

Building an Equitable Agreement on Climate Change

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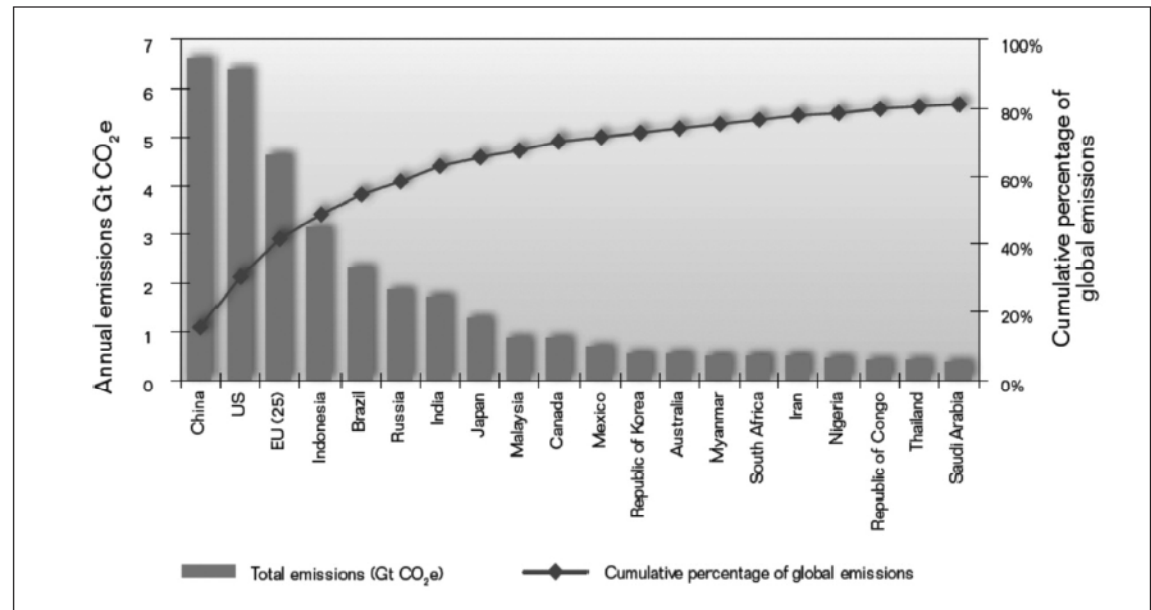
Three parts

- Part I: Risks.
- Part II: Current global positions and where we need to be.
- Part III: Possibilities for India.

Risks: from people to emissions

Emissions by country

- The combined effects of growth, industrialisation and hydrocarbon use substantially increased flows of greenhouse gas emissions: thus concentrations of stocks have grown from 285ppm in the mid 19th-century to over 430ppm CO₂e today.

