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A Fair Compromise to Break the Climate Impasse

A Major Economies Forum Approach to Emissions Reductions Budgeting

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Overview

Climate negotiations are at an impasse. To overcome it we propose a 4-step compromise for reducing emissions:

1. limiting initial action to the MEF members, 13 economies (81.3% of emissions)
2. utilizing consumption-based carbon accounting
3. applying equity principles of responsibility and capability to share the burden of reductions
4. bringing this deal back to the UN negotiations for wider adoption

Key objective: a morally-grounded compromise

- Given the stalemate in UN negotiations, our proposal changes some 'rules of the game': it devises a science-based compromise to break the impasse for rapidly, fairly, and effectively, sharing the burden of GHGs reductions
- Equity is unavoidable for moving forward the negotiations, especially for sharing the burden of emissions abatements, the most urgent coordination problem of the climate crisis

The problem: entrenched positions

- Key developed countries will not accept any regime that excludes from abatements emerging economies such as China and India
- Key developing countries have made equity a prerequisite for any kind of agreement:
  - they will not take on mandatory emissions reductions targets unless the wealthier countries commit to deep emissions cuts commensurate with their contribution

The solution: loosening the knot

- A successful approach to emiss reductions must:
  - involve the largest emitters from both the developed and developing countries
  - find a way to engage the latter without penalizing disproportionately any particular economies
- For securing progress, above all it must:
  - On theoretical grounds, be built on agreed equity principles for sharing the burden of required emissions
  - On empirical grounds, be acceptable to the two world superpowers and top carbon emitters, China and the U.S.
    - With this leadership, other emitters will likely follow

Four feasible steps to a compromise

1. MEF
2. Consumption-based carbon accounting
3. Equity principles of responsibility and capability
4. Back to the UN negotiations

1. The MEF

- Twenty years of painful negotiations among the 194 parties to the UNFCCC show that a deal needs to initially be struck in a setting with a limited number of subjects
- The MEF includes the 13 largest emitters in the world (81.3% of global emissions)
- The MEF is therefore a group small enough to avoid the unworkability of UN universalism and sufficiently broad to have significant global impact and exert global leverage

MEF members' cumulative consumption-based emissions, 1990-2010. Absolute values (million tonnes CO_2) and percentage of global emissions

MEF member	Absolute values (Mt CO_2)	Percentage of global emissions (%)
U.S.	118,034.2	22.1
EU	101,987.9	19.1
China	79,202.7	14.8
Japan	30,171.3	5.7
Russia	26,683.7	5.0
India	23,885.9	4.5
Canada	10,952.7	2.1
Korea	10,117.0	1.9
Mexico	8,584.4	1.6
Brazil	6,788.2	1.3
Australia	6,258.9	1.2
South Africa	5,805.3	1.1
Indonesia	5,668.1	1.1
Total MEF	434,140.3	81.3
Total World	533,919.0	100

2. Consumption-based

- C-based measures emissions associated with the final consumption of goods and services, and is calculated by subtracting from P-based emissions those associated with export and adding those generated for import
- Production-based accounting penalizes economies with carbon-intensive productions, and incentivizes the "off-shoring" of these productions (carbon leakage)
- C-based, generally considered fairer *per se*, encourages participation in, and increases flexibility of, agreements
  - A promising system for the most widely agreed compromise possible for fair and effective collective action against GHGs

Carbon-exporting and -importing MEF members. Final two columns show the difference between these two accounting systems [P – C], in absolute (million tonnes CO_2) and % values

