

## HOW CAN THE TRANSATLANTIC PARTNERS HELP IN ADDRESSING DEVELOPING COUNTRY EMISSIONS?

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The nature of the climate change problem will demand global cooperation in reducing greenhouse gas emissions over the current century. To the extent that efforts to stabilize atmospheric concentrations are ultimately successful, all major sources of greenhouse gas emissions will have to be addressed. The first section of this note briefly describes the current situation with respect to greenhouse gas emissions in developing countries. The second section summarizes the current political context for future actions. The final section describes specific actions that Europe and the US – despite their differences of views – can take to help address developing country emissions.

### – Greenhouse Gas Emissions in Context

If governments are going to address the problem of climate change, addressing developing country emissions, at least over the medium and long term, is a necessary condition for success. Global trends suggest massive future increases in energy use that, in turn, drive CO<sub>2</sub> emissions. According to the International Energy Agency (IEA), primary energy use worldwide is expected to grow 67 percent by 2030, resulting in a 69 percent increase in CO<sub>2</sub> emissions<sup>4</sup>. The U.S. Energy Information Administration (EIA) has developed three global economic scenarios – high growth, reference, and low growth – which imply worldwide emission increases of 31, 59, and 90 percent respectively by 2025<sup>5</sup>. A scenario development exercise led by the Intergovernmental Panel on Climate Change likewise suggests tremendous

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4. International Energy Agency (IEA), *World Energy Outlook* (Paris: IEA, 2002).

5. Energy Information Administration (EIA), *International Energy Outlook* (Washington, DC, 2003).

future growth in energy use and emissions, largely dominated by fossil fuels<sup>6</sup>.

In all scenarios, the largest increases in energy use and emissions come from developing countries where over 80 percent of the world's population resides. According to the IEA 'Reference Scenario' (IEA 2002), for example, developing country CO<sub>2</sub> combustion emissions are projected to over take OECD emissions by 2030, and the total emission gap between industrialized and developing countries is projected to *narrow* significantly from 1.9GtC in 2000 (arrow "①" in Fig.1.b) to 0.5GtC (②) in 2030, i.e. to around a quarter of its original size<sup>7</sup>. However, it is also projected that the emission gap between the industrialized and developing countries *increases* over the same period in per capita terms by a quarter from 2.6 (③) to 3.3tC (④). The discrepancy between these two measures of the "North-South emission gap" with their opposing dynamics lie at the heart of some of the key North-South controversies to be discussed in the next section, involving the issues of "environmental effectiveness" and "common but differentiated responsibility". Yet fortunately the two measures are not irreconcilable in their policy implications, as this paper aims to demonstrate.

The rise in developing country emissions is not surprising, given that one-third of the world's population – mainly in developing countries – does not have access to electric power services. Accordingly, many technologies have not widely penetrated developing country economies. As incomes rise and poorer populations increase their access to electric power, the attendant use of consumer goods like refrigerators, air conditioners, and computers put strong upward pressures on greenhouse gas emissions, and will continue to for many decades. This is particularly true in the transportation sector, where rates of motor vehicle ownership are about 100 times higher in the United States than in China, India, and many other developing countries.

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6. N. Nakicenovic and R. Swart, eds., Special Report on Emission Scenarios. A Report of Working Group III of the IPCC (Cambridge: Cambridge University Press, 2000).

7. Taking into account all greenhouse gases, developing countries in 2000 emitted 48% of global emissions. See Climate Analysis Indicators Tool (CAIT), World Resources Institute, 2003. <http://cait.wri.org>.