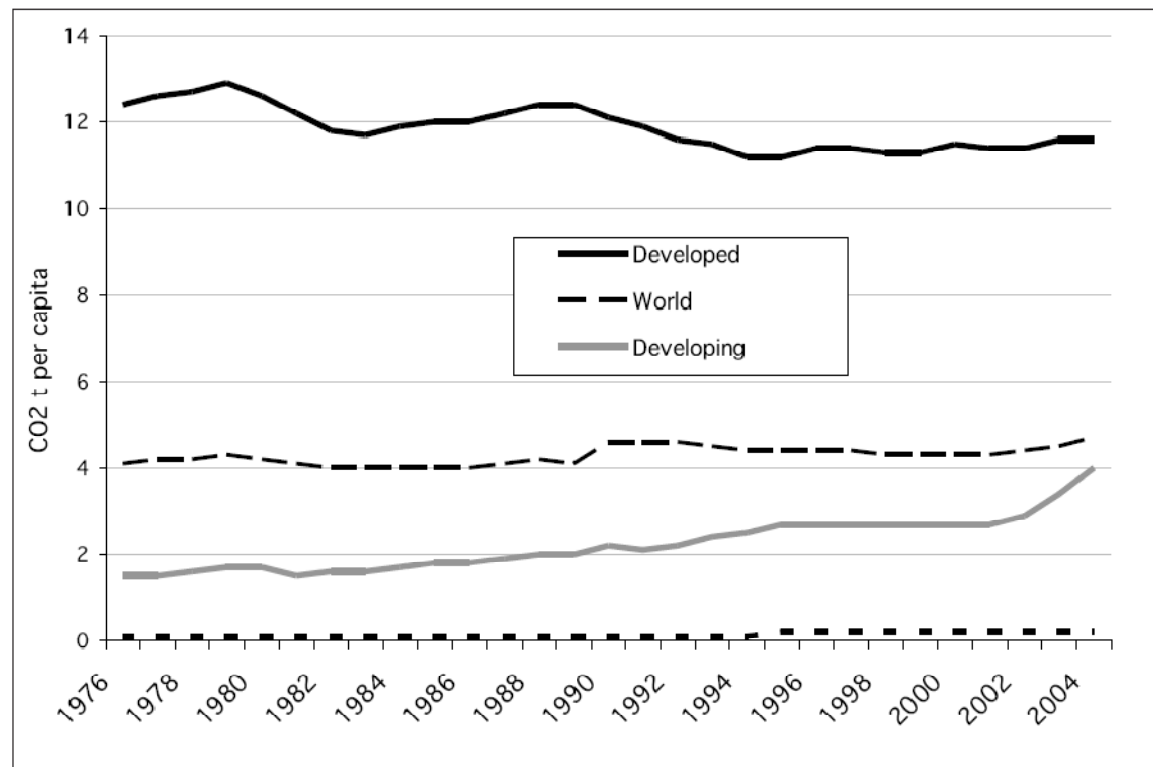


Source: Garnaut (2008), UNFCCC (2007) 2004 data for US, EU (25), Russia, Japan and Canada; Department of Climate Change (2008) 2004 data for Australia (using UNFCCC accounting); and World Resources Institute (2008) for other countries (2000 data except for CO₂ emissions from fossil fuels, which is for 2004).

Risks: from people to emissions

CO₂ emissions per capita (1976–2004)⁶

- Over the next 20 years developing countries will play an increasing role in driving growth in overall emissions.
- Per capita emissions for rich countries are much higher.



Source: Climate Analysis Indicators Tool (CAIT)

Risks: from stocks to temperature

Stabilisation level (in ppm CO ₂ e)	2°C	3°C	4°C	5°C	6°C	7°C
450	78	18	3	1	0	0
500	96	44	11	3	1	0
550	99	69	24	7	2	1
650	100	94	58	24	9	4
750	100	99	82	47	22	9

