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## **How Far Can Developing Country Commitments Go in an Immediate Post-2012 Climate Regime?**

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### **Abstract**

To point out the direction and focus of future international climate negotiations, this paper discusses how far developing country commitments can go in an immediate post-2012 climate regime. The paper argues that developing country commitments are most unlikely to go beyond the defined polices and measures in this timeframe. On this basis, the paper suggests that, rather than attempting the unrealistic goal, international climate negotiations may instead need to initially frame the post-2012 developing country participation in terms of certain policies and policies that I envisioned a decade ago. This conclusion does not change, as Barack Obama becomes the U.S. President and the Democrats have regained control over both U.S. House of Representatives and Senate. However, it should be emphasized that his stance on climate issues and how ambitious U.S. commitments would be under his administration are going to be critical for developing countries to take bold steps themselves and to even agree to reflect those national commitments in a global deal.

*JEL classification:* Q42; Q48; Q53; Q54; Q58

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## **1. Introduction**

At the Bali Climate Change Conference in December 2007, all governments agreed to launch a far reaching negotiation process to reach an agreement to a successor to the Kyoto Protocol, which is going to expire by the end of 2012. Given that many governments at the Montreal Climate Change Conference two years ago were even barely prepared to open an informal dialogue on future climate actions, this move is a significant step forward. It opens the way for the first time to a comprehensive negotiation of post-2012 agreement, with a clear deadline for the conclusion by 2009.

It is widely understood that the Bali roadmap is aimed to set emission commitments for Annex I countries beyond 2012. However, for the first time, developing countries in Bali agreed to commit to mitigation actions. While it is not clear yet whether these actions are existing unilateral ones or beyond, their willingness to consider mitigation actions in the next agreement raises the expectation for developing country commitments.

The question then is what can be expected from developing countries in an immediate post-2012 climate regime. This paper will focus on this issue. By revisiting the six options for China that I envisioned a decade ago and examining a variety of factors, the paper first discusses how far developing country commitments can go in an immediate post-2012 climate regime. It argues that developing country commitments are most unlikely to go beyond the defined policies and measures in this timeframe. On this basis, the paper then suggests that, rather than attempting the unrealistic goal, international climate negotiations may instead need to initially frame the post-2012 developing country participation in terms of certain policies and policies that I envisioned a decade ago. This conclusion does not change, as Barack Obama becomes the U.S. President and the Democrats have regained control over both U.S. House of Representatives and Senate.

## **2. What can be expected from developing countries in an immediate post-2012 climate regime?**

To address this issue, let's go back to international climate negotiations prior to Kyoto and subsequently until the U.S. withdrawal from the Kyoto Protocol.

Prior to Kyoto, developing countries' demand for the U.S. to demonstrate the leadership and the EU proposal for a 15% cut in emissions of a basket of three greenhouse gases below 1990 levels by 2010 put collective pressure on the U.S., which leads the world in greenhouse gas emissions. At Kyoto, the U.S. had made legally binding commitments. The Kyoto target is seen as not enough but yet not unreasonable given that the U.S. economy would not be disrupted unreasonably. This may give the U.S. some "moral" right to persuade developing countries to take meaningful mitigation action. After Kyoto, the ball was kicked into China's court. The U.S. had made it clear that bringing key developing countries, including China, on board had been and would continue to be its focus of international climate change negotiations. According to some U.S. Senators, it will be countries like China, India and Mexico that will decide whether the U.S. will ratify the Kyoto Protocol. It is therefore conceivable that the pressure will mount for China to make some kind of commitments at the negotiations subsequent to Buenos Aires.

The world's media will undoubtedly bring attention to China's non-participation, which will be seen as holding up the ratification of the Protocol by the U.S. Senate and possibly even be blamed for "blowing up" subsequent negotiations aimed at dealing with developing countries' commitments. The U.S. commitments at Kyoto and diplomatic and public pressure on China had put China in a very uncomfortable position. Under these circumstances, I envisioned a decade ago the following six proposals that could be put on the table as China's plausible negotiation position, which is each described in ascending order of stringency (Zhang, 2000).<sup>1</sup>

**First**, China could regard its active participation in CDM as "meaningful participation". **Second**, just as Article 3.2 of the Kyoto Protocol requires Annex I countries to "have made demonstrable progress" in achieving their commitments by 2005, China could commit to demonstrable efforts towards slowing its greenhouse gas emissions growth at some point between the first commitment period and 2020. Securing the undefined "demonstrable progress" regarding China's efforts is the best option that China should fight for at the international climate change negotiations subsequent to Buenos Aires.

