Climate Action in Major Emerging Economies

Brazil, China, India, Mexico and South Africa

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"We, on our part, are committed to undertaking nationally appropriate mitigation and adaptation actions which also support sustainable development. We would increase the depth and range of these actions supported and enabled by financing, technology and capacity-building with a view to achieving a deviation from business-as-usual." Statement by Brazil, China, India, Mexico, and South Africa in July 2008 at the G8 Summit in Japan[1]

In 2007 the Intergovernmental Panel on Climate Change (IPCC) released its most definitive report to date, finding that human-induced climate change is already underway and will lead to catastrophic results if not addressed quickly. Estimates of the impacts show that there seems to be a tipping point around 2°C above which the risks become unacceptably high, e.g. a sharp rise in the number of people exposed to water scarcity, coastal flooding and infectious diseases. To ensure a realistic chance of limiting global warming below 2°C, global Greenhouse Gas (GHG) emissions will need to peak in the next 10-15 years and then decline sharply resulting in a GHG concentration level no higher than 450 ppm CO2-equivalent. Table 1 below shows the level of emissions reduction required in developed countries and developing countries under three scenarios: 450 ppm (54% chance of 2°C); 550ppm (34% chance of 2°C); 650 ppm (12% chance of 2°C).[2]

[1] http://www.g8.utoronto.ca/summit/2008hokkaido/2008-g5.html
[2] Turner, Adair (2008), 'Interim Advice by the Committee on Climate Change', Letter to Department for Energy and Climate Change (DECC) on the UK's 2050 emissions target, 7 October. Available at www.theccc.org.uk

Table 1. The difference between GHG emissions in 1990 and emissions allowances in 2020/2050 for developed countries (Annex I) and developing countries (Non-Annex I) as a group for three GHG concentration levels

Scenario category	Region	2020	2050
A-450 ppm CO2 eq.	Annex I	-25% to -40%	-80% to -95%
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia, and Centrally Planned Asia	Substantial deviation from baseline in all regions
B-550 ppm CO2 eq.	Annex I	-10% to -30%	-40% to -90%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia	Deviation from baseline in most regions, especially in Latin America and Middle East
C-650 ppm CO2 eq.	Annex I	0% to -25%	-30% to -80%
	Non-Annex I	Baseline	Deviation from baseline in Latin America and Middle East, East Asia

Source: IPCC AR4 WG3, 2007

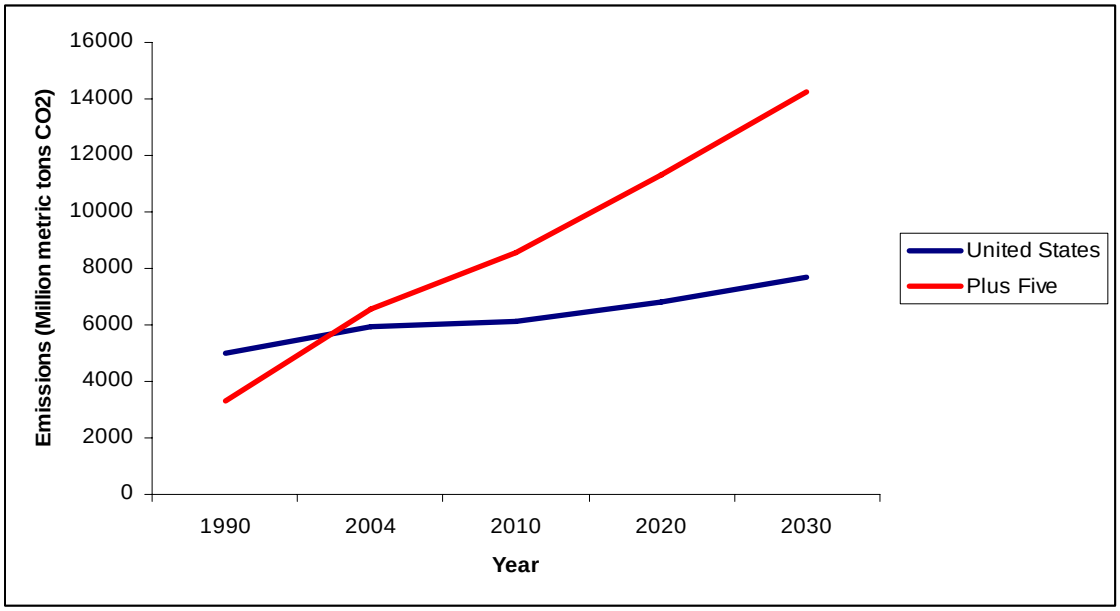
Climate change is a global problem. A ton of CO2 emitted in one country will have adverse consequences for every other country. Solving the problem will require global cooperation on an unprecedented scale. Under the UN Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol, other developed countries have been reducing their emissions.[3] The EU has embraced the goal of limiting global warming below 2°C and pledged to reduce its emissions by 20-30% by 2020 from 1990 levels. The "Plus Five" major emerging economies – Brazil, China, India, Mexico, and South Africa – recognise the challenge, are already taking action and are committed to doing more as part of an international agreement.