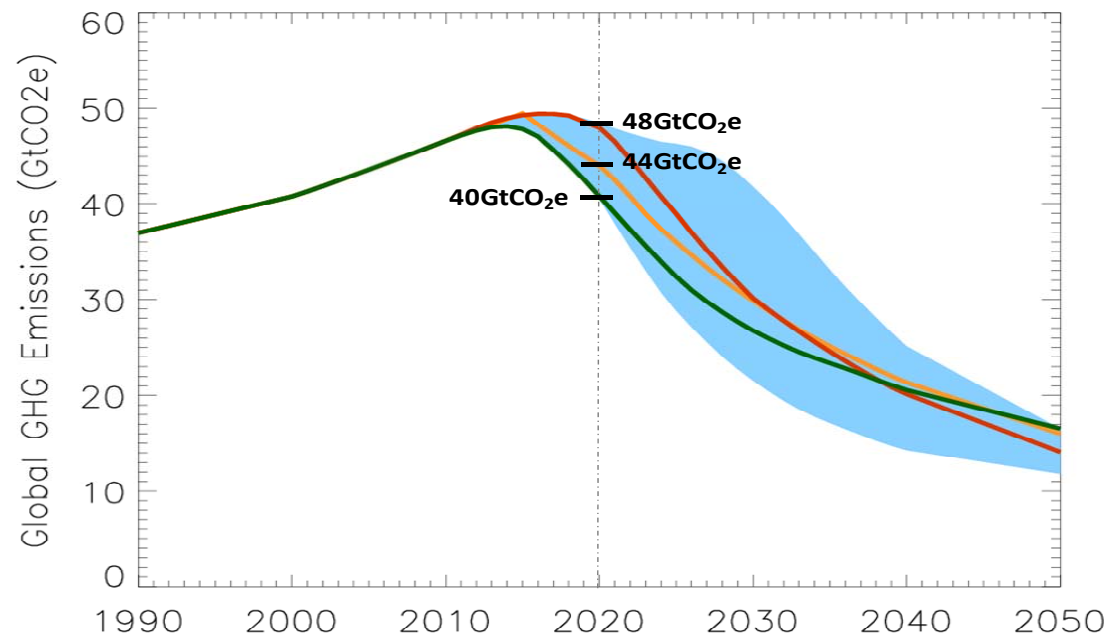
Extrapolations from Murphy et al. 2004

Source: Meinshausen 2006; Murphy et al. 2004; calculations.

Risks: potentially devastating effects on development and battle to overcome poverty

- We are already over 430ppm CO₂e, and are adding at a rate of over 2.5ppm per year (likely to accelerate with little or weak action). BAU will probably take us over 750ppm by the end of the century.
- This level of concentration would result in a large probability, around 50% or more, of an eventual temperature increase of more than 5°C compared with the pre-industrial era. This would be enormously destructive.
- Physical and human geography would be transformed. The planet has not seen such temperatures for 30 million years. Potential cause of migration of billions of people around the world and thus severe, extended and global conflict.
- Potentially devastating consequences for India's development and battle to overcome poverty.
- Our response to the two defining challenges of our century – overcoming poverty and managing climate change will succeed or fail together.

Risks: what our targets should be



- Holding below 500ppm CO₂e, and reducing from there, is necessary to give a reasonable chance of staying below 2 degrees. This requires bringing emissions down to below **20Gt CO₂e** (approx. 50% of 1990 levels) by 2050. Would reduce the risk of a 5°C increase to less than a 5% probability.
- A range of trajectories is possible – later peak years require stronger action later on.
- As global population likely to be around 9 billion in 2050, these simple headline numbers imply average emissions around **2 tonnes per person**.
- Cannot afford any delays: a delay of 10 years in initiating action would be likely to increase the ‘starting concentration’ from around 435ppm CO₂e to over 465ppm CO₂e, making required deductions more costly or impossible.
- This presentation examines trajectories with around **47Gt CO₂e** in 2010 (reduced by slowdown – might have been 50), **44Gt** in 2020, **under 35Gt** in 2030 and **under 20Gt** in 2050. Likely to have to go ‘**well under**’.

These results are based on the Hadley Centre climate model MAGICC
Thanks to Jason Lowe and Laila Gohar for running these trajectories through the model

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Emissions scenarios consistent with global emissions of 30 GtCO₂e in 2030