MEF member	Production-based cumulative emissions (Mt CO_2)	Consumption-based cumulative emissions (Mt CO_2)	[P – C] (Mt CO_2)	[P – C] (%)
South Africa (Exp)	8,166.6	5,805.3	2,361.3	28.9
Russia (Exp)	36,150.4	26,683.7	9,466.7	26.2
China (Exp)	93,059.5	79,202.7	13,856.8	14.9
Australia (Exp)	7,090.5	6,258.9	831.6	11.7
Indonesia (Exp)	6,141.5	5,668.1	473.4	7.7
India (Exp)	25,751.1	23,885.9	1,865.2	7.2
Canada (Imp)	10,693.2	10,952.7	-259.4	-2.4
U.S. (Imp)	114,464.9	118,034.2	-3,569.3	-3.1
Brazil (Imp)	6,492.0	6,788.2	-296.2	-4.6
Mexico (Imp)	8,129.6	8,584.4	-454.8	-5.6
Korea (Imp)	8,755.5	10,117.0	-1,361.5	-15.6
Japan (Imp)	24,907.5	30,171.3	-5,263.8	-21.1
EU (Imp)	83,545.0	101,987.9	-18,442.9	-22.1

3. Responsibility and capability

- The distribution of the burden of mitigation should be calculated on the basis of MEF members' responsibility and capability, the core principles of the UNFCCC
- R&C is a genuine compromise in itself for both developed and developing countries in the MEF:
  - For the first, it removes the "firewall" between countries with and without obligations, by bringing on board developing, low-capability, ones
  - To the developing countries in the MEF, the developed, high-responsibility, world acknowledges, against its long-standing non-acceptance, cumulative emissions since 1990, the Kyoto baseline

4. Bringing the deal back to the UNFCCC

- The compromise must finally be brought back into the UNFCCC
- A Trojan horse for expanding commitments to the UNFCCC members
- The affluent countries, MEF and non-MEF, should also have obligations to extend a "green ladder" to poorer developing non-MEF members, to realize their equitable access to sustainable development

Operationalizing the compromise: the carbon budget

- Climate science posits that to avoid dangerous interference with the climate system, emissions should be capped at a given threshold within a timeframe
- Based on Meinshausen *et al.* the carbon budget from fossil sources over the period 2013-50 for MEF members to remain under 2 °C in 2100 amounts to 400 Gt CO_2
- Our compromise equitably shares such carbon budget – and hence the contextual inversely proportional emissions reductions – among MEF members on the basis of R&C

Operationalizing the compromise: R&C

- Our operationalization of responsibility follows a short-horizon polluter pays principle, based on 1990-2010 cumulative emissions, and defines capability as mean per capita income (2010 per capita GDP, US$ PPP)
- For being politically feasible the calculation of the shares of the carbon budget takes account of the dimension of the economies of MEF members, estimated through their emissions

Determination of R&C

1. Calculation of baseline/non-corrected shares on the basis of 2010 emissions
2. Calculation of the responsibility correction on the basis of consumption-based 1990-2010 cumulative emissions
3. Calculation of the capability correction on the basis of 2010 GPD US$ per capita in purchasing power parity (PPP)
4. Application of the responsibility and capability corrections to baseline shares in a directly proportional way. From (1) are subtracted (2) and (3)
5. Scaling of the shares calculated in (4) to the 400 Gt carbon budget

