution (initially this was 'all countries will reduce ghg emissions by x% pro rata' [here 2050 - 2200]
5. The 'Byrd Hagel Resolution', where this central organising principle was modified to combine '<u>Reductions</u>' [controlled negative growth] with '<u>Limitations</u>' [controlled positive growth] giving 'convergence' [here 2000 - 2050].
6. That the 'commitments/entitlements' arising from this controlled 'contraction and convergence' must be 100% tradable.
7. That inter-emissions-budget-period borrowing must be allowed.

CONCLUSION

As there is no other way to combine all their requirements, *other than with anti-precautionary <u>guess-work</u>*, it is logical *minima* to observe that the US proposals are not in conflict with *"Contraction and Convergence"* to equal per capita tradable entitlements globally by an agreed date under a predefined global cap. It is also logical to ask what else is intended if not this?

The IPCC Third Assessment Report (TAR) should ask this question

SUGGESTED WORDING for "Contraction and Convergence"

The statement below is circulating for support. Current list appended.

A statement by Michael Meacher, the UK Environment Minister, has recognised the arguments above. He recently told the Royal Geological Society that, *"the future of our planet, our civilisation and our survival as a human species . . . may well depend on [our responding to the climate crisis by] fusing the disciplines of politics and science within a single coherent system."*

"Contraction and Convergence" is such a system. It is the 'logical approach'. As Sir John Houghton, Chair of the Intergovernmental Panel on Climate Change Sciences (IPCC) recently told the British Association for the Advancement of Science, global greenhouse gas emissions must be reduced by more than 60% in less than a hundred years merely to stabilise their rising concentrations in the atmosphere. Even this value would be 70% higher than any time past. So faster reductions to a lower value are desirable because this lowers the risks of dangerous surprises in the global climate changes taking place.

"Contraction" - For precautionary reasons, all governments must collectively agree to be bound by such a target. This makes it possible to calculate the diminishing amount of carbon dioxide and the other greenhouse gases that the world can release for each year in the coming century while staying within this target. Subject to annual scientific and political review, this is the contraction part of the process.

"Convergence" - On the basis of equity, the convergence part means that each year's ration of this global emissions budget gets shared out among the nations of the world so that every country converges on the same allocation per inhabitant by an agreed date. This rate of convergence is negotiable but 2030 was the date Sir John suggested. The convergence method recognises that most people globally expect a 'pre-distribution' of the rights to 'global commons' of the atmosphere that observes the principle of globally equal rights per capita.

Once agreed, countries unable to manage within their shares would, within limits, be able to buy the unused parts of the allocations of other, more frugal, countries. Sales of unused allocations would give the countries of the South the income to purchase or develop zero-emission ways of meeting their needs. The countries of the North would benefit from the export markets this restructuring would create. And the whole world would benefit by the slowing the rate at which damage was being done. Bilateral emissions trade and related deals between UNFCCC Parties, would not form part of the negotiations in that forum.

Because *"Contraction and Convergence"* is an effective, equitable, efficient and flexible framework in which governments can co-operate to avert climate change, even some fossil fuel producers have begun to demonstrate positive interest in the concept.

Further, as Jubilee 2000 and Seattle have shown, governments and powerful interests are helped to change by coherent co-ordinated pressure from civil society.

'CIVIL SOCIETY' SUPPORT for "Contraction and Convergence"

Aubrey Meyer	Global Commons Institute (GCI)
Richard Douthwaite	Author of the Growth Illusion. Ireland
Mayer Hillman	Senior Fellow Emeritus Policy Studies Institute. UK
Titus Alexander	Chair Westminster UNA/Charter 99
Tom Spencer	Secretary General GLOBE Council
David Chaytor MP..	Chair GLOBE UK All Party Group
Andrew Simms	Global Economy Programme. New Economics Foundation
Annikki Hird	Student Cincinnati Ohio USA
George Monbiot	Journalist UK
J N von Glahn	Chairman. Solar Hydrogen Energy Group
Nick Robins	Director. Sustainable Markets Group IIED
John Whitelegg	Eco-Logica Ltd
Nicholas Hildyard	The Corner House. UK
Helen N Mendoza	Haribon Foundation and SOLJUSPAX. Philippines
Sam Ferrer	Green Forum Philippines
Ramon Sales Jnr.	Philippine Rural Reconstruction Movement
Larry Lohmann	The Corner House. UK
Prof Daniel M. Kammen	Energy and Society. Director. Renewable and Appropriate Energy Laboratory (RAEL) Energy and Resources Group (ERG) University of California Berkeley. USA
Hans Taselaar	ESD. Assoc. for North-South Campaigns. Netherlands
Anil Agarwal	Director Centre for Science & Environment. New Delhi. India
Dr Frances MacGuire	Climate Change Policy Coordinator Friends of the Earth (England Wales and Northern Ireland)
Matthias Duwe	Student. SOAS. London. UK
Krista Kim	Student. UC Berkeley. CA US
Agus Sari	Executive Director Pelangi. Indonesia
Patrick Boase	Chairperson. Letslink. Scotland
Joerg Haas	Germany
Tony Cooper	MA DipStat MBCS CEng GCI
Thomas Ruddy	Chairperson and editor "Computers and Climate"
Paul Burstow	UK
Mark Lynas	Co-ordinator. Corporate Watch. UK
Philippe Pernstich	Global Commons Institute
Rohan D'Souza	Yale University. USA
Boudewijn Wegerif	Project Leader. Monetary Studies Programme
Jyotic Parikh	Senior Professor Indira Gandhi Institute of Development Research India. National Project Coordinator. Capacity Building Project. UNDP Chairperson. Environmental Economics Research Committee EMCaB. Worldbank IPCC TAR Lead Author
Aniko Boehler	Chairperson. Senso Experience & Projects
Marc van der Valk	Barataria. Netherlands
Charlotte Pulver	UK
Charlotte Rees	UK