Emissions scenarios 2030

Constant growth: China & India 7%; Indonesia & Brazil 5%; US & EU/Japan 2.5%

Emissions		USA		EU 27 & Japan		China		India		Indonesia & Brazil		Rest of World	
Trajectory consistent with 30Gt CO2e in 2030	Year (total Gt)	tCO2e per capita	Total (GtCO2e)	tCO2e per capita	Total (GtCO2e)	tCO2e per capita	Total (GtCO2e)	tCO2e per capita	Total (GtCO2e)	tCO2e per capita	Total (GtCO2e)	tCO2e per capita	Total (GtCO2e)
Scenario 1: em/output: India & China constant; US, EU27 & Japan, Indonesia & Brazil cut by factor of 2 by 2030	2030 (30Gt)	14.9	5.5	9.0	5.5	19.2	28.0	4.8	7.1	15.2	7.4	-6.1	-23.6
Scenario 2: em/output: India cut by factor of 2, China cut by factor of 4; US, EU27 & Japan, Indonesia & Brazil cut by factor of 2 by 2030	2030 (30Gt)	14.9	5.5	9.0	5.5	4.8	7.0	2.4	3.5	15.2	7.4	0.3	1.0
Scenario 3: em/output: India & China constant; US, EU27 & Japan, Indonesia & Brazil cut by factor of 4 by 2030	2030 (30Gt)	7.5	2.8	4.5	2.8	19.2	28.0	4.8	7.1	7.6	3.7	-3.7	-14.3
Scenario 4: em/output: India cut by factor of 2; China, US, EU27 & Japan, Indonesia & Brazil cut by factor of 4 by 2030	2030 (30Gt)	7.5	2.8	4.5	2.8	4.8	7.0	2.4	3.5	7.6	3.7	2.6	10.2

Assumptions		USA		EU 27 & Japan		China		India		Indonesia & Brazil		Rest of World	
Emissions (recession adjusted)		tCO ₂ e per capita	Total (GtCO ₂ e)	tCO ₂ e per capita	Total (GtCO ₂ e)	tCO ₂ e per capita	Total (GtCO ₂ e)	tCO ₂ e per capita	Total (GtCO ₂ e)	tCO ₂ e per capita	Total (GtCO ₂ e)	tCO ₂ e per capita	Total (GtCO ₂ e)
E2010		21.2	6.7	10.8	6.7	5.4	7.2	1.5	1.8	13.1	5.6	6.2	18.5

Sources: Climate Analysis Indicators Tool (CAIT) & Global Carbon Budget Project.

Population (bn)

E2030	0.37	0.61	1.46	1.49	0.49	3.89
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Source: UN 2008 World Population Prospects

