

Testimony of Ned Helme
President, Center for Clean Air Policy
before the
U.S. House of Representatives
Select Committee on Energy
Independence and Global Warming

December 19, 2007
2318 Rayburn House Office Building

Mr. Chairman, Ranking Member Sensenbrenner and Members of the Committee: I would like to thank you for the opportunity to testify before you today. My name is Ned Helme and I am the President of the Center for Clean Air Policy (CCAP), a Washington, DC and Brussels-based environmental think tank.

Since 1985, CCAP has been a recognized world leader in climate and air quality policy and is the only independent, non-profit think-tank working exclusively on those issues at the local, national and international levels. CCAP helps policymakers around the world to develop, promote and implement innovative, market-based solutions to major climate, air quality and energy problems that balance both environmental and economic interests.

CCAP played a leadership role helping to design the European Union Emissions Trading System. Today we are advising states -- particularly California -- on implementing climate policy and advising key developing countries such as China, Brazil, and Mexico on climate and energy policy. We are running a dialogue and providing in-depth analyses for climate negotiators from 30 nations to help them shape the implementation of the Kyoto Protocol and the post-2012 international response to climate change. CCAP also facilitates policy dialogues with leading businesses, environmental groups and governments in the European Union (EU) and U.S. on designing the details of future climate change policies.

In Bali, CCAP convened various high level discussions. With the Governments of Mexico and Norway, we hosted a high-level discussion on post-2012 climate strategies for developing countries. Environmental ministers and heads of delegations from more than 25 countries agreed that any final roadmap produced in Bali must include a package of incentives to encourage developing countries to build upon their unilateral actions to curb greenhouse gas (GHG) emissions and reduce deforestation. CCAP also co-hosted a discussion with representatives from the European Union, John Kerry (the sole Member of Congress in Bali) and other Congressional staff on US and European climate policy.

In the short time I have with you this morning, I would like to leave you with 6 key messages. I will describe each in more detail in a moment:

1. The debates in Bali highlighted a fundamental difference in the approach between the EU and developing countries on one hand and the U.S. on the other. The EU and developing country vision couples unilateral actions with incentives for them to go further. The U.S. vision couples individual pledges with vague references about the degree to which the U.S. will provide technology incentives sometime in the future.
2. The European Union's commitment to reduce emissions 20% below 1990 levels in 2020 on their own, and increase its target to 30% below 1990 levels -- if others join -- sets the bar where it needs to be.
3. The Bali Roadmap – the agreement reached last Saturday – marks a sea change in the climate debate for developing country emissions reduction efforts: developing countries are going farther than ever before in agreeing to “measurable, reportable and verifiable” mitigation actions. This builds upon the recent efforts key developing countries have made to pass laws and policies which, if fully implemented, would generate emissions reductions that would not be surpassed by the Lieberman-Warner bill until roughly 2020.
4. The Bali roadmap includes a positive path to ease competitiveness issues by defining a sector-based approach where developing countries can earn incentives to reduce the carbon intensity of competitive industrial sectors.
5. Including the near-term and long-term emissions reduction ranges in the final Bali agreement would have been helpful. However, more important is assuring that the actions and reductions developed and developing countries take by 2020 maintain some reasonable prospect of avoiding some of the worst impacts of climate change. The jury is still out on whether those actions will succeed.

6. Progress in defining comparable action for developed and developing countries is a critical next step.

What was Agreed to in Bali?

The Roadmap agreed to last Saturday in Bali at the United Nations Framework Convention on Climate Change (UNFCCC) conference is a far-reaching document that lays out the essential elements for a process to reach agreement on the successor to the Kyoto Protocol, which expires in 2012. The roadmap and other key decisions in Bali lay out an international strategy for:

- Developing a shared vision for a long-term global goal to reduce emissions;
- Establishing mitigation commitments or actions in all developed countries;
- Establishing national mitigation actions in developing countries;
- Creating incentives for greater action, including support for deforestation emissions reductions, sector-based approaches (in steel, cement, etc), and development and deployment of cleaner technologies;
- Supporting efforts to reduce deforestation and forest degradation emissions in developing countries by creating a framework for pilot initiatives and signaling that efforts to reduce these emissions will be a part of the post-2012 package;
- Enhancing action on adaptation, including development of vulnerability assessments, prioritization of actions, specific projects and programs, risk management and reduction strategies, disaster reduction strategies; and
- Enhanced action on technology, including agreement to kick-start a strategic program to scale up the level of investment for the transfer of both mitigation and adaptation technologies to developing countries.