**Third**, if the above commitment is not considered "meaningful", China could make voluntary commitments to specific policies and measures to limit greenhouse gas emissions at some point between the first commitment period and 2020. Policies and measures might need to be developed to explicitly demonstrate whether or not China has made adequate efforts. Such policies and measures might include abolishing energy subsidies, improving the efficiency of energy use, promoting renewable energies, and increasing the R&D spending on developing environmentally sound coal technologies.

**Fourth**, China could make a voluntary commitment to total energy consumption or total greenhouse gas emissions per unit of GDP at some point around or beyond 2020. In my view, carbon intensity of the economy is preferred to energy intensity of the economy (i.e., total energy consumption per unit of GDP) because all the efforts towards shifting away from high-carbon energy are awarded by the former.

**The fifth option** would be for China to voluntarily commit to an emissions cap on a particular sector at some point around or beyond 2020. Taking on such a commitment, although already burdensome for China, could raise the concern about the carbon leakage from the sector to those sectors whose emissions are not capped.

This leads to **the final option** that China could offer: a combination of a targeted carbon intensity level with an emissions cap on a particular sector at some point around or beyond 2020. This is the bottom line: China cannot afford to go beyond it until its per capita income catches up with the level of middle-developed countries." It looked like

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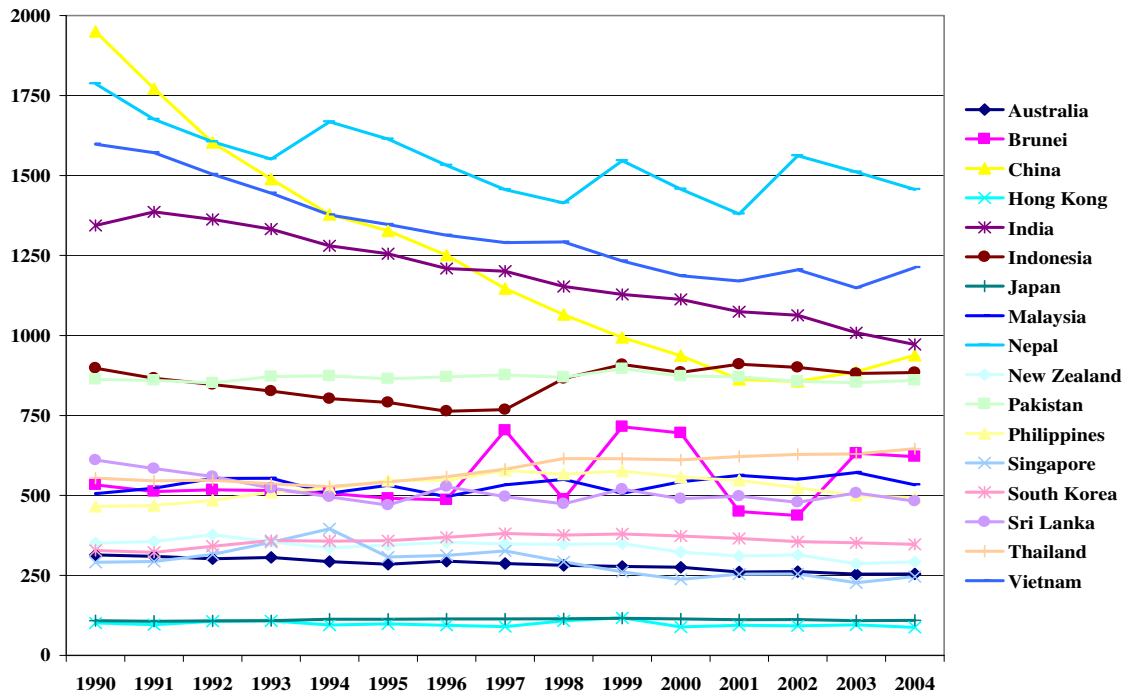
<sup>1</sup> Zhang (2000) was originally prepared for the United Nations Development Programme in 1998. When the draft of that paper was ready, the Washington DC-based Resources for the Future made a press release titled "Is China Taking Actions to Limit Its Greenhouse Gas Emissions?", September 15, 1998.

China would be pressured to take on commitments at much earlier date than what China wished. This situation has changed once the U.S. withdrew from the Kyoto Protocol.