[3] The US ratified the UNFCCC in 1992. It is therefore federal law with equal force to any other law. The US signed the Kyoto Protocol in 1997 but has not ratified it.

Why the Plus Five matter

GDP growth in the Plus Five has been extremely high. China and India in particular have averaged 9.8% and 6.2% growth per year between 1990 and 2005, respectively.[4] With this economic expansion has come a rapid rise in GHG emissions: Plus Five emissions increased by 32% from 1990 to 2000, compared to a global average increase of 14% during the same period.[5] On current trends emissions from the Plus Five will be almost twice those of the US by 2030 (Figure 1).

Figure 1. Total emissions for US and Plus Five, 1990 - 2030[6]



Source: Data from EIA: International Energy Outlook 2007

Per capita emissions in the Plus Five remain well below those of the US. But with over 40% of the world's population their total emissions are large. China's total emissions are already close to those of the US (Table 2).

[4] Data taken from United Nations Statistics Division.
[5] Murphy et al. (2008), 'Furthering EU Objectives on Climate Change and Clean Energy: Building partnerships with major developing economies', (Winnipeg, Canada: International Institute for Sustainable Development), p.17.
[6] Graph does not include data for South Africa.

Table 2. Population, GDP and Emissions figures for the US and the Plus Five. Emissions figures are for CO2 only and do not include deforestation or other land use change.

Country	Population (million)	GDP (billion 2000$)	CO2 Emissions* (Mt of CO2)	CO2 Emissions share of world total	CO2 Emissions Per Capita
United States	296.68	10995.8	5816.96	21.44%	19.61
Brazil	186.41	670.45	329.28	1.21%	1.77
India	1094.58	644.1	1147.46	4.23%	1.05
China	1304.5	1889.93	5059.87	18.65%	3.88
South Africa	46.89	159.7	330.34	1.22%	7.04
Mexico	105.3	636.16	389.42	1.44%	3.70
Plus Five	2737.68	4000.34	7256.37	26.74%	2.65
World	6432	36281	27136 **	NA	4.22

Source: IEA Key World Energy Statistics, 2007

*CO2 emissions are from fuel combustion only.

**The figure includes CO2 emissions from international aviation and international maritime bunkers.

The Plus Five countries also play an important regional and international leadership role on climate change. Brazil hosted the original 'Earth Summit' which gave birth to the UNFCCC. All five countries are active in the 'G77 + China' bloc of developing countries which often presents common positions within the UNFCCC negotiations. All have been participating since 2005 in G8 discussions of climate change and were part of the 'Major Economies Meeting' process convened by the Bush administration in 2007-08.

The Plus Five do not always speak with a single voice on climate change but they are united in emphasising that:

- Developed countries are responsible for 70% of historical emissions and must cut their emissions further and faster than developing countries, in line with the UNFCCC's principle of "common but differentiated" responsibilities.
- Developing countries will be worst affected by climate change; developed countries must provide support for adaptation as agreed under the UNFCCC.
- Developing countries' first priority is economic growth and poverty reduction – if they are to combine this with enhanced action to curb their emissions then developed countries must meet their commitments under the UNFCCC to deliver more support (finance and technology transfer).

This emphasis on the need for developed country leadership has fuelled a perception in some quarters that the Plus Five are not prepared to take action themselves. The evidence shows, however, that they are already rising to the challenge.

Action being taken by the Plus Five

South African environment Minister Martinus Van Shalkwyk has stated that "The world faces a global climate emergency. It is now clear that only action by both developed and developing countries can prevent the climate crisis from deepening." The Plus Five countries all recognise that they are vulnerable to climate change and that business-as-usual is not an option. Of the 10 major cities most exposed to flooding and other impacts of climate change, four are in China (Guangzhou, Shanghai, Tianjin, Hong Kong) and two are in India (Calcutta, Mumbai).[7]

The Plus Five also recognise that climate action can have wider benefits. Investing in energy efficiency is seen as a "win-win" strategy with enormous potential for both cost savings as well as emissions reduction. India, for example, could save an estimated $3.1 billion per year through investments in energy efficiency.[8] Tackling deforestation – the source of roughly 20% of global emissions – supports climate goals as well as preserving biodiversity and land

[7] http://www.oecd.org/dataoecd/59/36/39729575.pdf
[8] World Bank, News and Broadcasts, 'India: Energy Efficiency Lending Focuses on Industry Clusters', available at: http://go.worldbank.org/Q0UZCGL440.

for indigenous peoples. Cleaning up power stations can reduce emissions as well as improving air quality. These "co-benefits" are an important driver for climate action by developing countries.