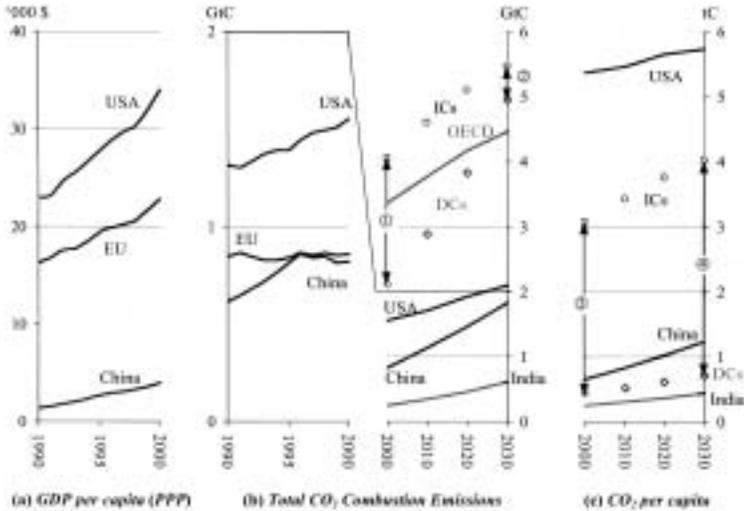


Figure 1: Selected Indicators. Historical (1990-2000) and Projected (2000-30)

'DCs' and 'ICs' = Developing and Industrialised Countries

Sources: CDP (current PPP): Development Data Group, The World Bank, 2002. *World Development Indicators 2002* online; CO<sub>2</sub> (fuel combustion): 1990-2000: IEA, *CO<sub>2</sub> Emissions from Fuel Combustion, 2002 Edition*; 2000-2030: IEA, *World Energy Outlook 2002*, 'Reference Scenario'.

Many factors affect the ability of developing countries to reduce greenhouse gas emissions, particularly the fact that other social and economic priorities such as poverty eradication far outweigh concerns over greenhouse gas emissions. Income levels of an average American, for example, when measured in terms of purchasing power, are nine times higher than that of an average Chinese citizen, and 14 times higher than that of an average Indian (Figure 1.a). Broader social and economic data reveal similar patterns. With more than 1.3 billion people living on less than \$1 per day and an equal number lacking access to safe drinking water, other issues will override – politically and financially – most efforts to control greenhouse gases. Even within the issue of climate change, adapting to the physical impacts of climatic changes is a more salient issue for developing coun-

tries. According to the most recent report of the IPCC, climate change impacts – current and future – will fall disproportionately across countries, with the poorer ones bearing the brunt of the burden.

Despite upward emissions trends, developing countries have already taken meaningful steps to reduce the greenhouse gas intensity of their development paths<sup>8</sup>. For example, although Mexico, India, Thailand, the Philippines, and Indonesia rely on coal and oil for electricity, they have all made national goals (targeted locally) to increase renewable energy and improve energy efficiency. Thailand and Brazil have made comprehensive, successful national efforts at demand-side management. In Argentina, 10 percent of the automobile fleet runs on compressed natural gas. India has implemented natural gas use for heavy vehicles in its major cities and for most of New Delhi's public transport system. Many countries – including Indonesia, and other OPEC nations – are phasing out fossil fuel subsidies. Many of these measures have required leadership and entailed political and economic costs, for which these countries deserve recognition.

Indeed, efforts in China, Brazil, India, Mexico, South Africa, and Turkey alone have reduced emissions over the past three decades by nearly 300 million tons a year. Without these efforts, emissions of these six countries would likely be about 18 percent higher than current levels. According to Chandler *et al.*, “[t]o put these figures in perspective, if all developed countries were to meet the emission targets set by the Kyoto Protocol, they would have to reduce their emissions by an estimated 392 million tons from where they are projected to be in 2010.”<sup>9</sup>

China's accomplishments are especially impressive. The world's most populous country has reduced its greenhouse gas intensity (i.e., emissions per unit of economic output) by 65 percent since 1980 (the US and Europe, by comparison have reduced intensity 35

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8. See B. Biagini, ed., *Confronting Climate Change: Economic Priorities and Climate Protection in Developing Nations* (NET and Pelangi, 2000); W.V. Reid and J. Goldemberg, eds., *Promoting Development While Limiting Greenhouse Gas Emissions: Trends and Baselines* (UNDP and WRI, 1999).

9. The figures in this paragraph are from W. Chandler et al., *Climate Change Mitigation in Developing Countries*, Washington DC: Pew Center on Global Climate Change, 2002:p.iii.

percent over that period). Even more impressive is the fact that China's CO<sub>2</sub> emissions, in absolute terms, levelled off or even decreased from 1996 to 2001, despite vigorous economic growth during the same period (Fig. 1.b). China has implemented sweeping energy policy reforms over the last two decades to promote energy efficiency and conservation. Measures taken include reductions in fossil fuel subsidies; research, development and demonstration projects; a national information network with efficiency service and training centres; tax reforms; equipment standards; and special loan programs, among other initiatives. The coordinated, economy-wide Chinese energy has yielded emission savings equal to nearly the entire US transportation sector, about 400 million tons of carbon per year<sup>10</sup>.