Paul Ekins	Forum for the Future. UK
Lara Marsh	Tourism Concern UK
Angie Zelter	Reforest the Earth. UK
Peter Doran	Foyle Basin Council (Local AGenda 21 Derry)
Paul Swann	Global Resource Bank
Adam Purple	Zentences
Martin Piers Dunkerton	Director Paradise Films UK
Alan Sloan	GRB Ecology Department UK
John Thomas	Energy Spokesperson Calderdale Green Party UK
Rick Ostrander	Relax for Survival USA
Christopher Harris	US
Carol Brouillet	Founder- Who's Counting Project. CA US
John Pozzi	Acting Manager Global Resource Bank
Icydor Mohabier	Georgia State University US
Christopher Harris	US
David Thomas	UK
Christopher Keene	Globalisation Campaigner Green Party of England and Wales
Piet Beukes	Industrial Missionar. ICIM South Africa
John Devaney	International Co-ordinator, Green Party of England and Wales
Jama Ghedi. Abdi Msc&MA	Gawan Environmental Centre. Somali NGOs
Julie Lewis	Centre for Participation. New Economics Foundation
Juliet Nickels	UK
Dr Caroline Lucas MEP	Member of European Parliament. Green Party
Dr David Cromwell	Oceanographer. UK
Prof. Colin Price	Environmental and Forestry Economics. Uni Wales. Bangor
Patrick McCully	International Rivers Network Berkeley. California USA
Samantha Berry	Post-graduate student (PhD)
Caspar Davis	Victoria. BC Canada
David J. Weston	Monetary Reform Group UK
Joseph Mishan	Stort Valley FOE local group
Ryan Hunter	Center for Environmental Public Advocacy. Slovak Republic
Dr. Elizabeth Cullen	Irish Doctors Environmental Association
Tom Athanasiou	Writer. USA
Jamie Douglas Page	UK
Rosli Omar	SOS Selangor. Malaysia
Michal Kravcik	People and Water. Slovak Republic
Daphne Thuvesson	Trees and People Forum. Editor/Forests Trees & People Newsletter. SLU Kontakt Swedish Uni. Agricultural Sciences
Chris Lang	Germany
Sarmila Shrestha	Executive Secretary. Women Acting Together for Change
Narayan Kaji Shrestha	Volunteer. Women Acting Together for Change
Wong Meng-chuo	Co-ordinator. IDEAL Malaysia
Amanda Maia Montague	international spiritual activist
Soumya Sarkar	Principal Staff Writer. The Financial Express
Sujata Kaushic	Editor Wastelands News. SPWD. NEW DELHI

