Equity, burden sharing and mitigation targets

CSE, November 25, 2010

The declarations

" We recognize the scientific view that the increase in global average temperature above pre-industrial levels ought not to exceed 2 degrees C".

Declaration of the leaders the major economies forum on energy and climate, L'Aquila, Italy, 2009

The declarations

"We agree that deep cuts in global emissions are required according to science, and as documented by the IPCC AR 4 with a view to reduce global emissions so as to hold the increase in global temperature below 2 degrees Celsius, and take action to meet this objective consistent with science and on the basis of equity".

Copenhagen Accord, 2010

2^0C implications

- Keeping global temperature below 2^0C above pre-industrial era implies a GHG emissions budget – *a definitive amount of total emissions that the world can emit from now to a future date (2000-2050).*
- This budget has to be divided based on certain principles between countries
- UNFCCC – responsibility (historical emissions), capability, equity, sustainable development

How much is the carbon budget?

- To remain within 2^0C target:
  - There is total emissions budget between 2000 and 2050: 600 – 1200 Gt CO_2
  - Peaking year target – total global emissions world peak and then start reducing: 2020 or 2030
  - What should be the global emissions in 2050 compared to 2000: 50-85% below 2000 levels
  - Play with these number to make global emissions trajectory

How much is the carbon budget?

Table 1: Probability of exceeding 2°C

Indicator	Emissions	Probability
Cumulative total CO_2 emissions 2000-49	886 Gt CO_2 1000 Gt CO_2 1158 Gt CO_2 1437 Gt CO_2	8-37% 10-42% 16-51% 29-70%
Cumulative Kyoto gas emissions 2000-49	1356 Gt CO_2e 1500 Gt CO_2e 1678 Gt CO_2e 2000 Gt CO_2e	8-37% 10-43% 15-51% 29-70%
2050 Kyoto gas emissions	10 Gt CO_2e/year 18 Gt CO_2e/year (1/2 1990) 20 Gt CO_2e/year (1/2 2000) 36 Gt CO_2e/year	6-32% 12-45% 15-49% 39-38%
2020 Kyoto gas emissions	30 Gt CO_2e/year 35 Gt CO_2e/year 40 Gt CO_2e/year 50 Gt CO_2e/year	8-38% 13-46% 19-56% 53-87%

Source: Malte Meinshausen *et al* 2009, 'Greenhouse gas emission targets for limiting global warming to 2°C',

How this should be divided?

- Many formulations: per capita entitlement (CSE proposal); development rights (emissions rights based on responsibility, capability and certain development threshold); burden sharing (how every country should reduce emissions to meet 2050 target)
- *All formulations conclude that the developed countries have overused their budgets and should actually have negative emissions.*

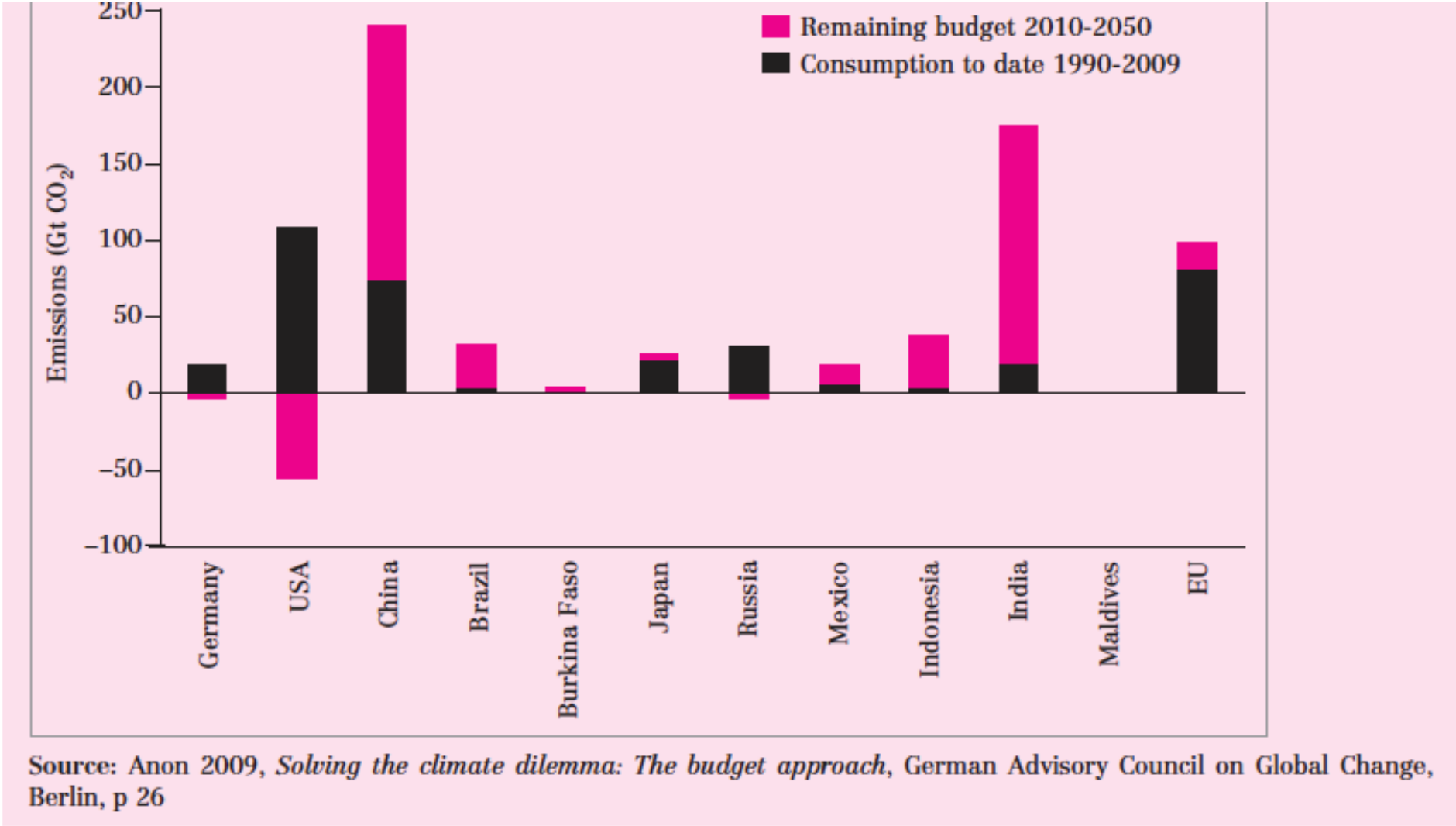
How this should be divided?