Bali Highlights Different Visions for Moving Forward

The debate in Bali centered around a fundamental philosophical difference on how to move forward. On one hand is the shared vision of the European Union, the major emerging economies and other developing countries, and on the other hand is the vision of the Bush Administration.

The EU and the developing world believe all industrialized countries should commit to binding emissions reduction targets, while developing countries should begin or continue to take unilateral actions to reduce emissions -- and then be provided with financial and technological incentives to go beyond those initial reductions.

In contrast, the Bush Administration has called for nonbinding pledges for industrialized countries and has been unconstructively vague about the degree to which it is willing to provide meaningful incentives for developing countries to make reductions beyond their domestic unilateral commitments and for developed countries to take further commitments if others do likewise.

The alignment of the vision of the EU and emerging economies is an important outcome of Bali: concrete unilateral actions and a commitment to go beyond in return for incentives. In the case of the EU, the incentive is joint efforts by the major industrialized and emerging economies to solve the climate problem. The incentive for developing countries to go further is a package of incentives for deforestation reductions, sector-based efficiency improvements, technology, and adaptation.

The EU Commitment to Unilateral Reductions Coupled with a Public Commitment to Go Further Sends the Right Signal

The European Union has taken significant steps. Last March, the EU Heads of State agreed to a groundbreaking climate and energy security policy. They proposed that Europe's 27 nations would achieve a 20% reduction in GHG emissions below 1990

levels in 2020 -- regardless of whether other nations take action to reduce their emissions. As an incentive for others to act, Europe's leaders offered to reduce their emissions by 30% or more below 1990 levels if "other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries contribute adequately according to their responsibilities and respective capabilities".¹

This was a bold step, one that undoubtedly could have some adverse competitive effects if Europe's major competitors do not take similar steps. This underlines the importance Europe places on addressing the climate challenge, even if some short-term adverse economic impacts might occur. It also reflects the European view that the cost of inaction far outweighs any short-term adverse economic impacts.² Additionally, Europe's leaders expressed their belief that action on climate can lead to the development of new technologies and opportunities that can put Europe in the lead in green technologies and industries.

Developing Country Sea Change in Bali

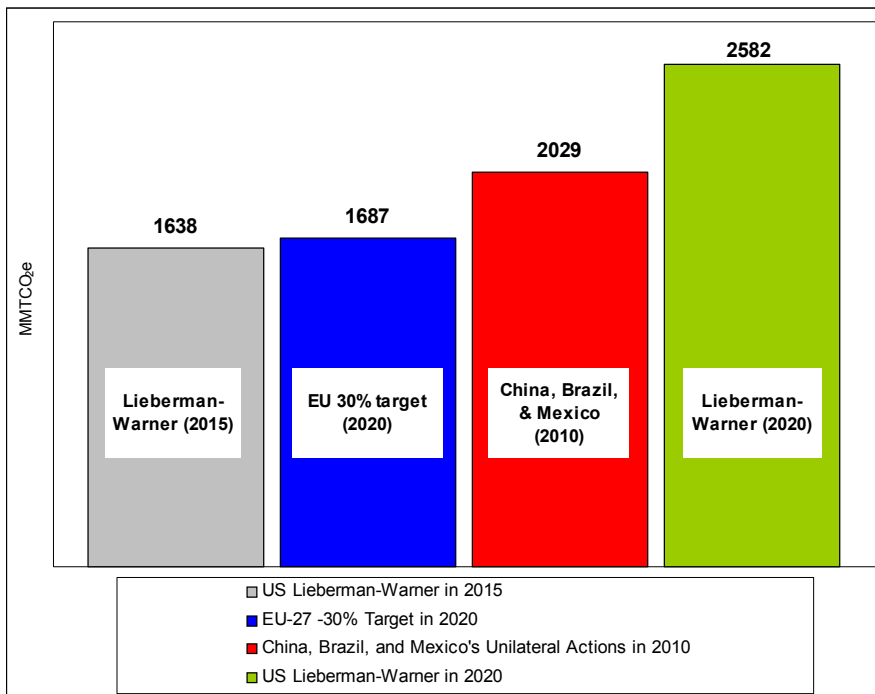
Bali marks a sea change in the global climate change debate. For the first time, key developing countries have played a major role in the debate, committing to take "nationally appropriate mitigation actions...in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner" and pressing the developed world to set more stringent "quantified emission limitation and reduction objectives". Minister Marthinus Van Schalkwyk of South Africa put this eloquently last Saturday morning: "Developing countries are saying voluntarily that we are willing to commit ourselves to measurable, verifiable mitigation action. It has never happened before. A year ago, it was totally unthinkable."

¹ From European Council conclusions March 2007, pg. 12, available at: www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf

² See for example, European Commission discussion on this available at (pg. 4): http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0002en01.pdf.