Xiu Juan Liu	Department of Geography Uni of Sydney NSW 2006 Australia
Ross Gelbspan	Author 'The Heat Is On' and Pulitzer Prize-winning journalist
Barry Coates	Director World Development Movement UK
Aubrey Manning	UK
Andy Thorburn	Composer. Pianist and seed potato inspector. Scotland
Mike Read	Mike Read Associates. Australia
Shalmali Guttal	Focus on the Global South. India
Jennie Richmond	Policy Officer Christian Aid
Lavinia Andrei	Co-ordinator Climate Action Network Central & E. Europe
Dr. Ing. Joachim Nitsch	German Aerospace Center; 'System Analysis & Tech Assessment'
Karla Schoeters	Co-ordinator Climate Network Europe
Sibylle Frey	Researcher UK
Dr Ben Matthews	Global Commons Institute
Wolfgang Sachs	Wuppertal Institite Germany. IPCC TAR WG3 Lead Author
Bernd Brouns	University of Lüneburg Germany
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John Tuxill	School of Forestry and Environmental Studies. Yale University
Olav Hohmeyer	Prof. Dr. University of Flensburg
Grant Harper	Victoria. Australia
Frances Fox	Asst. Manager. Global Resource Bank
Ernst von Weizsaecker. MP (SPD)	President. Wuppertal Institute for Climate. Environment & Energy. Germany
Marci Gerulis	Graduate Student. Boston. Massachusetts. USA
András LUKÁCS	President Clean Air Action Group. Budapest. Hungary
Srisuwan Kuankachorn	Director. Project for Ecological Recovery. Bangkok. Thailand
Devinder Sharma	journalist and author New Delhi. India
Ryan Fortune	journalist. Cape Times. Cape Town. South Africa
Emer O Siochru	Fdn for the Economics of Sustainability (FEASTA) Ireland
Anne Ryan	National University of Ireland. Maynooth
David O'Kelly	Fdn for the Economics of Sustainability (FEASTA) Ireland
Youba Sokona	Exec. Secr. Internat Relations of ENDA-TM. Dakar. Senegal
Jia Kangbai	Managing Editor. The Progress Online. Sierra Leone
James K. Boyce	Economics Dept Uni Massachusetts Amherst. MA USA
Judit.Halasz	Green-Women. Hungary
Dr.Saleemul Huq	Executive Director Bangladesh Centre for Advanced Studies
Dr. Jean-Michel Parrouffe	Association Québécoise des Énergies Renouvelables
Guy Dauncey	Author Victoria. Canada
Dr. Alex Casella	Prof.& Director of Energy Studies. University of Illinois
Michael R. Meuser	Clary Meuser Research Associates. Santa Cruz. CA USA
Arthur H. Campeau Q.C.	Ambassador for Environment and Sustainable Development
Professor Jack Dymond	Oregon State University
Donald L. Anderson	Biologist.USA (Maine)
Douglas G. Fox. Ph.D.	Pres Fox & Associates. Fr. President. Air & Waste Management Association & Chief Scientist. USDA-Forest Service USA

Clive Hamilton	Executive Director. The Australia Institute
Yves Bajard, D.Sc.	Secretary, National Centre for Sustainability, Victoria, BC, Canada
Winona Alama	South Pacific Regional Environment Programme (SPREP)
Fatu Tauafiafi	Information and Publications Officer, South Pacific Regional Environment Programme (SPREP)
Maria Lourdes 'Pinky' Baylon	University of Cambridge UK
Ying Shen	student of environmental chemistry Oklahoma City, US
Susan Engelke	student Sacramento, California, US
Pierre-Jean Arpin	France
Dr. Muawia H. Shaddad	Sudanese Environment Conservation Society
Christer Krokfors	University of Uppsala, Finland
Jesus Ramos-Martin	MSc Ecological Economics Keele University, UK
Lelei LeLaulu	Counterpart International
John Vandenberg	Resource Planning & Development Commission, Tasmania, Aust.
Pervinder Sandhu	ART
Paul Gregory	Researcher
Eleanor Chowns	Co-Ordinator GLOBE UK
Jurgen Maier	Forum Umwelt & Entwicklung, Germany
Grace Akumu	Executive Director Climate Network Africa
Robert Engelman	Vice President for Research, Population Action International
Tim O'Riordan	Associate Director, C-SERGE, UK
Ted Trainer	Author 'Developed to Death', Austrialia
Barry Budd	Australia
Tim Lenton	Centre for Ecology and Hydrology, UK
Tony Whittaker	retired solicitor, founder member Green Party
Lesley Whittaker	writer, consultant and member of Devon County Council, founder member Green Party
Freda Sanders	research psychologist and finance director, founder member Green Party
Dr. Michael Benfield	ethicist, development consultant and investor, founder member Green Party
Oras Tynkkynen	climate campaigner, Friends of the Earth Finland
Prof David Crighton	Environmental Consultant to the Association of British of Insurers
Teddy Goldsmith	Editor The Ecologist Special Issues
Simon Retallack	Deputy Editor, The Ecologist Special Issues
Ian Meredith	Canadian Association for the Club of Rome
Emilio Sempris	Coordinator. National Climate Change Program (Panama)
Michael Roth	Queensland Transport. Australia
Carrie Sonneborn	Australian Cooperative Research Centre for Renewable Energy. Western Australia
Ali Bos	Postgraduate student. Canberra. Australia
Sungnok Andy Choi	Student - The Graduate Institute of Peace Studies
James Robertson	Asia-Pacific Network for Global Change Research. Japan
Thomas Bernheim	Expert Federal Planning Bureau. Belgium
Julian Salt	Project Manager, Natural Perils, Loss Prevention Council UK

APPENDIX - SUPPORT

Indian Government essay a *"Global Solution" at COP1*

Already recognising the ultimate flaw in the Berlin Mandate, the Indian Government made this statement at the end of the First Conference of the Parties (COP1).

> *"We face the actuality of scarce resources and the increasing potential for conflict with each other over these scarce resources. The social, financial and ecological inter-relationships of equity should guide the route to global ecological recovery. Policy Instruments such as "Tradable Emissions Quotas", "Carbon Taxes" and "Joint Implementation" may well serve to make matters worse unless they are properly referenced to targets and time-tables for equitable emissions reductions overall. This means devising and implementing a programme for convergence at equitable and sustainable par values for consumption on a per capita basis globally."*

The BYRD HAGEL Global Solution

In July 1997 US Senators Byrd and Hagel tabled a resolution about the US involvement with the Kyoto Protocol. It rehearsed all their objections to what they felt was the 'flawed' character of the Berlin Mandate and the impending Kyoto Protocol.