Current “intentions” for 2020

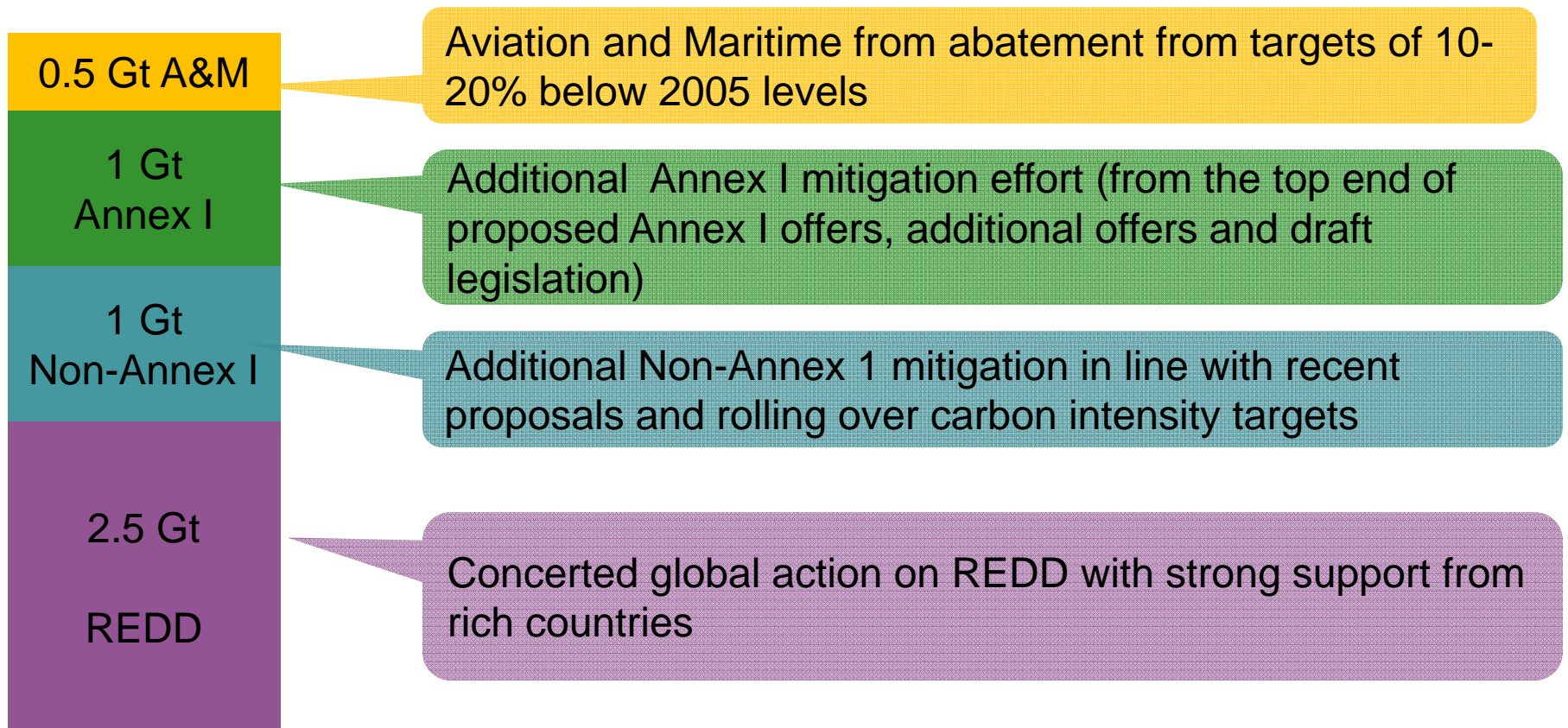
	Policy, intention or target	2020 Emissions (Gt CO ₂ e)
US	1990 levels	6.1
EU	-20% on 1990	4.5
Japan	-25% on 1990	1.0
Other developed countries	Current intentions	4.9
Developed country total		16.4
China	2010 intensity target; 2020 renewable and nuclear target (1.3 Gt saving)	11.2
India	2020 solar mission, renewable target, 2017 forestry target (0.2 Gt saving)	3.6
Other developing countries	Business as usual	18
Developing countries total		32.8
Global total		49.2

- Current intention and policies imply overall emissions around 49Gt in 2020.
- This is a saving on business as usual of 6-11Gt.
- It leaves a gap of around 5Gt.
- This does not include forestry intentions other than India

Note: Offsets would shift the balance of actual emissions and would imply finance flows to developing countries

Options for filling a 5Gt gap

- An example of how to close the gap.
- There are a number of alternative options - more progress on one area would mean less on another.
- Higher BAU would require more than an extra 5 Gt.



An ambitious global deal

A deal must be effective, efficient and equitable. A deal that fails on one or more of these fundamental principles will not be sustainable.

- **Effectiveness** – it must lead to the necessary cuts in emissions of greenhouse gases;
- **Efficiency** – it must be implemented in a cost-effective way, with mitigation focussed where and when it is cheaper; and
- **Equity** – it must take account of the fact that it is poor countries that will be hit earliest and hardest; further, rich countries have greater wealth, more technology and a particular responsibility for the cause of the problems through their past emissions. Equity requires strong reduction targets in rich countries, significant funding for mitigation and adaptation, and sharing of technologies.