Some of this change is explained by progress by a few of the key developing countries that has not necessarily made front page news in the U.S. In the last two years, for example, the key emerging economies of China, Brazil, and Mexico have passed domestic laws and policies that are already reducing their emissions below "business as usual" levels.

In Bali, my organization released a new study, developed with teams from each of those nations, that demonstrates if those new laws and policies are *fully implemented*, those three nations will reduce greenhouse gas emissions in 2010 below their "business as usual" levels. These reductions would not be surpassed by reductions called for in the Lieberman-Warner bill until around 2020³ (see Figure 1). Those nations are financing the majority of these reductions themselves so far -- they are not financed by industrialized nations as carbon reduction projects under the Kyoto Protocol's Clean Development Mechanism (CDM). For more details on this, see Appendix A.



Source: CCAP, 2007

³ (S. 2191), which recently reported out of the Senate Environment and Public Works Committee)

Here in Washington, we often hear the claim from opponents of domestic climate change legislation that developing countries are doing nothing on climate change. As CCAP's study demonstrates, this is simply a myth. Although China continues to have a variety of pollution problems, on climate change China is being bold in a number of areas. For example, China has adopted a goal to reduce the overall energy intensity of its economy by 20% from 2005-2010, has one of the most aggressive vehicle efficiency standards in the world (behind only Japan and the EU), has called for the share of renewable energy (including large hydro) to reach 10% and 15% in 2010 and 2020, respectively, and has shut down inefficient industrial facilities (See Appendix A).

Brazil has taken action to increase renewable electricity, expand the use of sugar-cane based ethanol in transportation, and reduce the rate of deforestation -- which is partly responsible for the reduction in the annual deforestation rate from 2004 to 2006 by nearly 50% (and which is now approaching a reduction rate of 70% based upon preliminary 2007 estimates).

The important point to take away from Bali is that developing countries indicated their willingness to go beyond these already-impressive unilateral actions if the developed world takes decisive action as well and provides additional financial incentives. Incentives included in the Roadmap would need to come in the form of support for step-change technological innovation, emission reduction strategies in key industrial sectors and in deforestation, as well as for adaptation.

The Bali Roadmap Includes a Positive Path to Easing Competitiveness Concerns Through a Sector-Based Approach

Europe shares with the U.S. a concern about the impacts of major emission reduction efforts on a small number of energy intensive internationally competitive sectors – cement, iron and steel, pulp, paper, and oil refining, but its vision of how to deal with competition from the developing world is a bit more nuanced than that of the U.S.

At the end of November this year in Brussels, I had the opportunity to address and participate in the High Level Group on Competitiveness, Energy and the Environment where more than 500 industry executives joined with the Commissioners of the European Commission to finalize a strategy to deal with the competitiveness question. While the Europeans discussed trade sanctions as a tool for ensuring that imports have to meet the GHG emissions standards of domestic producers, this potential tool does not dominate as it does in the U.S.

Instead, the Europeans, and increasingly developing countries, have focused more on a sector-based approach – one that encourages common carbon intensity standards for competitive sectors in developing and developed countries.

This interest in a sector-based approach has grown out of one of CCAP's flagship international efforts, the Future Actions Dialogue, which for more than four years has brought together senior delegates from 30 key countries to sort out policy options for the post-2012 climate change treaty.

Under the sector-based approach, developing countries would unilaterally agree to set carbon intensity targets for key industrial sectors based on a sense of the global "best practice." They would then be eligible for financing related to technological innovation in these sectors in return for taking on even more stringent targets. If they are able to exceed the more stringent targets, they could sell emission reduction credits in the international market equal to the amount by which they exceeded the target. For more information on this approach, see Appendix B.

The EU's High Level Group endorsed this broad concept and it is included in the Bali roadmap. Japan has also been a proponent of this approach, and the U.S. -- through the Asia-Pacific Partnership -- has helped motivate research on global best practices for key sectors. However, as has been the case throughout the climate process in recent years, the U.S. has missed the opportunity to push this further because of its insistence that

everything must be voluntary and its unwillingness to propose any mandatory strategies at home, in direct contrast to the EU and to leading developing countries.

While it may be too late to expect this Administration in its waning days to propose concrete GHG reduction policies, the point is that the Bali Roadmap offers some attractive opportunities for the next Administration. If a future U.S. Administration is willing to commit to concrete actions, there is a lot of room in the roadmap to take care of competitiveness concerns.