Their fundamental objection was to the 'global apartheid' in the UNFCCC between the Developed Country Parties of Annex One who were to observe commitments to control their ghg emissions, and all the Developing Country Parties who were not required to observe such commitments. The Resolution, adopted with a vote of 95 in favour and 0 against, clearly allows *"Contraction and Convergence"*.

"Now, therefore, be it Resolved that: -

> *(1) the US should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period."*

The crucial detail in the Byrd Hagel Resolution is in paragraph 1A. Two defining distinctions are maintained. The first is between the Annex One Parties and the Developing Country Parties. The second is between 'limit' ghg emissions and 'reduce' ghg emissions. Limitations of ghg emissions is controlled positive growth of ghg emissions and reductions of ghg emissions is controlled negative growth of emissions.

If we put these concepts together *"within the same compliance period"*, the paragraph can only translate into a process of formal *"Contraction and Convergence"*. Annex One Parties will reduce (or contract) their ghg emissions while the Developing Country Parties will limit their ghg emissions (so as to converge with Annex One Country Parties).

Technically, not just rhetorically, there has to be a 'convergence factor' to do this. It won't happen by accident. The authors and supporter of this resolution have to face the unavoidable question, *"what is this convergence factor?"*

The AFRICA GROUP respond

Recognising the mounting dangers the Africa Group of Nations took a clear initiative at the August 1997 negotiating session of the Ad Hoc Group of the Berlin Mandate (AGBM7). The group defined and presented the global solution now formally known as *"Contraction and Convergence"* to the final plenary session.

"As we negotiate the reduction of GHG, the countries of Africa believe that there should be certain principles that need to be clearly defined.

1. *There must be limits on all GHGs if the danger to our climate is to be averted. The IPCC scientific assessment report provides us with the basis for global consensus on such limits.*

2. *A globally agreed ceiling of GHG emissions can only be achieved by adopting the principle of per capita emissions rights that fully take into account the reality of population growth and the principle of differentiation.*

3. *Achievement of a safe limit to global GHG emissions can be achieved by reducing the emissions of Annex One while at the same time ensuring that there is controlled growth of future emissions from Non-Annex One countries, reflecting our legitimate right to sustainable economic growth. We strongly believe that this will take us along a path to responsible climate management that allows us to reach our goal of defining a mutually agreed point of convergence and sustainable development. Such a convergence Mr. Chairman must ensure that we maintain a global ceiling on emissions to prevent dangerous interference with the climate system.*

4. *When we look at time frames, we believe that insufficient commitment by Annex One countries will only result in delaying our influence on the climate system. If this course is maintained, then we will all suffer and the burden will be even greater for humanity in general. The burden for any future mitigation efforts on those of who have not been historically and currently responsible for creating the problem will be greater.*

Mr. Chairman, we must focus our attention on the most appropriate, reasonable and acceptable time frame for action. There is an over-riding pre-requisite. The time frame can not be too far away into the future if we are to avoid at all costs the dangers that global climate change poses. The current scientific evidence indicates that Africa faces decline in water resources, agricultural production and economic performance. It is therefore for this reason that we wish to register the seriousness with which we view the effective implementation of the Convention and future agreements emanating from it."

They carried this position through to the very end-game of COP3 in December that year, with vivid and literally dramatic results in the final session establishing the Kyoto Protocol, seeding the statement of the Non-Aligned Movement (NAM) (see below) in those very moments.

The USA: - "It's the only game in town."

During mid 1997 and at the request of US government personnel, a series of private policy briefings on *"Contraction and Convergence"* took place in Government agencies in Washington comprising the US climate policy community (EPA, AFLCIO, State Dept. and the Energy Dept.). They were fully briefed on the flexibility of the model.

The application of the principle of graduated "Contraction" of the global ghg emissions budget over time to a pre-set goal of atmospheric ghg concentrations, enables any future carbon budget to be computed and subsequently revised to control concentrations.

The application of the principle of "Convergence" to equal per capita shares globally to a pre-set date within the budget and the budget period to a pre-set population year enables any rate of international convergence to be negotiated and revised blending control with consent.

The US were also advised that this flexibility should be read in conjunction with the flexibility sought in respect of the extent to which the resultant ghg allocations would be internationally tradable as emissions permits. Assuming such flexibility from *ab initio* enables the *"Contraction and Convergence"* rates to be negotiated without having to mimic and modify baseline trend emissions as in principle the global ghg emissions budget was convertible for cash.

Senior bureaucrats conceded that if the Chinese could be persuaded to play *"Contraction and Convergence"* the US would have to play. It was the only game in town.

