Developed Countries' Response to Climate Change: Separating the Wheat from the Chaff[1]

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Abstract

This paper compares the future trajectory of carbon emissions of OECD (Annex-I) countries, under the Kyoto Protocol with the emission reduction targets being discussed namely the Lieberman-Warner Climate Security (LW-CS) Bill of USA and the EU unilateral commitment to reduce emissions to 20% below 1990 levels by 2020. If OECD (Annex-I) countries follow these trajectories, they would meet the Kyoto Protocol commitment in terms of the stock of emissions since 2008, only in 2021 or 2024, a long . delay of 9 to 12 years. Eighty to ninety percent of the excess emissions over the Kyoto obligations are due to USA. If the excess emissions of the OECD (Annex I) countries were monetized (at a carbon cost of US $ 30/tonne of CO2) they would have resulted in additional costs of US $50 billion in 2008 alone.

The financial support from these countries for the developing countries is a tiny fraction of what is needed. The Annex-I countries need to adopt a much more aggressive target for emission reduction by 2020 and offer much stronger support for mitigation and adaptation if they are serious about climate protection.

Introduction

With more certainty being provided by science about the impacts of increased greenhouse gases (GHGs) on the climate, there is urgency for a concerted international effort to curtail emissions of GHGs. Dramatic reductions in emissions are required to avoid irreversible damage to the earth's climate. The Stern Report states that reductions of 75% or more from the 2000 level of global emissions will be required by 2050[2] (Stern, 2005).

While the need to reduce worldwide emissions of GHGs is well recognized by almost all of the countries, sharing of the responsibility for these reductions between countries remains a contentious issue. UNFCC acknowledges that the response of individual countries has to be in accordance with their "*common but differentiated responsibility*"

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[2] The Stern Report's estimate of 75% reduction is based on bringing the level of GHGs to 500-550 ppm which would still result in a temperature rise of about 3 deg C with some consequent damages. If the GHG level in the atmosphere is to be stabilized at 450 ppm, greater reductions would be required.

but that still leaves considerable uncertainty about how the responsibilities will be divided. Several proposals have been put forward by developed countries articulating how much they are proposing to reduce their emissions (Pew Center on Global Climate Change, 2008; G8, 2008; European Commission, 2007)

Concerns have also been expressed about the emissions by fast developing countries, mainly India and China, with developed countries saying that these countries' emissions must also be constrained. A recent article in the Economist (2008) referred to India and China as the world's biggest climate-change problems. Further, referring to India's efforts at Bali to modify the requirements for developing countries to take "measurable, reportable and verifiable" efforts to cut their emissions, the article said, "….India has acquired an ugly reputation on the global front against climate change. Among big countries, perhaps only America and Russia are considered more obdurate." This portrayal of India suggests that India is a major contributor to the problem and that it is doing much less than others in providing solutions. We examine these issues in this paper.

While no one would dispute that India and particularly China[3] must rapidly reduce their emissions below projected levels and follow a much less carbon-intensive development path, in this article, we see to what extent the developed countries are shouldering their responsibility for mitigating climate change. Developed countries have a responsibility to reduce the threat of climate change in two ways: (1) by reducing their own emissions and (2) by facilitating the mitigation efforts of developing countries by providing financial support. We assess the response of the developed countries on these two dimensions.

Cumulative Emissions by Developing and Developed Countries

While discussing climate change and emissions of GHGs, it is important to distinguish between the stock (accumulated emissions) and flow of emissions (current emissions) (Bhagwati, 2008; Mahbubani, 2008). It is the stock of emissions that determines the extent of climate change; however, only flows can be reduced to limit climate change in the future.