I also would like to address an unnecessarily alarmist point of view I often hear in the U.S. debate – fear that the leading developing countries will use weak carbon controls as a way to attract plants away from the US. Our study of developing countries (Appendix A) shows that China in particular has taken a number of actions in the cement, iron and steel, and pulp and paper industries in recent years to reduce emissions by closing old plants, requiring a 20% improvement in energy efficiency in these sectors by 2010, and building new efficient facilities. Greater efficiency might make them more competitive, so it seems highly unlikely that they will continue to operate inefficient polluting plants or building new inefficient plants to pull industry away from the US. Moreover, China recently went further than conventional wisdom here in the U.S. would suggest when it eliminated or reduced export tax incentives for energy intensive industries to help meet these energy efficiency targets – a step that could reduce exports.

Controversy over Emission Reduction Targets in the Bali Roadmap

The final area of the Bali Roadmap that garnered much press was the issue of whether a range of emission reduction goals should be included in the final document. In the end, the final compromise linked the Roadmap via a footnote to the range of reductions suggested by the Intergovernmental Panel on Climate Change (IPCC). The EU pushed hard for inclusion of these ranges in the core of the agreement in order to shape future negotiations, while the U.S. opposed it.

In my view, the inclusion of ranges would have been helpful, but focusing on whether they were included or not included distracts from the more important issue -- whether the agreement on what to do after the Kyoto Protocol expires in 2012 (to be agreed upon at the COP 15 in Copenhagen in 2009) will result in aggregate emission reductions by 2020, sufficient to keep open the possibility of holding temperature increases to the EU's stated objective of two degrees Celsius or stabilization of global atmospheric greenhouse gas concentrations to 450 ppm (or less). In other words, will the binding reductions agreed to by the industrialized countries in Copenhagen -- combined with the measurable national actions enacted by key developing countries -- add up to enough by 2020, or will it leave the world with an impossible task in the years beyond 2020?

Critical Next Steps: Progress Defining Comparable Action

While the debate on the ranges of reductions received significant attention in the media, there was less attention on the EU and other developed countries effort to ensure that developed countries commitments after 2012 are based on comparable efforts. Some would prefer to make this debate a simple one -- all developed countries should follow Europe's lead and set their reduction goals at 30% below 1990 levels. Such a uniform reduction goal -- paired with serious actions to reduce emissions in key industrial sectors and with reductions in emissions from deforestation -- would do a great deal to keep global emissions on track in 2020 to avert the most damaging impacts of climate change.

But a uniform approach begs the key economic question -- are countries making comparable economic efforts with such targets? As part of CCAP's international dialogue, we are attempting to gather the best data from various national and international cost studies to determine the economic impact of various targets on countries in terms of gross domestic product (GDP) and cost per ton of reducing emissions. Although we recognize that comparability is not just a question of GDP impacts, it is one useful indicator. According to the studies we have examined, a uniform target will affect GDP of some developed countries more than others. In the U.S. and Japan, for example, some studies suggest the cost of reducing emissions 30% below 1990 levels in 2020 would be

greater than for the E.U. While much more remains to be done on understanding what is comparable and fair, it is likely that comparable efforts will mean different targets for each industrialized country based upon costs and other indicators.

In the coming debate on what is comparable, policymakers will need to balance this fairness notion with the urgency of obtaining enough reductions by 2020 to avert the most damaging impacts of climate change later in this century.

Conclusions

I believe the Bali Roadmap is an excellent path forward. In the U.S., we need to determine how we can make our much needed contribution to this process on a timely basis. While the Bali roadmap is not as aggressive as some had hoped for, it sets a process in motion to deliver a post-2012 international agreement. With effective leadership, all the elements of a strong post-2012 agreement can be delivered from the elements of the Bali Roadmap. The new leadership the developing countries demonstrated in Bali is the big story. The convergence of views between the developing nations and the European Union is a new and welcome development, and it bodes well for the long term success of this Roadmap and leaves a wide berth for the United States to move maneuver.

Thank you again Mr. Chairman for the opportunity to testify today. I am happy to respond to any questions, and I ask that our study of developing country action and our paper on the sector-based approach to developing country action be placed in the record.

**Appendix A: Emissions Reduction Actions in
China, Brazil, and Mexico**

GREENHOUSE GAS MITIGATION IN CHINA, BRAZIL AND MEXICO: RECENT EFFORTS AND IMPLICATIONS

“UNILATERAL ACTIONS” OF DEVELOPING COUNTRIES

In November 2006, the Center for Clean Air Policy (CCAP) released a groundbreaking report, *Greenhouse Gas Mitigation in Brazil, China and India: Scenarios and Opportunities through 2025*. This report found that while greenhouse gas (GHG) emissions in these three countries are projected to increase (more than doubling in key sectors from 2000-2020), they have already undertaken policies that will slow this rate of growth. The study shattered a commonly held myth that developing countries are not taking meaningful action to reduce GHG emissions, and identified further reductions that these countries could undertake.