China - "Emissions control standard formulated on a per capita basis"

During August 1997 Chinese policy makers were given the equivalent briefing and by October 1997 the Chinese appeared to have been persuaded to signal a tentative readiness to play C&C. In doing this they spelled out more specifically their views for the mid-term than had previously occurred. They in effect declared potential pathways for *"Contraction and Convergence"*.

Dr Song Jian (the State Councilor with responsibility for Climate Change and Population) made the following statement at the closing ceremony of the China Council for International Co-operation on Environment and Development.

"When we ask the opinions of people from all circles, many people, in particular the scientists think that 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. Today the per capita consumption is just one tenth of that of the developed countries, one eighth of that of medium developed countries. It is estimated 30-40 years would be needed for China to catch up with the level of medium developed countries."

COP3 - The "Kyoto Protocol" (Article 17) - global or sub-global?

The Kyoto Protocol (KP) was tabled at Third Conference of the Parties (COP3) in Japan in December 1997. It attempted to fulfil the Berlin Mandate for a "sub-global" solution, the main tension over 'globality' unanswered. Emissions reduction commitments were attached to the industrial country group only. In spite of the Africa Group position many developing countries continued to resist any talk of parallel (voluntary) commitments from them because of the history of deep inequity and mistrust.

However, the flaws in this "sub-global" strategy were revealed. The developing country group was persuaded by the northern environmental lobby to project an aggressively one-sided and unrealistic long-term scenario for global arrangements on emissions restraint. In exchange for nothing, the developing country group would prescribe ever-deeper ghg emissions reductions for the developed country group only for the next fifty years or more. In their growing frustration with the US and the US insistence on 'globality ', the NGOs argued that this would be seen as *"developing countries taking the lead"*.

The sub-global strategy also complicated the position of those developing countries that had been taking climate friendly measures including some control of ghg emissions. Their complaint became that these actions were not even being recognised let alone 'credited'. This was true but transactional credit required the finite accounts of globality.

Moreover, as the issue of the international tradability of ghg emissions entitlements progressed, an increasing number of countries recognised the logic of the Africa Group proposals for *"Contraction and Convergence"*. Not only did the principles answer the US demand for a global solution, they did so in a manner that enabled revenues from international emissions trading to accrue to developing countries for sustainable development in potentially significant amounts.

While the US appeared not to have won their insistence on 'globality' they had won their case for tradability. This led directly to what the US called a "near-death experience" at the very end of the negotiations; major G-77 players suddenly turned the tables at the last minute.

"Contraction & Convergence" Dawns at Kyoto's Darkest Hour;

At the end of the Kyoto negotiations, the entire debate came to centre on the issues of trade and the assigning of property rights in the future carbon budget. By definition, emissions trading cannot occur until the principle of property rights has been agreed and the entitlements have been assigned and ratified.

At 3.00am when the negotiations were already into injury time, the paragraph in the draft Kyoto Protocol relating to trade came up for acceptance. The US re-iterated their insistence on everyone's acceptance of emissions trading. The governments of China and India, contrary to people's expectations, did not rebut the idea.

Instead they responded by saying that acceptance of trade depended on the issue of "equitable allocations" of emissions entitlements on a per capita basis. Moreover the Africa Group of Nations intervened, re-iterating that this was why they had advocated "Contraction and Convergence". The US replied by saying that they heard the call for "Contraction and Convergence" but suggested this wasn't the moment to try and integrate such a comprehensive structural methodology.

However, that US response underlined the remarks made in Washington in July 1997 and reaffirmed at the GLOBE International workshop in Bonn in October 1997 by US Ambassador Mark Hambley to an international gathering of Parliamentarians, that the idea is being taken seriously in Washington. Like many others since, they have said it is the only game in town. The global equity argument was finally being won on the floor of the COP.

The COP meeting was arrested for half an hour. On resumption, Chairman Estrada read out a prepared text (now known as Article 17). In effect the COP issued instructions to SBI and SBSTA to elucidate during 1998 the rules, principles, modalities etc relating to trade, in time for COP4 in Buenos Aires in November 1998.

Progress with "Contraction and Convergence" in 1998

During 1998 the campaign to secure *"Contraction and Convergence"* made real progress. As a result of the last-minute developments in Kyoto the whole debate has swung round towards the clearest recognition yet the logic of *"Equity and Survival*". International arrangements are now being created to share ownership of the global atmosphere at sustainable and equitable rates of use.

But at present these still exclude eighty percent of the world's population as a result of pursuing 'sub-global' solutions. This is daft and many people are now recognising this and that the *"Contraction and Convergence"* argument and imagery remains the clearest and simplest exposition of a 'global solution'. With the international distribution of literally thousands of graphics of the programme during 1998, the year has been largely about developing support for the concept rather than developing the concept itself. In future both are necessary. We need to project the argument in ways that are responsive to the situations and conflicts that are coming towards us in the real-political process.