Another key factor is the growing role of renewable energy companies in the Plus Five economies. China's Suntech is the third largest manufacturer of solar cells in the world. India's Suzlon is one of the world's five biggest makers of wind turbines.[9] Companies of this kind see the shift to a low carbon economy as an opportunity, not a threat, with wider implications for national policy. This trend has been supported by the Kyoto Protocol's 'Clean Development Mechanism', under which developed countries can invest in emissions reduction projects in developing countries. China alone has delivered emissions reduction of around 120 million tons of CO2 through CDM projects – equivalent to around 53% of global CDM emissions reduction to date according to the UNFCCC.[10] India comes second, accounting for 13.5% of global CDM emission reductions.

While these are positive signs, the Plus Five also face immense challenges in combining climate action with rapid economic growth and poverty reduction. India for example will need to boost its power generation capacity at least six-fold by 2030 if it is to maintain current rates of economic growth. To reduce the environmental impact of this investment it will need financial and technological support from the US to, for example, accelerate the demonstration and deployment of clean coal technologies. The Plus Five also need support in building the administrative capacity to monitor and report emissions, control deforestation and to adapt to the impacts of climate change.

China. China's 11th Five-Year Plan (2006-2010) includes a target to reduce energy intensity (energy consumption per unit GDP) by 20% in the five years to 2010. If achieved this would translate to a saving of over 1.5 billion tons CO2-equivalent[11] – around four times more than the EU-15 is required to mitigate under its collective Kyoto Protocol target.[12] It is well known that China has been

[9] http://www.economist.com/displaystory.cfm?story_id=11488548
[10] http://cdm.unfccc.int/Statistics/Registration/AmountOfReductRegisteredProjPieChart.html
[11] Lin, J., Zhou, N., Levin, M. And Fridley, D. (2008), 'Taking out 1 billion tons of CO2: The magic of China's 11th Five Year Plan?', Energy Policy 36 (3), 954-970.
[12] EU-15 refers to the 15 Member States of the EU in 1997 when the Kyoto Protocol was signed. Their collective target is to reduce their emissions by 340 million tonnes CO2-equivalent. The 12 countries that have joined the EU since 1997 have separate national targets - http://www.europaworld.org/week167/background5304.htm.

building one coal-fired power plant a week on average over the past few years.[13] What is less well known is that in 2007 the government closed 553 smaller, inefficient plants with total capacity of around 14GW.[14] Since 2005 China has required that all new large power plants use high efficiency super-critical coal-fired technology. China also has ambitious plans on renewables (15% of total energy supply by 2020), vehicle fuel efficiency (minimum standard of 36 mpg in 2007; higher than the US federal standard of 27.5 mpg adopted in 2007 and the proposed 35 mpg standard by 2020)[15] and other key sectors – all summarised in a detailed National Climate Change Programme (2007)[16] and in a recent Climate Change White Paper (2008). [17]

India. India's Ministry of Renewable and Non-Conventional Energy was established as long ago as 1982. India ranks fourth in the world for installed wind capacity and second in the world for biogas.[18] Reliance Solar, an Indian company, is building a massive 1 GW plant, equivalent to one-third of the world's current solar manufacturing capacity. By the year 2020, India is expected to produce 25% of its energy from renewables.[19] Energy efficiency is also a top priority: since 2004 India's energy use has grown by around 4% per year, less than half the average rate of economic growth (9%). India's National Action Plan on Climate Change[20], published in 2008, sets out further commitments.

Brazil. 75% of Brazil's emissions are linked to deforestation. Tackling this problem has been a top priority for several years, with some success: according to figures released by the government deforestation rates fell 25% between August 2005 and July 2006[21], and by 20% between August 2006 and July 2007.[22] Part of the government's National Plan on Climate Change, approved in December 2008, is a target to cut rainforest destruction by 70% over 10 years beginning with a 40% reduction of deforestation in 2009. This would mean a

[13] Jeffrey Logan, Joanna Lewis and Michael B. Cummings (2007), 'For China, the shift to climate-friendly energy depends on international collaboration', *Boston Review*, January/February. Available at: http://www.pewclimate.org/press_room/discussions/jlbostonreview.cfm
[14] The Climate Group (2008), 'China's Clean Revolution', August.
[15] Valedes-Dapena, P. (2007), 'A 35 mpg future for your car', CNNMoney.com, December 18.
[16] http://en.ndrc.gov.cn/newsrelease/P020070604561191006823.pdf
[17] http://www.china.org.cn/government/news/2008-10/29/content_16681689.htm
[18] Ringwald, Alexis (2008), 'India: Renewable Energy Trends', Centre for Social Markets, Discussion Paper Series.
[19] Iniyan, S. and Jagadeesan, T. (1997), 'A comparative study of critical factors influencing the renewable energy systems use in the Indian context', Centre National De La Recherche Scientifique, 11 (3), 299-317.
[20] http://www.pewclimate.org/international/country-policies/india-climate-plan-summary/06-2008
[21] BBC News (2007), 'Brazil Amazon Destruction slows', 13 August available at: http://news.bbc.co.uk/1/hi/world/americas/6944808.stm
[22] BBC News (2007), 'Brazil deforestation slows again', 8 December available at http://news.bbc.co.uk/1/hi/world/americas/7133957.stm