An ambitious global deal – broad picture

- Six key numbers

~ 50Gt	<35Gt	<20Gt	>80%	US\$100bn	US\$100bn
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- Global emissions - around 50Gt in 2010; under 35Gt in 2030; under 20Gt in 2050. Likely to have to go well under these figures for 2030 and 2050.
- Agreement must be based on the foundations laid out in the “Bali Roadmap”, including Annex 1 – non-Annex 1 distinction.
- The developed world must lead with strong and credible commitments in 2020 and 2030 towards a reduction of at least 80% by 2050. This would bring Europe and Japan close to the 2 tonnes per capita world average required by 2050.
- The developing world will be 8 out of the 9 billion people in 2050 – they must be centrally involved. Even if rich countries were at zero, their average could not exceed 2.5 tonnes per capita. Strong climate change action plans are crucial.
- Developing world could indicate readiness to take on targets within 10 years or so *conditional on* strong performance by the developed world over the next decade on their reductions, finance and sharing technology.

An ambitious global deal – key detail

- Developing country action conditional on **finance** for climate change action plans. Rich countries to provide support and scale up finance over time, with additional support contingent on progress.
- Rich country commitments for 2015:
 - Firm and quantifiable commitments for 2015 (at least \$50 bn. p.a.) to provide near-term credible support for climate change action plans so that action can move quickly. Additionality.
 - \$50bn p.a. commitment (some through the markets) by 2015 (0.1% of rich country GDP). Possible breakdown: \$15bn deforestation; \$15bn adaptation with priority for Africa and other vulnerable communities and countries; remainder for mitigation, possibly including technology fund.
 - As total adaptation and mitigation costs are likely to be much higher than these numbers (HDR estimate \$86bn for adaptation alone in 2015), self-financing will also be substantial.
- Rich country commitments for 2020 and going forward:
 - Commitments to increase finance beyond 2015 to world figures of around \$100bn p.a. in adaptation and mitigation funding by 2020 (some mitigation funding through markets).
 - Intention for at least \$200bn p.a. in 2020s as the world moves forward to a low-carbon economy (\$100bn for mitigation and \$100bn for adaptation) depending on progress.
 - Possible sources: auction revenues, national or international; carbon tax revenues; international taxes on aviation/maritime (1-2 Gt CO₂e at \$20 – \$30 per tonne could yield \$20-60bn p.a.); general public revenues.

An ambitious global deal – key detail

- **Within overall framework important further detailed work necessary including:**
 - Governance/Institutions: could deliver finance mostly through international institutions, e.g., new African Development Bank soft window, similarly other regional banks and possibly also World Bank.
 - Assessments of additionality; new sources of finance give greater confidence.
 - Rich country 2020 emissions reduction targets.
 - Reform of CDM.
 - Programmes for strong technology policy and sharing.
 - Strong action on REDD.

A “political agreement” in Copenhagen

- Unlikely to be full treaty in Copenhagen.
- But opportunity to make strong political agreement if world decides to take it.
- This could transform the negotiations by setting clear parameters for targets and finance which could provide the foundations of a more formal international agreement.
- Basic content is in preceding three slides. Much but not all is broadly understood.
- This is the time to be explicit and resolve the differences. The consequences of failure are at best a very damaging delay and at worst great global risk.
- This now requires heads of state to take the key decisions that could allow environment, finance and other ministers to sort out the detail.

Areas for and benefits of early action

- **Early action**
 - Energy efficiency - great scope for energy efficiency improvements across all countries.
 - Halting deforestation, particularly in the tropics.
 - Low-carbon technologies - e.g., wind, solar, geothermal, hydro, wave, nuclear, bio-fuels. Strong technology promotion is essential; also analysis of risks.
- **Benefits and opportunities.**
 - Low-carbon economy will be one of the most exciting and dynamic periods in history; innovation, discovery, investment.
 - Low-carbon growth will be more energy secure, cleaner, quieter, safer, more bio-diverse.
 - Huge opportunity for private investment. Many large long-term funds seeking opportunities and many innovations emerging.
 - High-carbon growth will kill itself, first on high hydrocarbon prices and, more fundamentally, on the hostile environment it will create.