While these initiatives have unquestionable climate benefits, the scientific evidence suggests that much more will be needed over the coming decades to avoid dangerous climatic changes. The emission trends – driven by population and economic growth – will overwhelm improvements in energy efficiency and modest penetration of renewable energy technologies.

#### – The Political Context of Addressing Developing Country Emissions

The 1992 UN Framework Convention on Climate Change calls on Parties to “protect the climate system... on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.” More specifically, it calls on the industrialized countries to “take the lead” in protecting the climate. Accordingly, governments agreed that at least the first round of legally binding emissions controls – adopted in the 1997 Kyoto Protocol – should *not* include developing countries. This agreement reflects an understanding that the wealthier countries have greater responsibilities for the problem and greater financial resources and technological capability to put themselves on a sustainable course, and that developing

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10. Z. Zhang. “Is China Taking Actions to Limit its Greenhouse Gas Emissions?” in Reid and Goldemberg, *stipra*.

countries, on the other hand, face more urgent priorities, such as poverty alleviation and public health.

However, since the adoption of the Kyoto Protocol, a number of industrialized countries have been concerned that current lack of emission control commitments for developing countries translates into a lack of environmental effectiveness for the international climate regime. This concern is due to rising greenhouse gas emissions in poorer countries (described above) as well as the possibility that, if industrialized countries adopt commitments, some energy-intensive industries might migrate to developing countries where growth is unconstrained. While accepting that richer countries must take the largest steps, they have argued that developing countries must take – or at least declare an intention to take – smaller steps.

In the eyes of the developing world, industrialized country demands have lacked credibility. Most developing countries maintain that the richer countries are mainly responsible for precipitating climate change and that they have done little to address a problem largely of their own making. Indeed, many in the developing world have felt that some richer countries are fulfilling neither the letter nor spirit of the 1992 UN Framework Convention on Climate Change, particularly with regard to the affirmed principle that countries act “on the basis of equity and in accordance with their common but differentiated responsibilities and respective capability”.

While still operating in the background, this North-South divide is no longer so perceptible at the intergovernmental level. Rather, a more recent divide between the United States and Europe has, at least temporarily, substituted for some of the long-standing North-South divisions. Currently, Europe is committed to the entry into force and implementation of the 1997 Kyoto Protocol. The United States, on the other hand, has focused on transformative and technological solutions to climate change (e.g., hydrogen development, capture and storage) outside of a multilateral framework. Instead of Kyoto’s targets and timetables, the US has deemed technology-oriented approaches more compatible with US interests in strong economic growth and prosperity.

The US and Europe also differ, at least for the moment, over the future role of developing countries in mitigating climate regime. Currently, the Bush Administration position is aligned with those of many developing country governments, in that neither believe that legally-binding emission limitations or serious action on climate change is warranted from developing countries, where other socio-economic priorities prevail. While the European Union has sought to initiate discussions on future commitments beyond Kyoto's 2008-2012 time-frame, the United States has supported the developing country view that no such talks are warranted, at least in the foreseeable future. Rather than engage multilaterally, the US has employed a primarily bilateral and voluntary approach to cooperation with developing countries.

While the recent negotiations have shown a disagreement between the key developing countries and the EU concerning 'developing country commitments' and an apparent rapprochement with the Bush administration on this issue. The EU position that industrialised countries must take on substantial further cuts in emissions – rejected by the Bush administration – is supported by the large majority of developing countries.

#### – Actions to Reduce Developing Country Emission Growth

Despite the differences described above, Europe and the US may still be able to find common ground on climate protection. In particular, they have some means at their disposal for helping developing countries slow the rise in their greenhouse gas emissions. Four sample areas are offered for consideration. These four examples share a common thread: they are based on actions that *industrialized countries*, in particular the transatlantic partners, can take to help rein in future emissions in developing countries.