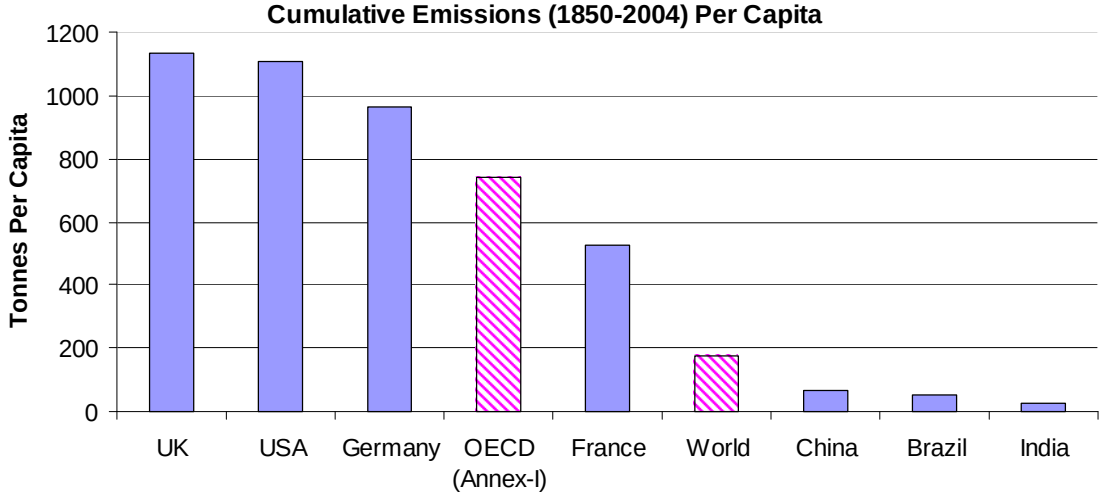
We first look at the contribution of different countries to the stock of emissions. Figure 1 shows the cumulative emissions from some of the larger developing countries and from the set of OECD countries that are also listed in Annex I of the Kyoto Protocol[4]. As can be seen the cumulative emissions per capita of the OECD (Annex I) countries is many times that of the developing countries. In comparison with India the OECD (Annex I)'s contribution per capita is about 32 times, and the contribution of USA, UK and Germany

[3] In discussions on global climate change, China and India are often grouped together because they are both considered "fast growing developing countries." However, India and China are not necessarily in the same league. China's per capita emissions of carbon dioxide in 2004 were already about the level of the world average while India's were only about 25% of the world average. In addition, China's growth rate is higher than India's.

[4] We will refer to these countries that are part of OECD and are also listed in Annex I as "OECD (Annex I)" countries.

is 40-50 times that of India! Even in absolute numbers, India's contribution to the stock of emissions is only about 2% of the entire world's contribution, and about 8% of the US contribution.

Figure 1.
Cumulative Emissions (1850-2004) Per Capita



Source: Climate Analysis Indicators Tool (CAIT), World Resources Institute (2008)

Sometimes this massive difference in the contributions to the stock of emissions is ignored as the discussion focuses on current and future emissions. Although the incremental emissions from China and India are expected to be large compared to wealthier nations, even in a BAU case, their contribution to the cumulative emissions (stock) per capita will remain below that of the wealthier nations.

Emission Reduction Attempts by Developed Countries

Even though the emissions of the OECD (Annex I) countries have been increasing, there are some countries particularly in Europe that have started reducing their emissions. In addition, the developed countries are making various proposals about the extent to which they would reduce emissions. One such proposal has come from the G8 countries (G8, 2008). In their declaration at the summit at Hokkaido issued on July 8th, the leaders of G8 countries proposed that global emissions be reduced by 50% by 2050. However, they did not give a baseline from which the reduction would be measured, thus making it impossible to judge the effectiveness of the proposal. Moreover, they were silent about how the burden would be divided between the developed and the developing countries.