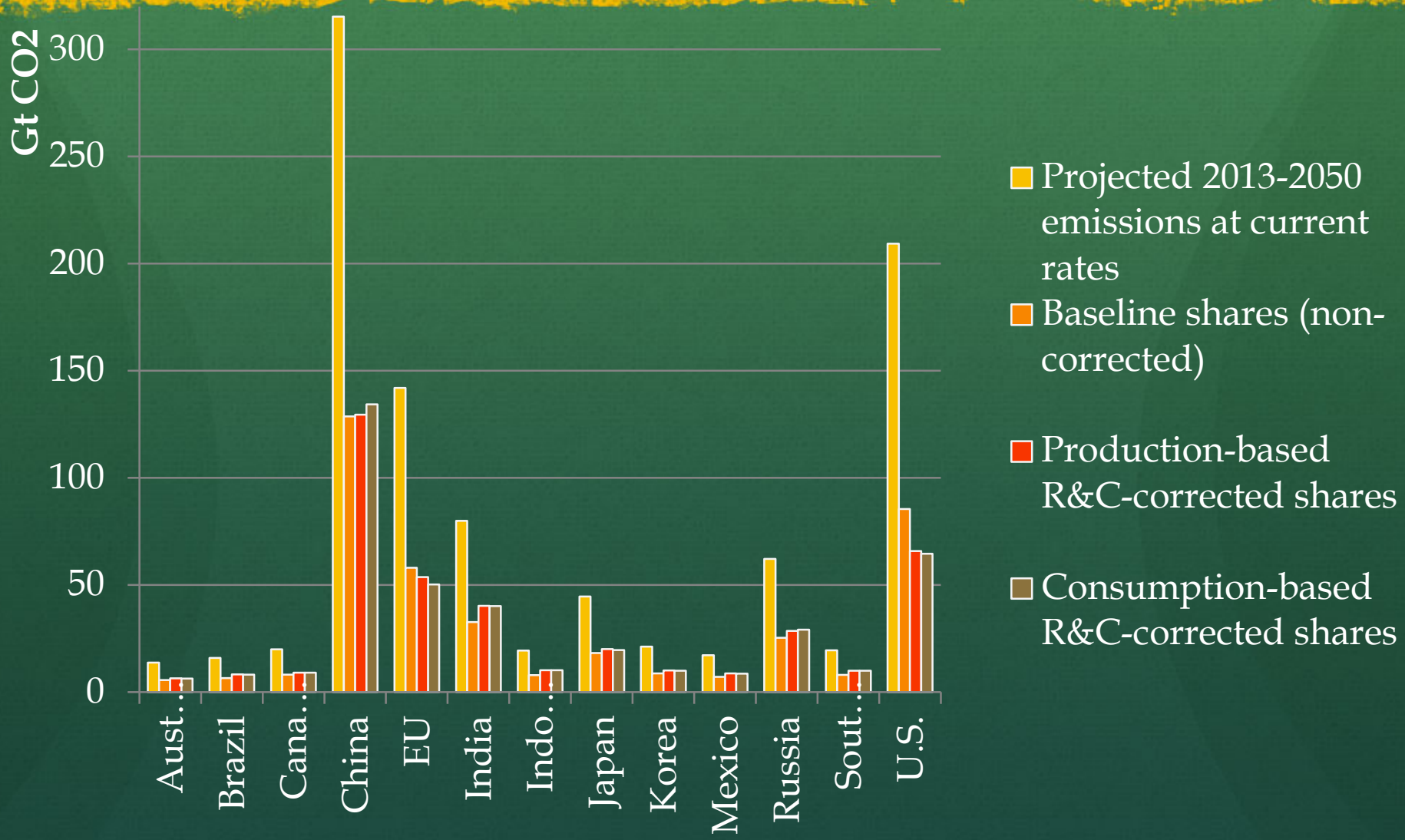
CONSUMPTION-BASED CORRECTION - All non % values expressed in Mt CO2

	2010 Em	% 2010 Em on Tot	Baseline (non-corrected CB)(1)	1990-2010 aggregate Cons-Em	Responsibility Correction (2)	2010 GPD US$ per capita (PPP) World Bank	Capability Correction(3)	Intermediate CB corrected R&C(4) e.g. 5619 – 1.4%*5619 – 13.5%*5619	Percent Intermediate CB corrected R&C	CARBON BUDGET (5)
Australia	362	1,4%	5619	6259	1,4%	39721	13,5%	4782	1,6%	6309
Brazil	419	1,6%	6499	6788	1,6%	11183	3,8%	6151	2,0%	8116
Canada	524	2,0%	8133	10953	2,5%	40370	13,7%	6815	2,2%	8992
China	8295	32,2%	128676	79203	18,2%	7794	2,6%	101802	33,6%	134321
EU27 total	3736	14,5%	57956	101988	23,5%	32101	10,9%	38037	12,5%	50186
India	2102	8,2%	32603	23886	5,5%	3454	1,2%	30427	10,0%	40147
Indonesia	509	2,0%	7903	5668	1,3%	4636	1,6%	7676	2,5%	10128
Japan	1173	4,6%	18201	30171	6,9%	33874	11,5%	14847	4,9%	19589
Korea	558	2,2%	8652	10117	2,3%	30286	10,3%	7562	2,5%	9978
Mexico	453	1,8%	7023	8584	2,0%	15266	5,2%	6521	2,2%	8604
Russia	1634	6,3%	25352	26684	6,1%	20036	6,8%	22073	7,3%	29123
South Africa	512	2,0%	7940	5805	1,3%	10465	3,5%	7552	2,5%	9965
USA	5508	21,4%	85443	118034	27,2%	45922	15,6%	48917	16,1%	64542
	25786	100%	400000	434140	100%	295108	100%	303163	100%	400000