## 1. *Technology Spill-Over*<sup>11</sup>

Technology spill-over refers to the North-South diffusion of technology through market forces. The phenomenon is illustrated here with a particularly promising sector, namely, transport. Mitigating transport emissions in developing countries could amount to a significant reduction in their overall greenhouse gas emissions, particularly in light of the large projected emission increases in this sector.

Technology spill-over is already apparent in the transport sector. Most motor vehicles are produced (and sold) in industrialized countries, among a relatively small number of manufacturers. Developing countries tend to rely on either imports or licensed production. For example, almost nine-tenths of the roughly 600,000 passenger cars sold in India during the last financial year were produced domestically. But 85 percent of that domestic production was carried out under license. In short, given the structure of this sector, spill-over can be surprisingly quick, as exemplified in the rapid diffusion of catalytic converter technologies in the US during the 1970.

The key to whether climate-friendly technology spill-over occurs depends on the speedy diffusion of the technology *within industrialized countries*. Once they adopt clean technologies, it might make little sense for global automobile industry to continue producing CO<sub>2</sub> – intensive vehicles for the developing world. Here, there is some cause for optimism. In 2002, the state of California approved a law that will establish the first major greenhouse gas emission standards in the country. Under this law, automakers will be required by the end of the decade to limit greenhouse gas emissions from new cars and light trucks sold in California; such sales account for about 10 percent of total US auto sales. President Bush himself, in his 2003 State of the Union Address, proposed \$1.2 billion in research funding to develop clean, hydrogen-powered automobiles.

Accelerating clean transport technologies – either through regula-

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11. This Section is largely based on Benito Müller, *Framing Future Commitments* (OIES, 2003), available at [www.OxfordClimatePolicy.org](http://www.OxfordClimatePolicy.org).

tion, R&D, or other measures – would also bring emission and other air quality benefits to developing countries. Until this happens, however, the existing (dirty) technology spill-over will continue to exasperate rather than mitigate developing country emissions.

## 2. *Technology Transfer*

The Climate Convention and its subsidiary instruments (Kyoto Protocol, Marrakech Accords) put considerable emphasis on the notion of technology transfer, a concept that has taken on a variety of meanings across the North-South divide. Probably the biggest division regards what constitutes “transfer”. In the South, transfers are often interpreted as technology *donations* by the industrialized countries reflecting the differences in ability to pay and/or the difference of responsibility in causing the problem.

In industrialized countries, the prevailing interpretation is essentially that of subsidised technology spill-over, i.e., subsidised *export* of (hopefully) sustainable technologies. This was recently illustrated by the Bush Administration. The highest amount budgeted in the US Climate Change Strategy<sup>12</sup> to be spent in connection with developing countries is \$155m for the United States Agency for International Development (USAID), serving “as a critical vehicle for transferring American energy and sequestration technologies to developing countries to promote sustainable development and minimize their [greenhouse gas] emissions growth”. Clearly, this amount would not buy a lot of technology for transferral to the developing world, but it is not actually intended to. It is to be used to “promote the export of climate-friendly, clean energy technology”<sup>13</sup>.

The Convention and Protocol suggest both interpretations have some validity. In any case, the main instrument for technology transfer under the current international regime is the Global Environment Fa-

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12. ‘US Climate Change Strategy: A New Approach’ [www.whitehouse.gov/news/releases/2002/02/climate-change](http://www.whitehouse.gov/news/releases/2002/02/climate-change).

13. <http://www.whitehouse.gov/news/releases/2001/06/climatechange.pdf>

cility (GEF) with projects such as the recently launched Chinese fuel-cell bus project for trials of fuel-cell buses in Beijing and Shanghai. During the last decade, the GEF approved on average \$270 million financing per annum, a figure which increases to around \$500 million if additional government and implementing agency funds as well as private sector financing are factored in. However, even this figure is dwarfed by the financing of projects in developing country leveraged through another technology transfer instrument, namely export credit and insurance agencies (ECAs), which are discussed below.

### 3. *Greening Financial Flows*<sup>14</sup>

During the 1990s, Export Credit Agencies financing through loans, project guarantees, and investment insurance averaged around \$90 billion per annum, almost twice the average level of official development assistance during the same period. Unlike the GEF, ECAs are financial institutions explicitly created by governments (and funded by taxpayers) to promote exports and facilitate investments in riskier overseas markets. By the end of the last decade, almost a third of all the long-term financing received by developing countries was done under the auspices of ECAs.