Another proposal came from the US where in early June 2008, a bill, called the Lieberman-Warner Climate Security Act (LW-CS Act) of 2008 was debated in the Senate (Pew Center on Global Climate Change, 2008). If enacted, the bill was expected to reduce GHG emissions from covered sectors to 4% below 2005 levels by 2012; 19% by 2020; and 71% by 2050. Unfortunately, due to lack of sufficient support the bill was withdrawn after just one week. The European Union, on the other hand, has made an

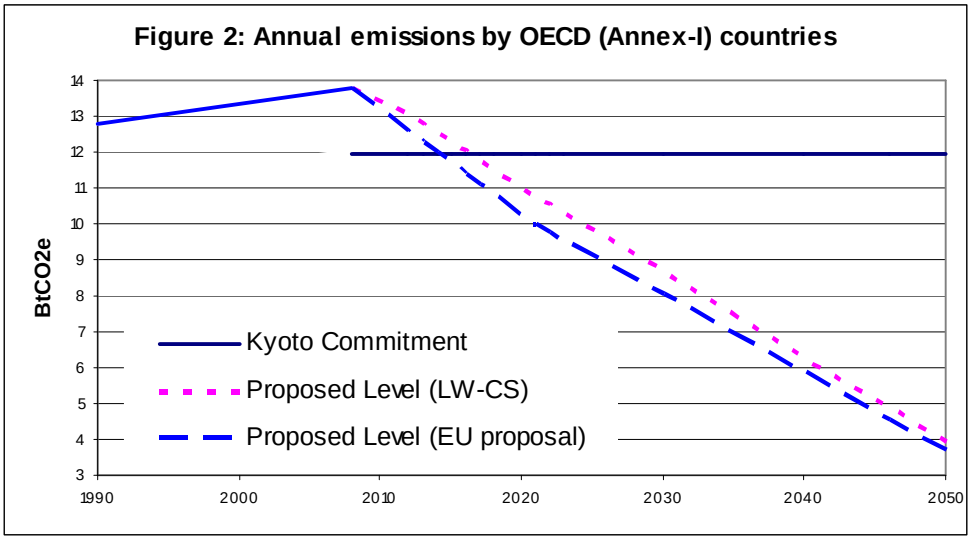
unilateral commitment to reduce emissions by 20% below 1990 levels by 2020[5] (European Commission, 2007).

Let us examine how these proposals compare with the reductions under the Kyoto Protocol. We focus on the emissions by OECD (Annex I) countries and the US[6] in particular. We compared the projected emissions by these countries from 2008 onwards under three scenarios: (1) Under the first scenario, we assumed the countries met their targeted reductions in the first commitment period under Kyoto Protocol without making any further reductions, i.e. reduced their emissions in the period 2008-2012 as envisaged in Kyoto and maintained those levels of emissions until 2050. Thus, this scenario assumes that the OECD (Annex I) countries do not agree to any further reductions in the second commitment period under Kyoto starting 2012. (2) Under the second scenario, we assumed that all OECD (Annex I) countries followed the reduction schedule proposed for USA in the LW-CS Bill, 2008. We chose this reduction trajectory because the US is one of the most important countries in the OECD (Annex I) and the LW-CS Bill represented the most ambitious emission reduction proposal by the US. While the LW-CS Bill covered only about 87% of the emissions of the US, we have made the conservative assumption that the reduction targets apply to all the emissions of the respective country. (3) We assume that the countries followed the reduction schedule from 2008 as committed to by the EU. Moreover, since the EU proposal does not make any commitments beyond 2020, we assumed that, just as the target in percentage terms for 2020 is almost the same as the LW-CS Bill but with 1990 as the baseline, they would aim for a 2050 target which is the same as the LW-CS bill (i.e. 71% reduction) but with 1990 as the baseline.