Table 2: Will the West accept negative growth?

World carbon budget (1850-2050)	650 GtC
Already consumed by Annex 1 (1850-2000)	209 GtC
If we assume that Annex I countries will reduce emissions by 85 per cent by 2050, then from 2000 to 2050 they will emit	85 GtC
Total Annex I budget by 2050	209 GtC + 85 GtC = 314 GtC
Allocation based on population for Annex 1 (1850-2050)	137 GtC
They have overused their budget by	314 GtC – 137 GtC = 177 GtC

Source: UN Department of Economic and Social Affairs

How this should be divided?



Source: Anon 2009, *Solving the climate dilemma: The budget approach*, German Advisory Council on Global Change, Berlin, p 26

BASIC divides the budget in Tianjin

Table 3: Budget under burden sharing and entitlement approach ($GtCO_2$)

Approach	Entitlement (2006-2050)	Burden sharing (2010-2050)
Annex I	-365	-545
Non Annex I	1,603	1,802
Brazil	59	58
India	377	266
China	381	421
S. Africa	4.3	32
ΣBASIC	821	777
Gap between two approaches	–	-44
Including LULUCF	NO	YES

Is the developed world ready for burden sharing?

- Economy wide deep emissions reduction target (25-40% by 2020 wrt 1990) converted into pledge and review – Copenhagen Accord
- Copenhagen pledges:
  - US and Canada: 17% below 2005 level by 2020 only if energy and climate legislation is passed – US emissions already 20%+ higher than 1990 levels
  - Australia: 5-15% below 2000 levels by 2020
  - EU: 20-30% below 1990 levels by 2020
  - Japan: 25% below 1990 levels by 2020

Is the developed world ready for burden sharing?

- Developing countries pledges:
  - Brazil: 36-39% below BAU by 2020
  - China: CO_2 emissions per unit GDP 40-45% below 2005 levels by 2020 + 15% primary energy from non-fossil fuel+40 million ha additional forest
  - South Africa: 34% reductions in emissions below BAU by 2020
  - India: Emissions intensity of GDP 20-25% below 2005 levels by 2020

Is the developed world ready for burden sharing?

- The world must emit by 2020: 40-44 $GtCO_2e$ to keep it within 2° C
- Business as usual scenario emissions in 2020: 57 $GtCO_2e$
- Reduce emissions by : 13-17 $GtCO_2e$ by 2020

Copenhagen: Inequity in pledge

Reduction pledges:

- Annex 1: 2.5 $GtCO_2e$
- Non-Annex 1: 5.5 $GtCO_2e$
- Pledges lower of what is required
- Of that too, developing countries will reduce 70% -- **Burden of emission cut shifted to the developing world**

Cumulative inequity

What even the most ambitious emissions reduction target by developed world mean for burden sharing till 2030?

- **US: Energy and climate bill– 42% below 2005 levels by 2030**
  - US will emit 140 $GtCO_2e$ between 2006-2030
- **EU: 45% below 1990 levels by 2030**
  - EU will emit 110 $GtCO_2e$ between 2006-2030

Cumulative inequity

- **India: Average of five different models – 5.6 $GtCO_2e$ by 2030**
  - India will emit 85 $GtCO_2e$ between 2006-2030
- **Even the most ambitious emissions reduction target of the developed world divides the carbon space inequitably.**

New framework

- **Ambitious emission reduction by the developed world based on equitable access to carbon space**
- **Framework that can lead to energy transformation and low carbon economy in the developing world – finance and technology transfer**