In the second half of the 1990s, three-fifths of project and trade finance destined for developing countries (\$216.6 billion out of \$376 billion) supported energy-intensive exports or investments: fossil-fuel power plants, oil and gas development, energy-intensive manufacturing (chemicals, iron and steel, pulp and paper), transportation infrastructure, and aircraft. These projects will result in large quantities of greenhouse gases. It is estimated that thermal power and oil and gas projects in developing countries that received support between 1992 and 1998 from the two US ECAs (OPIC and Ex-Im<sup>15</sup>) will release 29.3 billion tons of CO<sub>2</sub> over their lifetimes, an amount roughly equal to global CO<sub>2</sub> emissions in 1996. The two US ECAs provided loans or

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14. This section is largely based on Maurer, *The Climate of Export Credit Agencies* (WRI, 2000).

15. Export-Import Bank of the United States and the Overseas Private Investment Corporation.

guarantees for projects worth \$7.7 billion in energy-intensive sectors in India and China between 1994 and 2001. Over this same period, OPIC and Ex-Im have supported projects totalling \$27 billion in the energy-intensive sectors of all developing countries combined.

By comparison, little has been provided to promote renewable or other clean energy technologies. Export credit agencies from *all* industrialized countries (OPIC and Ex-Im included) participated in renewable energy projects worth only \$2 billion during the 1994 to 1999 period. Not all of fossil fuel investment is categorically bad for climate protection, and indeed OPIC and Ex-Im are more environmentally conscious than most of their overseas counterparts. However, the sheer magnitude of the carbon-intensive flows, and the paltry renewables investment, illustrate that taxpayer dollars in industrialized countries are encouraging developing country dependence on fossil fuels and long-term increases in greenhouse gas emissions.

The challenge for industrialized countries-and the transatlantic partners in particular-is to transform ECAs into instruments that promote climate protection in the context of export promotion and economic development. A first step might be to discuss a set of standards and guidelines to assess the greenhouse gas impacts of different investment options<sup>16</sup>.

Other public funds also could be used to support clean, climate-friendly economic development, including official development assistance. For example, President Bush's proposed Millennium Challenge Accounts would dramatically increase US foreign aid. If not oriented around broader goals of sustainable development, however, these funds (like ECA funding) could have the effect of further accelerating developing countries' contributions to climate change<sup>17</sup>.

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16. C. Dasgupta has some reservations concerning this proposal, given (1) the possibility that developing countries might continue to rely on current (domestically available) technologies that are even less climate friendly than the technologies whose exports are sought to be discouraged and (2) common standards might not be appropriate on account of differing national circumstances.

17. See N. Purvis, *Greening US Foreign Aid through the Millennium Challenge Account* (Brookings, 2003).

#### 4. *Purchase of Emission Reduction Credits*

It is widely recognized that the primary onus for protecting humanity from adverse climatic change lies with the richer, industrialized countries with their past and current responsibility for the problem and their superior financial resources and technology. Yet, in many cases, the costs of reducing greenhouse gas emissions are substantially less in developing countries. This presents a major opportunity for North-South collaboration on climate change; i.e., for the industrialized countries to pay for emission reductions undertaken in developing countries. This dynamic is recognized in the Kyoto Protocol's Clean Development Mechanism (CDM), which aims to (1) assist developing countries in "achieving sustainable development" and (2) reduce the industrialized countries' costs of achieving their Kyoto targets. The CDM does this by allowing industrialized countries to offset part of their targets with emission reductions "credits" generated from emission-reducing projects in developing countries. In this way, the CDM creates a market for emission reductions, allowing reductions to take place in locations where they are least expensive.

There are at least two critical elements to ensuring that this approach works in practice. First, a mechanism is needed to create the emission reductions credits and ensure they represent real reductions. The CDM, which includes a body of rules and operating procedures, represents one such mechanism. However, the CDM operates pursuant to the Kyoto Protocol<sup>18</sup>, to which the US is not a party. Nevertheless, like the EU<sup>19</sup>, the US, through its domestic legislative and rulemaking processes, could create an analogous crediting system. Such a system might improve on the current crediting that is permitted under § 1605(b) of the US Energy Policy Act, perhaps borrowing some useful elements of the CDM. Thus, while the CDM represents one approach to crediting emission reductions, other approaches for pur-

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18. Strictly speaking, the CDM operates pursuant to the UNFCCC. However, this arrangement is viewed as temporary, considering that the Kyoto Protocol has not yet entered into force.