Anyhow, international efforts towards a post-Kyoto climate regime continues. A decade later, we see that the carbon intensity and sectoral approaches-based commitments, which were discussed in the academic literature ten years ago, are formally incorporated into the Bali roadmap. This is a very positive development, and clearly indicates the policy relevance of the once-sound-theoretical ideas. However, given the very short timeframe to conclude the negotiations, in all likelihood, it would be impossible to reach the necessary agreement on the rules, countries and sectors covered and the levels of ambitions for developing countries, especially due to the amount of the data that would be required. As it has been indicated by the Asian-Pacific Economic Cooperation (APEC) Leaders Summit in September 2007, setting a carbon intensity target, even if it is not binding, is not that easy. Australia, the host country, proposed that all 21 APEC economies, regardless of whether they are developed and developing economies, agree to reduce energy intensity by at least 25% by 2030, but in the end the leaders only agreed to work towards achieving an *APEC-wide* (emphasis added) aspirational goal in energy intensity by at least 25% by 2030, relative to 2005 levels (Zhang, 2008a). This should not come as a surprise because energy use per unit of GDP, a key indicator of patterns of energy use, is still high in many developing Asian countries, and even increased in countries such as Brunei, the Philippines, Malaysia, South Korean and Thailand between 1990 and 2004. Indonesia and Pakistan consumed almost the same amount of energy per unit of GDP as they were in 1990 (Figure 1). Even the rate of energy efficiency improvement in IEA countries has been less than 1% per year since 1990 – much lower than in previous decades (IEA, 2007).

**Figure 1** Energy use per unit of GDP in the selected Asia Pacific countries, 1990-2004 (Tons of oil equivalent/million 2000 US\$).

*Source:* Zhang (2008a).



Moreover, it is inconceivable that developing countries would ever go beyond the aforementioned third option between 2013 and 2020 without an effective financial mechanism. This is the lesson learned from the Montreal Protocol.<sup>2</sup> The CDM under the Kyoto Protocol serves as a channel to provide finance and technology transfer to developing countries. The CDM market increased from 563 MtCO<sub>2</sub> equivalent of certified emission reductions (CERs) and €3.9 billion in 2006 to 947 MtCO<sub>2</sub> equivalent of CERs and €12 billion in 2007 (Point Carbon, 2008). While the CDM has emerged as a financing mechanism to mitigate greenhouse gas emissions as the implementation of CDM projects has progressed, it still does not work to full potential scale. To that end, change needs to take place both at national and international levels. At the national level, for those developing countries that have not truly benefited from the CDM, they need to put in place clear institutional structures, streamlined and transparent CDM procedures and sound governance of clearer lines of responsibility and functions to facilitate the smooth implementation of CDM projects in their countries. At the international level, post-Kyoto climate negotiations need to reform the CDM to overcome its current structural limitations and to make it accommodate those players and types of small projects that have been left out to date. When taken together and combined, they will help to expand the number and geographical reach of the CDM, thus spreading its benefits to more countries (Zhang, 2008a). Nevertheless, markets cannot deliver miracles. Market

<sup>2</sup> See Zhang (2008b) for further discussion on the lesson learned from the Montreal Protocol and its implications for multilateral trade measures in a post-2012 climate regime as well as whether the funds established within the climate regime can deliver as the Multilateral Fund under the Montreal Protocol did.

instruments like CDM, as useful as it may be, must be complemented with traditional fund solutions that provide a stable source of funding.

Now let's have a look at the funds established within the climate regime. The Special Climate Change Fund and the Least Developed Countries Fund are established under the United Nations Framework Convention on Climate Change (UNFCCC). As of October 2, 2008, the total pledged for these two funds (cumulatively, not per year) is US\$279 million (Table 1). The only fund under the Kyoto Protocol is the Adaptation Fund. The level of its funding depends on the quantity of CERs issued and their prices. Assuming annual sales of 300-450 million tons of CERs and a market price of US\$24 per ton of CERs, the Adaptation Fund would receive US\$80-300 million per year for the period 2008-2012 (UNFCCC, 2007). The Global Environment Facility (GEF) as an entity operating the financial mechanism of the UNFCCC has targeted the amount of US\$950 from its fourth replenishment at climate change projects over the period 2006-2010. **Combined together, the pledges and contributions from all these three funds and the GEF Trust Fund are well below US\$1 billion a year.**

By contrast, according to the Stern Review (Stern, 2007), the incremental costs of low carbon investments in developing countries are likely to be at least US\$20-30 billion a year. This is a very conservative estimate. The UNFCCC (2007) puts the investment estimates for climate change adaptation in developing countries in the range of US\$28-67 billion a year. On mitigation, the UNFCCC (2007) estimates the investment of US\$76 billion needed in developing countries a year.<sup>3</sup> So, developing countries will need the investment of at least US\$100 billion in climate change mitigation and adaptation. **However, the contributions from all these three funds and the GEF Trust Fund only amount to less than one percent of the anticipated needs from developing countries.** This suggests that the ratio of the combined pledged funding from the funds to the required investment at 1:100.