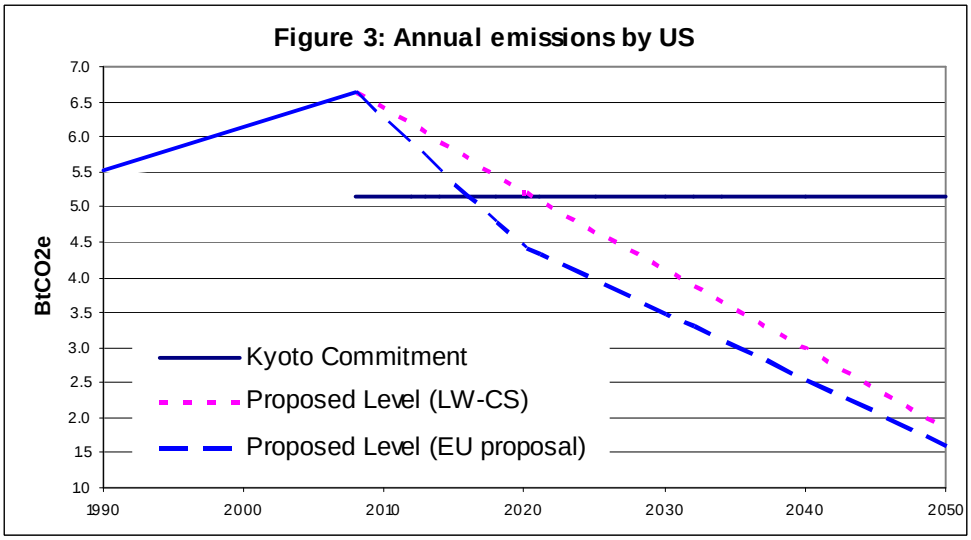
Figure 2 shows the annual emissions from OECD (Annex I) countries for these scenarios, while Figure 3 shows the annual emissions by the US alone under these scenarios. As Figure 2 shows, the annual emissions by the OECD (Annex-I) countries under the LW-CS bill are higher than the levels committed under the Kyoto Protocol until 2017, while the annual emissions by these countries under the EU proposals are higher until 2015. Considering the US alone, Figure 3 tells us that if the US followed the LW-CS bill, it would meet its Kyoto level obligations of annual emissions only by 2021, while if it followed the EU proposal, it would meet Kyoto levels by 2017.

[5] The EU also recommended that all industrialized countries collectively reduce their emissions by 30% from 1990 levels by 2020. Further, the EU agreed to reduce its emissions by 20% from 1990 levels regardless of what other countries do (European Commission, 2007). The US is unlikely to commit to a reduction of 30% given the failure of the LW-CS Bill. Therefore, in this paper we have assumed a 20% reduction when we discuss the European proposal.

[6] We recognize that the US has not ratified the Kyoto Protocol and hence is not necessarily bound by the agreement. In this paper, when we are discussing the Kyoto Protocol, we are referring to the obligations for emissions reductions for Annex I countries given in Annex B of the Kyoto Protocol.



Source: UNFCC data including land-use, land use change, and forestry



Source: UNFCC data including land-use, land use change, and forestry

As discussed earlier, for climate change the stock of emissions are more important than the annual flows. If one compares the cumulative emissions (stock) for the three scenarios post-2008, then the OECD (Annex I) countries achieve reductions below what was promised under the Kyoto Protocol only by 2024 if they followed the LW-CS bill and only by 2021 if they followed the EU proposal. The US, on the other hand, will meet its Kyoto level obligations only by 2034 if it follows the LW-CS bill and by 2025 if it follows the EU proposal.

In other words, until the 2020's the OECD (Annex I) countries would be just trying to compensate for their emissions level in 2008 being much higher than their Kyoto commitment; while the US will be trying to do so until 2025 or 2034 depending on the path of reductions it would follow. The emissions above the Kyoto commitment by the OECD (Annex-I) countries in 2008 amount to about 1.8 Gt. If the excess emissions were

monetized at a carbon price of US$ 30/tonne of CO2 (Point Carbon, 2008a), the additional costs just in 2008 would amount to $50B.

In effect, even if one ignores the huge contribution to the stock of emissions not just until 1990, but until 2008, the OECD (Annex I) countries are not promising much. The targets proposed in the LW-CS Bill to reduce the flow of emissions in future suggest that (1) they would not do anything more than what they agreed in Kyoto until 2024, (2) they would repudiate other components agreed to in Kyoto, such as a penalty for non compliance and further reductions during the second commitment period starting in 2012.

It should be noted that the LW-CS Bill was not passed by the US Senate indicating that even this level of reduction by the US is not acceptable to the country. In contrast, the EU has been more responsible; and its unilateral commitment is more aggressive than the defunct LW-CS Bill. Furthermore, the EU has also committed to a 30% reduction if an agreement between all industrialized nations is reached.

