

Historical responsibility as a guide to future action in climate change

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- UNFCCC Preamble: “Noting that the largest share of historical and current global emissions of GHG has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs,”

2 approaches showing global emission cut and implications regarding historical responsibility

- Residual cut versus Negative emission
- Carbon budgeting and fair shares to carbon space

Concepts, principles

- Rights to fair allocation of atmospheric space
- Rights to fair share of development space
- There can be a difference between what a party is assigned to do (responsibility or obligation) and what it actually does. It can compensate for the difference

What the science and equity tells us

- Limit GHGs to 450 ppm or even 350ppm
- Cut emission by 50% or 85% by 2050
- How to assign the tasks between annex I and non annex I in a fair manner reflecting CDR including historical responsibility and the need for development

Scenarios of tasks for 50% global cut by 2050 (1)

- Reference 1990: Total CO₂e emission 38 bil ton
Industrial countries – 18 ton
Developing countries – 20 ton (per capita 5)

Scenario 1: 50% global cut; 80% annex I cut

Total emission – 19.3 bil ton

Industrial countries – 3.6 b ton (80% cut)

Developing countries – 15.7 b ton (20% cut)

Per capita 2 ton (60% cut) as pop. doubles

Scenarios of tasks for 50% global cut by 2050 (2)

Reference 1990: Total emission 38 bil ton
Industrial countries – 18 ton
Developing countries – 20 ton (per capita 5)

Scenario 2: 50% global cut; 100% annex I cut
Total emission – 19 bil ton
Industrial countries – 0 ton (100% cut)
Developing countries – 19 ton (5% cut)
Per capita 2.4 ton (52% cut)

Scenarios of tasks for 50% global cut by 2050 (3)

- Reference 1990: Total emission 38 bil ton
Industrial countries – 18 ton
Developing countries – 20 ton (per capita 5)
- Scenario 3: 50% global cut; same per capita emission in developing countries
Total emission – 19 bil ton
Industrial countries – minus 20 b.ton(213% cut)
Developing countries – plus 40 b.ton (100% rise) Per capita 5 ton (no change)

Guide for future action

- “Negative emission” as concept in assigning of tasks
- Possible to assign task of cutting by more than 100%
- In Scenario 3, Annex I task is 213% cut, or from + 18.2 bil ton CO₂ to – 20.5 bil ton CO₂

through (a) net creation of sinks or (b) request others to assist it fulfil task or (c) Other

Example: Cut from 18 to 0; Compensate others to undertake 20.5 bil ton cut. UNFCCC can seek agreed methods of compensation (eg contribution to Fund)

- There can be difference between Task Assigned (obligation) and Actual Task Done. Caveat: Danger of Offsets or Too Many Offsets

Approach 2: Fair Carbon Budgetting

Imbalanced assigning of tasks: 2020 targets scenario (vis-à-vis 1990)

30% annex I cut	from 20 to 14 tpc
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20% deviation fr baseline	2 to 2.6?
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40% annex 1 cut	from 20 to 12 tpc
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20% deviation	2 to 2.8?
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Fair carbon budgetting (2)

- World has only 600 GtC of carbon emission to budget between 1800 to 2500
- Given population ratio, the equitable share of annex I countries is 125 GtC of the total 600. Non Annex I should be allocated 475 GtC in an equitable system.
- But Annex I has already consumed (years 1800 to 2008) 240 GtC, which is 115 GtC above its fair share of 125 GtC.
- And given the scenario (global cut by 50% by 2050 and Annex I cut of 85%), Annex I will consume another 85 GtC from 2009 to 2050.
- Thus the total Annex I consumption is 325 GtC in all, from 1800 to 2050. Since its fair share is 125 GtC, there is a Carbon Debt of 200 GtC.

Carbon budgetting (3)

- On the other hand, if there was a fair sharing of allocation of carbon space, developing countries have a share of 475 GtC for years 1800 to 2050.
- However the situation till now plus the scenarios if accepted for now to 2050 would mean that developing countries can in actual fact only emit 275 GtC. Thus they are under-consuming by 200 GtC.

Fair carbon budgetting (4)

- If the scenario is to be agreed to (50% global cut plus 85% annex I cut by 2050) then Annex I should compensate by 200 GtC (gigatonne of carbon, not carbon dioxide) to developing countries.
- If Annex I were to undertake greater emission cuts between now and 2020, and between 2020 to 2050, its carbon debt would be less.

Actual vs Fair Carbon Budget

in gigatonne carbon

	1800- 2008	2009- 2050	Total	Fair Share
Annex I	240	85	325	125
Non A1	91	184	275	475
Total	331	269	600	600

Assuming 50% global cut and Annex1 cut by 85% in 1990-2050

Historical Responsibility and Carbon Debt: Guide to Action

- Calculate the “carbon debt” overall and by each country
- Discuss how to address carbon debt
 - E.g. it can be the basis of one of sources of UNFCCC Fund
 - Step 1: Estimate mitigation & adaptation needs of developing countries; and technology and capacity building needs
 - Step 2: Contribute to Fund as Percentage of GNP

Historical Responsibility and equity in Per Capita Emission

- Is per capita equity in emissions a goal? Pertinent but have to go beyond simple “Contraction and Convergence”
- Per capita emission is related to the level of development DIFFERENTLY for different categories of countries
- Can envisage Annex I country with 1 ton per capita CO₂ emission by 2050, associated with \$50,000 per capita income
- A developing country with 1 ton per capita emission may be stuck with \$500 per capita income or \$1000 or so, unless it undergoes a technology revolution

Hist. Resp. and Per Capita Emission: Conclusions

- Annex 1 has advantage of past growth based on abundant use of carbon, leading to greater infrastructure, technology, human and social capacity
- Can turn economy and society around and achieve low-carbon economy and growth
- Dev. Countries no longer have the low-cost carbon resources to base its development
- Use of “multiplier” (denoting lower levels of technology, infrastructure, capacity) required to adjust for per capita emission for developing countries in future discussion
- Conceptualise and aim for negative per capita emissions in Annex1 countries to enable more carbon space and development space for developing countries

Guide to Action

- Great importance of transfer of finance, technology, capacity to developing countries through appropriate structures and in adequate volumes. Key to fair deal at Copenhagen and beyond. Key to enabling dev ctries to contribute to climate friendly world
- “Deep cuts” required in annex1 that should be envisaged in negative emissions.

Guide to Action

- Global goal is part of overall package (political, environmental, economic, social, etc) with the equity, CDR and historical responsibility factors explicitly built in (carbon budgeting and fair shares to atmospheric space is part of this). It is a component, but not the component, and cannot be addressed in isolation.

All parts of the jigsaw have to be in place together.

- Translating the scientific fact to a political deal incorporating all these elements is the main challenge of Copenhagen and beyond.