GLOBE International

Early last year GLOBE International prepared an exposition of *"Contraction and Convergence"* for use by GLOBE at the G-8 in Birmingham. At the time this was very widely distributed in political circles in Britain, internationally and in UN agencies such as the IPCC with consistently good feedback since then.

The G-8 Birmingham

During GLOBE's preparations for this Mr. Meacher - The UK Minister of the Environment - was persuaded to publicly support GLOBE's advocacy of *"Contraction and Convergence"*. At a GLOBE event in the UK House of Commons in May he made a key-note address which endorsed the intellectual and campaigning work of GCI and GLOBE and the of *"equity and logic"* upon which the *"Contraction and Convergence"* model is based.

> *"As I have said it is our view that the time has come for a serious review under the Convention of the commitments of all countries, that reflects the economic and development needs of developing countries. "Contraction and Convergence" should be clearly one of the ideas on the table in such a review. It has the attraction of equity and logic - but equally raises huge political and practical issues which need to be considered carefully."*

John Gummer (the ex Minister) was in the chair and did so too. Sir John Houghton, the former head of the Met Office in Bracknell and the Chairman of the IPCC Science working group was there as well and has become an advocate of the scheme for the same reasons. Negotiators from the Africa Group and India were keynote speakers at this event and both decisively re-iterated that *"Contraction and Convergence"* was the basis of their international political strategy. GLOBE did not succeed in getting the G-8 to adopt it in their statement.

The UK Government

Since that time repeated advocacy of the scheme has been pressed on Tony Blair and his cabinet by growing list of parliamentarians here and in Europe. Tony Blair has put on record that they regard it as an important contribution to the debate about climate change. Several debates about the issues in general and the proposals in particular have occurred during this year on the floor of the UK House of Commons.

The Bonn UN climate negotiations in June

Also in June, while still leading the EU at the UN climate negotiations, the UK delegation almost specified, *"Contraction and Convergence"* as their negotiating strategy with the US on the one side and the G-77 and China on the other.

> *"Agreeing simultaneously on long-term global stabilisation objectives, on principles for securing convergence of emission levels, and on emissions targets for an enlarged number of Parties, may be the necessary ingredients of the next step in the development of the Convention process."*

GLOBE International General Assembly (GIGA)

In August the GIGA adopted a statement with the following wording in.

> *"Support the adoption of a mandate at Buenos Aires to redefine the way in which greenhouse emission cuts are currently shared between countries, following the principle of equity enshrined in the Contraction and Convergence analysis, and urge the summit of the Non-Aligned Movement countries meeting in Durban, RSA, to persist in demanding an equitable approach as a precondition for their participation in COP4 at Buenos Aires."*

Non-Aligned Movement (NAM)

In August and September the NAM held a heads of Government conference in South Africa. Combining the logic of *"Contraction and Convergence"* with the trade Article 17 of the Kyoto Protocol (KP), the NAM agreed the following statement: -

> *"Emission trading for implementation of (ghg reduction/limitation) commitments can only commence after issues relating to the principles, modalities, etc of such trading, including the initial allocations of emissions entitlements on an equitable basis to all countries has been agreed upon by the Parties to the Framework Convention on Climate Change."*

The GLOBE Southern Africa Network (9 of the 16 SADC countries)

> *Members of Parliament and Members of the GLOBE Southern Africa Network . . . Support the adoption of a mandate at Buenos Aires to redefine the way in which greenhouse emission cuts are shared between countries under the Kyoto Protocol, following instead the principle of global equity enshrined in the Contraction and Convergence analysis,*

1. *Specifically work to ensure that all future development of the UNFCCC and its related instruments will be consistent with these interdependent principles of global equity and sustainability;*
2. *And rebut any recourse to "flexibility mechanisms" that are not derived from the interdependent application of these principles of sustainability and global equity;*

Environmental Justice Network Forum (EJNF) South Africa

During many visits in different parts of the country to persuade grass-roots groups, trade unionists, environmental groups and bureaucrats to adopt *"Contraction and Convergence"* EJNF made the following declaration: -

> *EJNF commits itself to campaign in support of the "Contraction and Convergence" proposals that specifically embody the principles of global equity and sustainability.*
> *This means that EJNF will advocate that the apportionment of future international greenhouse gas (ghg) emissions entitlements shall be the result of a deliberate convergence process to a point of equal per capita shares globally by a date to be negotiated by the United Nations Framework Convention on Climate Change (UNFCCC)."*

Earth Action

During the latter part of the year the Earth Action grouping had a mass mail-out globally with thousands of copies the *"Contraction and Convergence"* graphic and documentation going to policy makers, parliamentarians and activist groups.

European Parliament

A few days after the NAM and GLOBE Southern Africa statements were adopted, the European Parliament adopted a resolution on climate change that clearly embedded the global constitutional principles for the long-term management of global climate change using *"Contraction and Convergence"*. The resolution, led by the Environment Committee, was intensely debated and finally adopted with a 90 percent majority in favour.