Financial Support to Developing Countries for Adaptation and Mitigation

In addition to reducing their own emissions, the developed countries were expected to provide financial support to developing countries to adapt to, and mitigate climate change. Thus an essential feature of a global emissions reduction regime is an effective mechanism to provide adequate and predictable funds by the developed countries to the developing countries for adaptation and mitigation. Various policy statements (see for example UNFCC, 2007) also acknowledge the need for such a financing mechanism. The Stern Report estimates that the annual cost of mitigation would be around 1% of World GDP (Stern, 2005), although some people estimate that the requirements would be significantly higher. In any case, assuming the estimate to be 1% of the World's GDP, the required funds would have been about US$ 550B in 2007. We compared this estimate with the amount of funds transferred for climate change mitigation in recent years through three of the most important mechanisms for such transfers. (1) The Global Environment Facility (GEF), funds projects and programs in developing countries to protect the global environment. GEF supports projects not just related to mitigating climate change but also related to biodiversity, international waters, land degradation, the ozone layer, and persistent organic pollutants. In 2006, 32 donor countries pledged $3.13 billion to fund operations for four years (GEF, 2008); a mere $ 0.8 billion per year. (2) A much debated and controversial mechanism of funds transfer is carbon trading through the CDM. Here too the volume of fund transfer has been small. Point Carbon (2008) reports that the total volume of carbon traded in the primary market under CDM in 2007 was only about $11B. (3) More recently, at the Hokkaido summit, the G8 countries pledged $6B to the two Climate Investment Funds of the World Bank - the Clean Technology Fund (to fund the demonstration, deployment, and transfer of low-carbon technologies) and the Strategic Climate Fund (which will be broader and more flexible fund for innovative approaches to climate change). If one assumes that G8 countries will commit some additional funds in the post-2012 period then the $6B over only 4 years amounts to $1.5B per year.

Hence adding the three major mechanisms – GEF, CDM, and WB Climate Investment Funds; the total the allocations are only $13.3B per year – less than 2.5% of the requirement estimated by the Stern report! Assuming that a very significant amount of the reductions in emissions will have to be done by the developing countries, a proportionate amount of the fund requirement of $550B would have to be transferred to the developing countries. The current level of transfer of funds by industrialized countries is woefully inadequate. The $13.3B currently being spent on financial support for mitigation by all developed countries should be compared with the expected cost to the US economy of the Iraq war alone which is likely to exceed $3 trillion (Bilmes and Stiglitz, 2008).

Adaptation to climate change is also an issue about which there has been little or no action or attention except by a few countries that have shown sensitivity to this issue. As a result, countries like Bangladesh, Myanmar and Senegal, which have made almost no contribution to the problem of climate change are among the worst sufferers. Though this is also an important issue, we do not deal with it in detail in this paper.

Conclusions

The response of the developed countries in fulfilling their responsibility to reduce the threat of climate change has been tepid on both fronts: emissions reductions and financial transfers. Recent proposals for emission reductions being made by the wealthier nations which *prima facie* seem dramatic, on closer examination are not so. In fact, these proposals essentially seek a deferral of the commitments under the Kyoto Protocol for 10-15 years in the case of the OECD (Annex I) countries and for 15-25 years in the case of the US. In addition, the focus on current and future emissions may lead to a discounting of the massive difference in the additions to the stock of emissions by developed countries not only until 1990 but until 2008. Furthermore, these proposals would nullify the penalty clause of the Kyoto protocol. The record on financial transfers has been just as disappointing with actual financial transfers to developing countries being a very tiny fraction of what is required.

The authors by no means wish to suggest that developing countries such as India and specially China be allowed to increase their emissions without any constraint. That could cause extensive damage to the global environment if under those conditions, business as usual continued and energy intensive industries simply moved from developed countries to India or China. Additionally, as mentioned earlier, developing countries must work towards reducing their emissions below the BAU path. But the wealthier nations must first accept targets for 2020 that are more aggressive than the two targets discussed and should also support mitigation and adaptation efforts in developing countries in a substantial way if they are serious about reducing the threat of climate change.

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