**Table 1** The amount of pledges and contributions from the multilateral financial mechanisms under the Framework Convention and its Kyoto Protocol

Sources	Amount (million US\$)
Special Climate Change Fund	106.57 (pledged)
Least Developed Countries Fund	172.44 (pledged)
Adaptation Fund	80-300 per year (estimated)
Global Environment Facility Trust Fund (allocated to climate change focal area)	950 (targeted for 2006-2010)

*Sources:* Global Environment Facility (2008a); UNFCCC (2007).

<sup>3</sup> The estimates vary. The World Bank (2006) estimates the incremental, upfront capital costs of US\$30 billion per year to decarbonize the power sector in developing countries alone.



**Table 2** GEF Trust Fund allocations and co-financing in the climate change focal area

GEF Phase	GEF Grant (million US\$)	Co-financing (million US\$)
Pilot phase (1991-1994)	284.80	2402.89
GEF 1 (1994-1998)	510.36	2322.10
GEF 2 (1998-2002)	681.07	3403.40
GEF 3 (2002-2006)	877.72	4810.56
GEF 4 (2006-2010)	950.00 (targeted)	
2007	76.35	1651.82
2008	138.45	1119.46
2009	88.26	514.04
Total	2657.01	16224.28

*Source:* Global Environment Facility (2008b).

The value of a single multilateral fund lies in its ability to leverage contributions from a range of other donors. Can these funds leverage co-financing from other sources to close this financing gap? Let's look at the recent record of leverage of multilateral funding. Since 1990, the World Bank Group commitments to renewable energy and efficiency have exceeded US\$10 billion, with each dollar leveraging another three dollars from other private and public sources (Cundy, 2006). The GEF as an entity operating the financial mechanism of the UNFCCC, since its inception in 1991, has provided \$8.26 billion in grants and generated over \$33.7 billion in co-financing from other sources to support over 2,200 projects that produce global environmental benefits in 165 developing countries and countries with economies in transition.<sup>4</sup> As indicated in Table 2, in the focal area of climate change, as at November 2008, the GEF has allocated since its inception a total of US\$2.66 billion from the GEF Trust Fund. This GEF funding has leveraged a co-financing in excess of US\$16.22 billion. This suggests that the GEF enjoys an average leverage ratio of 4.1 in the all six focal areas and 6.1 in the climate change focal area, meaning that each dollar of the GEF grant leverages US\$4.1-6.1 from other sources. Assuming the leverage ratio of 6 and the minimum requirement of US\$100 billion per year, then the current commitments are only able to bring the total finance value to US\$7 billion and leave the financing gap of US\$93 billion per year. To close this gap, we need to increase the multilateral funding and enhance its leverage ability. Assuming the leverage ratio of 10, which has not experienced over the long time horizon for multibillion public funding, and the minimum requirement of US\$100 billion per year, then the multilateral funding needs to be increased to US\$10 billion per year to meet developing country needs for climate change mitigation and adaptation. If the funding available under the financial mechanism of the UNFCCC remains at its current level and continues to rely mainly on voluntary contributions, it will not be sufficient to address the

<sup>4</sup> See "The About GEF" at the GEF web site at: <http://www.thegef.org/interior.aspx?id=50> (accessed on November 14, 2008).

future financial flows estimated to be needed for climate change mitigation and adaptation in developing countries. Unless this funding situation changes significantly, which is most unlikely to happen, developing countries cannot afford to make commitments beyond the third option above-envisioned a decade ago.