> *". . . . . calls on the Commission and the Member States to take the lead in brokering an agreement on a set of common principles and a negotiating framework beyond Buenos Aires;*
>
> *. . . . . re-iterates and re-emphasises once again its view that a set of common*
> *principles will have to be based on, inter alia:*
>
> 1. *agreement to have a worldwide binding limit on global emissions consistent with a maximum atmospheric concentration of 550 ppmv CO2 equivalent,*
> 2. *initial distribution of emissions rights according to the Kyoto targets,*
> 3. *progressive convergence towards an equitable distribution of emissions rights on a per capita basis by an agreed date in the next century,*
> 4. *across-the-board reductions in emissions rights thereafter in order to achieve the reduction recommended by the Intergovernmental Panel on Climate Change (IPCC),*

5. *an agreement to have a quantitative ceiling on the use of flexibility mechanisms that will ensure that the majority of emission reductions are met domestically in accordance with the spirit of articles 6, 12 and 17 of the Kyoto protocol; in this context trading must be subject to proper monitoring, reporting and enforcement;*
6. *an adequately financed mechanism for promoting technology transfer from Annex 1 to non-Annex 1 countries;"*

Fourth Conference of the Parties (COP4) Buenos Aires

At the end of the two weeks of negotiations at COP4, the European Union and European Commission issued a press release that included the following: -

"The Conference adopted a Buenos Aires Plan of Action, including deadlines on a number of important issues, such as: -

1. *financial mechanisms*
2. *further work on policies and measures*
3. *development and transfer of technologies*
4. *rules for governing the Kyoto mechanisms*

and a solid promise to discuss a number of particular concerns to the EU - such as supplementarity, ceilings, long term convergence and equity."

Geo-Polity - References for formal "Contraction and Convergence"

Since formal *"Contraction and Convergence"* has been entirely omitted from the TAR so far, here are SOME references for some peer-reviewed published literature from: -

1. ZEW (ISBN 3-7908-1146-7 Physica Verlag, Heidelberg, New York),
2. GCI (http://www.gci.org.uk),
3. CSE (http://www.cseindia.org),
4. The Africa Group (AGBM7),
5. GLOBE General Assembly statements 97,98,99 (http://www.globeint.org),
6. European Parliament (http://www2.europarl.eu.int/omk/omnsapir.so/pv2?PRG=CALEND&APP=PV2&LANGUE=EN&TPV=DEF&FILE=980917)
7. RIIA/Chatham House (The Kyoto Protocol - Earthscan 1999)
8. Christian Aid: "Who Owes Who?" [http://www.christian-aid.org.uk/f_reports.htm]

The line taken in these references is that this the formal approach of Geo-Polity, alone makes the JAZZ dimension relevant and some of the growth expectations in the FROG model realistic. Thus formal *"Contraction and Convergence"* represents an enabling framework of geo-polity for JAZZ.

That the above are closely consistent with the: -

1. statement of the Government of France to AGBM2.
2. position of the Government of Japan at AGBM5. [http://www.unfccc.de/resource/docs/1996/agbm/10.pdf]
3. statement of the Governments of France and Spain at AGBM6 for the EU [http://www.unfccc.de/resource/docs/1997/agbm/02.pdf]
4. position of the Africa Group of Nations at AGBM7. [See p 26 this doc. http://www.unfccc.de/resource/docs/1997/agbm/05.htm - para 26]
5. sum of US global climate policy statements over the last ten years. [See page 15 this document - "The US and Contraction & Convergence"].
6. position of the countries of the Non-Aligned Movement (NAM Summit August/September Durban South Africa1998).
7. statement in the UK Parliament by the Right Honorable Michael Meacher MP UK Minister of the Environment [see page 25 this briefing document]
8. position taken in Danish Ministry's Energy Futures and in Energy 21 from 1995 and 1996, and the recent statement by Sven Auken the Danish Minister of the Environment. [see page 25 this briefing document].
9. all the resolutions taken by GLOBE International (The international Parliamentarians network) calling for an international policy framework for global climate security since 1996 [see http://www.globeint.org] and also [http://www.globeusa.org/globeusa/pamphlet.html]
10. Indian Government submission to SBSTA/SBI (22/10/99) [http://www.unfccc.de/resource/docs/1999/sb/misc10.pdf]
11. resolution of the European Parliament: - [http://www2.europarl.eu.int/omk/omnsapir.so/pv2?PRG=CALEND&APP=PV2&LANGUE=EN&TPV=DEF&FILE=980917]
12. resolution of the Environmental Justice Network Forum [EJNF] South Africa (1998). [see page 26 this briefing document].
13. statement of the Atmospheric Equity Group of South East Asia [http://ws101.cisti.nrc.ca/ceesp/pub/towards.htm]
14. multi-signatory statement of the Global Commons Network (from Dec '99) [http://www.gci.org.uk/indlet.html]

Sir John Houghton in The ECONOMIST - THE WORLD IN 2000

As things hot up

Global warming will preoccupy the next generation, predicts Sir John Houghton, of the Intergovernmental Panel on Climate Change.