Three parts

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Current global commitments

- **Strong progress recently made outside India**
 - Japan: Prime Minister Hatoyama - 25% cut on 1990 by 2020
 - China: President Hu Jintao - cut emissions intensity by a “notable” margin by 2020
 - Brazil: National Plan on Climate Change announced 2008; deforestation targets (October 2009), cut by 80% by 2020
 - Mexico: President Calderon - Mexico will voluntarily cut its GHGs by 50m tonnes a year by 2012
 - US: slow progress but clear Presidential commitment
 - EU: building on EU ETS, R&D and renewables commitments, announced possible financial support to developing countries and re-emphasised possible 30% cut 1990 – 2020 at European Council at end October 2009.

India's influence - I

- PM Manmohan Singh reiterated commitment to ensure that India's per capita carbon emissions will never exceed the average of the per capita carbon emissions of developed countries.
- PM Manmohan Singh has argued for a review of intellectual property rights for green technology and financial commitments to help pay for technology sharing.
- Amb. Shyam Saran - India will support the Group of 20 leaders on withdrawing subsidies for fossil fuels 'over time'.
- Minister Jairam Ramesh – India will quantify emission reductions based on current mitigation policies: and will work to create equitable agreement.
- Challenging but constructive approach has changed international perspective on India's role.
- India's low per capita emissions past and present, extent of poverty, high vulnerability and analytic and diplomatic capability imply strong moral authority.

India's influence - II

The per capita principle

- Is there a right to damage the “atmospheric commons” by emitting as opposed to a right to development and use of energy? Better to see permits as an issue of allocation of newly created financial assets?
- Distinction between actual emissions and permits: actual per capita emissions by 2050 will have to be fairly close, to around 2 tonnes per capita, if we are to hold global emission below 20 Gt. But allocation of permits not necessarily equal.
- Per capita principle places a limit on allocations to rich countries given past history of much higher emissions
- From perspective of principles relevant to inequality, should richer countries get lower allocation of new financial assets?
- Thus should rich countries have zero permits for some time?

India's influence - III

- CDM is one-sided trading (rewarded for reductions but not penalised for increases): when could India anticipate targets and transition to two-sided trading?
- Could India indicate readiness to take on targets in say 10 – 15 years conditional on rich country performance in: their reductions; sharing technologies; and finance? That would be conditionality set by poor countries on rich countries.
- Can India support proposals for 'wholesaling' CDM? E.g. State-level power programmes, or city plans?

India's influence: low-carbon growth

- The new technologies will be a major driver of growth over next 2 or 3 decades.
- Products with high-carbon content risk being penalised in international trade if domestic policies not in place.
- China has seen the new growth possibilities in this area and will move strongly in 12th and 13th five year plans (2011 – 2020).
- India has many natural advantages: technological creativity; engineers; entrepreneurs; solar
- Advantages of lack of dependence on grid for some users and technologies.
- Importance of reforms to facilitate and foster opportunities; including cutting hydrocarbon subsidies. Strong private sector response likely.
- Low-carbon growth: more opportunity than “burden”.

India's influence: possible ways forward

- Continue to:
 - (a) demonstrate and quantify what India is doing
 - (b) emphasise India's low emissions relative to other countries and PM Manmohan Singh's commitment to keep emissions per capita below rich countries
- Continue to support priority for adaptation funding for most vulnerable and poorest countries and communities, particularly Africa.
- Promote \$50 bn. p.a. by 2015 as a minimum contribution by rich countries for climate finance with priority for adaptation and combating deforestation, emphasising additionality. Without this, a \$100bn p.a. target for 2020 is not credible.
- Promote reform of CDM to allow wholesale or programme support (not just projects) and widen eligible technologies.
- Work with US for stronger finance and emissions reductions from them while promoting international understanding of their starting position
- Consider indicating readiness to take on formal targets around a decade or so from now **provided** rich countries meet conditions on finance, technology and their emissions reductions.