19. Project-based emission reduction activities in developing countries are currently being integrated in the EU-wide emission trading scheme (itself independent of the Kyoto Protocol ratification).

chasing emission reduction credits from developing countries can be developed.

Second, as with any market, there must be sufficient *demand* for the particular product or service. In this case, a demand for emission reduction credits needs to be created through industrialized country emission limitation commitments. Indeed, there will be a direct correlation between the stringency of emission reduction commitments taken by industrialized countries and the amount of action that takes place in developing countries. If industrialized countries agree to steep domestic reductions, combined with a crediting mechanism described above, there will be a strong incentive for emission reduction activities in developing countries.

For the EU, the targets agreed to through the Kyoto Protocol represent a start in this regard. However, the overall market for emission reductions created by Kyoto is currently hampered by insufficient demand (due largely to the withdrawal of the United States, the largest prospective buyer, and possible surplus supply from Russia). For the US, a domestic emission limitation target (along with a market crediting mechanism) could be created even in the absence of joining Kyoto. Thus, either in the context of Kyoto (as with the EU) or apart from Kyoto (as with the US, at least currently), the industrialized countries can actually promote climate-friendly activities all over the world by committing to do more at home.

This is a potentially powerful dynamic, and perhaps one of the keys to building a successful global strategy to protect the climate. This kind of strategy reduces costs by harnessing market forces, allows private actors to participate, and potentially spurs investment. In the future, the transatlantic partners should consider a strategy of expanding such a crediting mechanism for emission reductions in developing countries<sup>20</sup>. Such a mechanism could go beyond the “project-based” scope of the CDM. There are at least two additional reasons to expand the CDM.

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20. For example, see Samaniego and Figueres “Evolving to a Sector Based Clean Development Mechanism” and Winkler et al. “Sustainable Development Policies and Measures” in Baumert et al. (eds.) *Building on the Kyoto Protocol: Options for Protecting the Climate* (Washington, DC: World Resources Institute, 2002).

First, it is unlikely that a *project-by-project* approach is sufficient to induce the larger transformative shifts needed to genuinely change emission trajectories in developing countries, particularly in the energy sector. This could be remedied if the scope of the CDM were expanded to encompass entire sectors (such as cement or power production) or geographic regions (such as a municipality). Consortia of the host government (local and/or national), private actors, development banks, and other stakeholders might come together to forge large, transformative strategies particularly in advanced developing countries. Such initiatives might include large scale shifts from coal to gas infrastructure in the power or transport sectors, or renewable energy initiatives that might lower some countries' heavy dependence on energy imports.

Second, while improving the cost-effectiveness of the regime, such larger-scale initiatives might also help promote durable and broad-based sustainable development benefits in host countries. A main purpose of the CDM is to help developing countries "achieve sustainable development". However, sustainable development will not be "achieved" on a project-by-project basis. Rather, this will require that countries develop national and sectoral sustainable development strategies. Credit purchases by industrialized countries can help promote such strategies that are consistent with reducing or limiting greenhouse gas emissions growth.

## – Conclusions

Over the past few decades, developing countries have undertaken significant measures to reduce their emission growth. These measures have been undertaken in a variety of sectors, including transport and power generation. Nevertheless, if developing countries are going to be successful in their efforts to eradicate poverty and develop their economies, greenhouse gas emissions will need to rise, at least in the short to medium term. How to minimize greenhouse gas growth, while promoting development is a central challenge for the 21<sup>st</sup> century, and one that the transatlantic partners should seek to address.

While some propose to address this challenge by imposing emission reduction “commitments” on developing countries, there are indeed other viable and more promising strategies. These include technology spill-over and transfers, greening of conventional financial flows, and emission reduction purchases by industrialized countries. These strategies, as well as others, are eminently achievable, particularly if facilitated through transatlantic collaboration and leadership.