One hundred years ago Claude Monet painted scenes of London through its smoggy atmosphere. That was local pollution. What is relatively new and more worrying is global pollution—that is pollution emitted by people locally that has global effects. The first example to emerge was damage to the earth's ozone layer. International action was promptly taken through the Montreal Protocol to phase out the use of the chemicals responsible. Although full recovery of the ozone layer will now happen, it will take at least a century.

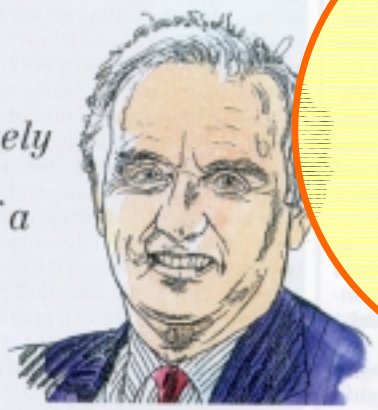
Another example is pollution that leads to global warming and climate change. Carbon dioxide and other "greenhouse" gases such as methane are released into the atmosphere through the burning of fossil fuels (coal, oil and gas) and also through deforestation. These gases absorb "heat" radiation emitted by the earth's surface that would otherwise be lost to space, so maintaining the surface and the lower atmosphere at a warmer level than normal.

The amount of carbon dioxide in the atmosphere has already increased by over 30% since 1750 and, if no action is taken to stem the increase, it will reach double its pre-industrial value during the second half of the 21st century. As a result, the average rate of warming of the climate is expected to be greater than at any time during the past 10,000 years. This is not of itself necessarily bad; some communities will experience a net benefit. But many ecosystems as well as humans will find it difficult, if not impossible, to adapt.

Although there is a lot of uncertainty concerning the detail, the basic science underlying global warming and climate change is well understood. It is not in question. Hundreds of scientists from over 50 countries have contributed as authors or reviewers to the assessments of the Intergovernmental Panel on Climate Change (IPCC). Because of the uncertainties it is easy either to exaggerate the possible impacts to calamitous proportions or to suggest that too little is known to justify any action. What the IPCC has done is explain clearly what is known together with the major uncertainties. Then, taking account of all relevant scientific data, best estimates have been provided of climate change and its impact over the next century. Here are a few of the IPCC's main findings and an outline of the agenda for the years ahead.

First, largely because of the thermal expansion of ocean water and the accelerated melting of glaciers, sea levels are likely to rise by approximately half a metre by 2100. Therefore, sea defences in many coastal regions will need to be improved, albeit at considerable cost. However, adaptation is just not possible for countries with large river deltas such as Bangladesh, Southern China and Egypt, and for many island states in the Pacific.

"The sea level is likely to rise by about half a metre by 2100."



A second major result of global warming will be, on average, a more intense hydrological cycle leading to impacts on water distribution and availability. In many areas heavy rainfall will tend to become heavier while some semi-arid areas will receive less rainfall. There will be more frequent and more intense floods or droughts, especially in sub-tropical areas. Since, in many places, water is rapidly becoming a critical resource and since floods and droughts are the natural disasters that already cause most deaths, misery and economic damage, these could represent the most damaging impacts of global warming. When combined with the rise in sea levels, a recent study has estimated that this could lead to 150m environmental refugees by 2050.

Three widely accepted principles will govern the international agreements needed to meet this threat. The first is the "Precautionary Principle", already clearly imbedded in the UN Framework Convention on Climate Change agreed at the Earth Summit in Rio in 1992. This states that the existence of uncertainty should not preclude the taking of appropriate action. The reason for such action is simply stated as the stabilisation of the concentrations of greenhouse gases (such as carbon dioxide) in the atmosphere in ways that allow also for [illegible] development. The second principle is the "P[illegible] Pays Principle", which implies the imposition of measures such as carbon taxes or carbon trading arrangements. The third is the "Principle of Equity (both Intergenerational and International)" which is the most difficult to apply. However, a proposal of the Global Commons Institute that is being widely discussed applies the second and third principles by allowing eventually for the allocation of carbon emissions to [illegible] per capita basis while also allowing for emissions trading.

The action agreed at Kyoto in 19[illegible] is a first step. Necessary post-Kyoto action, however, will be more demanding. The rate of increase of global emissions must first be substantially slowed; then there must be reductions in these emissions to well below 1990 levels before the end of the next century. Many of the required technologies to bring about these reductions are already available, but they require adequate resources for investment and development. Studies show that the necessary action may cost around 1% of the total world product, much less than the likely cost of damage and adaptation if there is no action.

If human communities are to be fulfilled and creative, they not only need goals related to their economic performance but also moral and spiritual goals. Care for the overall health of the planet is such a goal. It demands action by scientists to provide better information about likely climate change, by governments to set the necessary frameworks for change, by business and industry to seize the opportunities for innovation and the introduction of new technologies, and by all world citizens to support the action being taken and contribute to it.