Shares of the Carbon Budget

	Projected 2013-2050 emissions at current rates (Mt CO_2)	Baseline shares (Mt CO_2)	Production-based R&C-corrected shares (Mt CO_2)	Consumption-based R&C-corrected shares (Mt CO_2)	Differential (%)	Differential (Mt CO_2)
Australia (Exp)	13,765	5,619	6,327	6,309	-0.3%	-18
Brazil (Imp)	15,921	6,499	8,163	8,116	-0.6%	-48
Canada (Imp)	19,924	8,133	9,045	8,992	-0.6%	-52
China (Exp)	315,220	128,676	129,500	134,321	3.6%	4,821
EU (Imp)	141,975	57,956	53,683	50,186	-7.0%	-3,497
India (Exp)	79,868	32,603	40,163	40,147	0.0%	-17
Indonesia (Exp)	19,361	7,903	10,168	10,128	-0.4%	-41
Japan (Imp)	44,587	18,201	19,981	19,589	-2.0%	-391
Korea (Imp)	21,195	8,652	10,065	9,978	-0.9%	-87
Mexico (Imp)	17,205	7,023	8,658	8,604	-0.6%	-54
Russia (Exp)	62,105	25,352	28,535	29,123	2.0%	588
South Africa (Exp)	19,451	7,940	9,959	9,965	0.1%	6
U.S. (Imp)	209,311	85,443	65,752	64,542	-1.9%	-1,210

Emissions reductions



Main outcomes

- Largest carbon-importers would be somewhat penalized by consumption-based accounting
  - In particular, the EU would have a 7% larger emissions abatements burden (i.e. 3.5 Gt CO_2) than with current production-based
  - More modest shifts occur for the U.S., who would have 1.9% larger emissions reductions (1.2 Gt CO_2) and for Japan (2%, or 0.4 Gt CO_2)
- Conversely, the leading carbon exporters (China and Russia) would have respectively 3.6 (or 4.8 Gt CO_2) and 2.0 (or 0.6 Gt CO_2) % smaller emissions reductions required in consumption rather than in production terms
- For the remaining MEF members the differences in emissions reductions are not significant (< 1%)

Some considerations

- Our compromise seems capable of furthering climate negotiations for three 'pragmatic' reasons:
  1. C-based more acceptable to China, who would have substantial "headroom" and less stringent targets
  2. The U.S., the other top emitter, would not be excessively penalized by C-based accounting
  3. C-based accounting does not disproportionally penalize anyone
     - The main difference involves the EU, whose relatively successful recent de-carbonization seems largely due to the off-shoring of carbon intensive productions

Policy pointers

- MEF's emissions reductions are highly ambitious, especially for China, the U.S. and to a lesser extent for the EU, even though there is still time for greening these economies
- With emission trading, it would be in principle possible for the most penalized economies to carry out part of their mitigation commitments in other countries also not belonging to MEF
- Consumption-based accounting, though not profoundly different from production-based accounting, satisfies most of the requisites for successful climate negotiations
- At the same time, consumption-based accounting answers a legitimate concern of economies with substantial embodied emissions in their exports, and especially those of the largest carbon-exporters like China

A new way forward

- Our compromise is indeed ambitious in terms of emissions reductions, but it is politically feasible:
  - Each MEF member would, in fact, achieve and give up some of their short-term goals in this simple framework
  - Despite the importance of national sovereignty each MEF member will have to relax some of their hard-line positions: no one will win if they do not
  - Other details will have to be worked out
- In the short-term, and especially with the 2015 deadline to structure a deal under the Durban Platform approaching, the MEF, with this compromise, can constructively lead the way