Furthermore, the U.S. factor will continue to play a role in affecting developing country's willingness to take on commitments and the stringency of that commitments. Let's look at the Lieberman-Warner Climate Security Act of 2008 (S.3036), the most detailed bipartisan bill to date to require domestic, mandatory and economy-wide GHG emissions reductions in the U.S. beginning January 1, 2012. On June 6, 2008, the U.S. Senate debated and held votes on this bill. While it failed to secure the 60 votes needed to close debate on the bill and move to a final vote (i.e., to "invoke cloture"), the bill has made more headway than any of its precursors because it was the first time that a GHG cap-and-trade bill had ever come to the floor of the U.S. Senate through regular order—that is, having been debated and voted out of a committee. Both the presidential candidates John McCain and Barack Obama supported the bill in the Senate, and President-elect Obama reiterated his campaign promise of a system to cap and trade greenhouse gas emissions in the U.S.. Therefore, this Act is likely to serve as a template for any future bill. Under the Act, 87% of the U.S. GHG emissions are estimated to be subject to the emission caps that are set 19% below the 2005 level by 2020 (Pew Center on Global Climate Change, 2008). However, the U.S. GHG emissions were 16.8% higher in 2005 than that in 1990 (EIA, 2007), and not all emission sources are capped under the Act. As a result, even if the Act becomes law, the U.S. GHG emissions in 2020 are probably still above its 1990 level. From a U.S perspective, that emission reduction would appear quite ambitious and require serious actions and investment, but is still far short of a 7% reduction of the U.S. GHG emissions during the period 2008-2012 required by the Kyoto Protocol and a 25-40% cut by 2020 suggested by the IPCC and demanded by developing countries. In expectation that the U.S. would take on the more stringent commitments subsequent to the first compliance period (namely, far below its 1990 level), I envisioned a decade ago that developing countries may go beyond the aforementioned third option. However, the U.S. emissions in 2020 are at best kept at its 1990 level as estimated under the Lieberman-Warner Climate Security Act. This is far from the point where it is likely that developing country would do that.

### **3. Does the election of Senator Barack Obama as the U.S. President make a difference?**

In his presidential campaign, Barack Obama supported implementation of a market-based cap-and-trade regime to reduce U.S. greenhouse gas emissions to 1990 levels by 2020. After being elected, he reiterated his campaign promises of reducing such emissions and promoting clean energy at home and actively engaging international climate negotiations. Therefore, there is any reason to expect that U.S climate policy in the incoming administration will have dramatic departure from the current one against mandatory emission cuts. However, whether such major policy shift is quick and aggressive enough for a new climate treaty by December 2009 is another story.

While it is impossible to predict what greenhouse gas emission target would be ultimately set by the U.S. Congress, it is safe to say that that target is unlikely to be more ambitious than that of such a state as California that is leading state-level climate efforts. Under the so-called Global Warming Solutions Act, California is mandated to cut its emissions to 1990 levels by 2020. The national emission target that ultimately emerges could well be less ambitious than that of California. As discussed above, even if the commitments of the aggressive leader are still far short of what developing countries and EU are calling for, then the national emission target would be even so. In my view, this situation does not change, as Obama becomes the President and the Democrats have regained control over both U.S. House of Representatives and Senate, at least on the two grounds. One is related to the “regional” character of the U.S. Congress and several major economic sectors (e.g., oil and gas production, steel), which have translated into “regional influence” in previous environmental policy-making, such as U.S. acid rain legislation (Rose and Zhang, 2004). Such regional character may well lead the Democrats from those states adversely affected by the emission caps not to vote along the party line in the Congress to protect their own constituencies. This may well lead a less ambitious national target to ultimately win approval from the Congress. The second is on timing. While Obama could begin to tackle climate change without the Congress through administrative actions, the new U.S. administration will likely not be in the position to agree to a specific emission target when governments meet in Copenhagen, December 2009. That can happen only when the Congress has enacted or is on the verge of enacting a legislation capping the U.S. greenhouse gas emissions (Diringer, 2008). However, the Democratic-controlled Congress is unlikely to act until 2010 a bill to cap the U.S. greenhouse gas emissions.

This by no means undermines the role of the new Obama administration. Indeed, his stance on capping U.S. greenhouse gas emissions is going to be critical both for the U.S. Congress to pass on such a bill and for encouraging other countries to go further. Section 2 lists potential national commitments from developing countries. This does not necessarily mean that these national commitments will be reflected in a global deal in Copenhagen. Under the new Obama administration, if the U.S. commits itself to ambitious environmental goals, combined with the EU leadership role in the climate area and the urgency to tackle climate change, developing countries may be forced to take bold steps themselves and to even agree to reflect those unilateral commitments in a global deal.

#### **4. Concluding remarks**

The Bali roadmap is aimed to set emission commitments for Annex I countries beyond 2012. In the meantime, it raises the expectation for developing country commitments. By revisiting the six options for China that I envisioned a decade ago and examining a variety of factors, this paper suggests that developing country commitments are most unlikely to go beyond the third option above-envisioned a decade ago. Rather than attempting the unrealistic goal, international climate negotiations may instead need to initially frame the post-2012 developing country participation in terms of certain policies and policies as envisioned in the aforementioned second and third options. This

conclusion does not change, as Barack Obama becomes the U.S. President and the Democrats have regained control over both U.S. House of Representatives and Senate. However, it should be emphasized that his stance on climate issues and how ambitious U.S. commitments would be under his administration are going to be critical for developing countries to take bold steps themselves and to even agree to reflect those national commitments in a global deal.

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