72% reduction of carbon emissions over the period[23] preventing roughly 5 billion tons of CO2 from reaching the atmosphere - more than the combined commitment of developed countries under the Kyoto Protocol.[24] The climate change plan includes increased investments in renewables and targets such as a 10% reduction in annual electricity consumption by 2030, annual increases of more than 10% in the use of ethanol for motor vehicles and an obligation for all diesel to contain 5% biodiesel beginning in 2010.[25] Brazil already accounts for 17% of global ethanol production and is a world leader in pioneering the use of biofuels, reducing its own emissions by around 10% since 1975.[26] Brazil obtains 90% of its electricity from hydropower.[27]

Mexico. Since 2004 Mexican companies have been reporting their emissions under a scheme developed by the Washington-based World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The scheme remains voluntary but Mexico was the first developing country to roll it out on a national scale.[28] In December 2008 Mexico announced it would reduce economy-wide GHG emissions by 50% below 2002 levels by 2050. The goal would be achieved through a cap-and-trade programme to be operational by 2012.[29] The country's full climate change plan is due to be released in February 2009, to be adopted under the 2007-2012 National Development Plan, building on the strategy it released in May 2007.[30] It is assessing the role of sectoral commitments to reduce emissions in key sectors of its economy.

South Africa. Building on its first national climate change strategy (2004), South Africa embarked in 2006 on a nationwide process of consultation between government, business and civil society to define a long-term policy framework. The results, published in July 2008, are groundbreaking.[31] South African emissions will peak by 2020-2025 as part of a comprehensive international effort to limit global warming below 2°C.[32] This represents a

[23] Phillips, Tom, 'Brazil announces plan to slash rainforest destruction', The Guardian 2 December 2008. Available at: http://www.guardian.co.uk/environment/2008/dec/02/forests-brazil.
[24] Partlow, Joshua, 'Brazil's decision on deforestation draws praise', The Washington Post, 6 December 2008. Available at: http://www.washingtonpost.com/wp-dyn/content/article/2008/12/05/AR2008120503325.html
[25] Government of Brazil, Executive Summary: National Plan on Climate Change, Brasilia, December 2008.
[26] Goldemberg, Jose (2008), 'The Brazilian biofuels industry', *Biotechnology for Biofuels*, 1(6).
[27] IISD 2008, p.51
[28] http://www.geimexico.org/english.html.
[29] Holly, Chris, 'Mexico Sets Greenhouse Cut of 50 Percent By 2050-If Aid Provided', The Energy Daily, December 12, 2008.
[30] http://www wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/02/19/000076092_20080220122422/Rendered/INDEX/PID010Concept0Stage.txt
[31] http://www.iea.org/textbase/pm/?mode=cc&id=4157&action=detail.
[32] By comparison President Bush announced in April 2008 that US emissions would peak by 2025.

substantial deviation from the "business-as-usual" scenario under which South African emissions would double by 2030 and quadruple by 2050. More detailed policy measures are to be announced at a National Climate Change Summit scheduled for February 2009. Options under consideration include mandatory targets for key sectors and an escalating CO2 tax or emissions trading scheme. South Africa has also been clear on its readiness to do more if incentives are provided in a post-2012 international agreement.

U.S. leadership can unlock additional action in everyone's interest

The Bali Action Plan, agreed in December 2007 by the US and over 180 other countries, recognises that all countries must do more to tackle climate change – with developed countries taking binding caps, and developing countries agreeing to measurable, reportable and verifiable enhanced actions supported by finance, technology, and capacity building from developed countries. The willingness of developing countries to agree to this language, despite the lack of progress on emissions reduction by the US and some other developed countries, was an act of good faith that must be reciprocated in order for there to be continued progress in the climate negotiations.

The US is a world leader in technological innovation and finance, and has a long history of capacity building activities in developing countries. The most important thing the US can do to achieve a global agreement is to put in place its own mandatory emissions reduction commitment consistent with the IPCC's scenario for limiting global warming below 2°C. In addition, increased US support for climate action by the Plus Five would deliver multiple benefits: enabling these countries to adopt more ambitious commitments while also creating markets for US low carbon technology developers and enhancing US climate security.