Over the past two years, developing countries have adopted additional “unilateral” policies and programs that will reduce their GHG emissions. **This report, *Greenhouse Gas Mitigation in China, Brazil and Mexico: Recent Efforts and Implications*, provides an updated consideration of developing country “unilateral actions.”**¹ Once again, we find that full implementation of developing country unilateral actions is estimated to significantly reduce GHG emissions. **The combined emission reductions in China, Brazil, and Mexico from these unilateral measures are estimated to be greater than the reductions under the Kyoto Protocol (without the US), EU’s reduction commitments in 2020, and reductions estimated in current US legislative proposals in 2015.** Most of these reductions have been financed domestically, independent of the Kyoto Protocol’s Clean Development Mechanism (CDM), and many of these measures are not simply the “low-hanging fruit” in domestic-oriented sectors, but are in fact policies with positive costs in sectors such as cement and iron and steel where international competition is a concern.

As negotiations are about to begin on the structure of the post-2012 international response to climate change, the “unilateral actions” undertaken by developing countries will be a crucial piece of the puzzle. **Recognizing and encouraging these and other “unilateral actions” and providing incentives (and appropriate international policy structures) to undertake further reductions will be an essential element of the post-2012 response.**

CHINA’S “UNILATERAL ACTIONS”: AN UPDATE

In 2006, CCAP and Tsinghua University in China estimated that policies adopted between 2000 and the end of 2005 in China would reduce GHG emissions in key energy-intensive sectors below their BAU levels by almost 400 million metric tons carbon

¹ The more detailed version of this report is available at:

http://www.ccap.org/international/Developing_Country_Unilateral_Actions_2007_Update.pdf

dioxide-equivalent (MMTCO_{2e}) in 2020—a combined reduction of over 7%. New policies and programs have been adopted since the end of 2005, and further progress has been made in implementation of a number of the measures identified in the earlier report.

China adopted a plan to reduce national energy intensity per unit of GDP 20% by 2010—the achievement of this goal is estimated to reduce China’s emissions by over 1,500 MMTCO_{2e} annually by 2010.

The National Climate Change Programme details GHG reduction policies and measures to be adopted through 2010. Specifically, this plan calls for improving energy efficiency in industry, transportation and end-use sectors; increasing the hydro/renewable energy share up to 10% by 2010; expanding nuclear, IGCC and clean power technologies; and coal-bed methane recovery. The estimated emission reductions from all measures quantified in the report would exceed 1,500 MMTCO_{2e} by 2010.

While China’s energy and climate protection plans are far-reaching and ambitious, it should be emphasized that achievement of the 2010 energy intensity target and the energy efficiency and other goals announced in the national climate plan will depend upon effective implementation and consistent enforcement at both the national and local levels. To date China has had considerable success in implementing climate-friendly measures in key sectors (discussed below), but not all of its short-term goals have been achieved. For example, meeting a 20% improvement in energy intensity by 2010 would require a 4% annual average reduction after 2005, but in 2006 China achieved a reduction in economy-wide energy intensity of only 1.33% (though this was the first decline since 2003). Realization of the full climate benefits of China’s plans is thus not guaranteed, and will require a sustained national commitment.

China’s renewable energy generation has increased rapidly—even though China is already the world leader in renewable energy (with 42 GW in 2005, excluding large hydro projects), renewable generation has continued to expand rapidly. China’s renewable energy plan calls for the share of renewable energy (including large hydro) in primary energy to reach 10% and 15% in 2010 and 2020, respectively.

- At the end of 2006, China had the sixth largest installed wind capacity of any country, and while official plans call for China to reach a total wind capacity of 5 GW in 2010, this level is now expected to be achieved in 2007.

Inefficient power plants are being closed. The *Tenth Five-Year Plan* includes plans to shut down inefficient power plants. In 2006, China shut down 38 small thermal plants with a total installed capacity of 1.2 GW, and in the first ten months of 2007 China shut down another 343 plants with a total capacity of over 10 GW.

A number of outdated cement, iron and steel, pulp and paper and other industrial facilities have been closed. The *11th five-year-period Development Plan for Construction Industry* (March 2007) set a goal for the phase-out of outdated cement production capacity totaling 250 million metric tons (Mt) by 2010 and further plans require that the number of cement enterprises decrease from 5,000 to about 3,500 by 2010 and to about 2,000 by the end of 2020. Further, a policy for the cement industry sets a goal of increasing the share of new, dry-process cement kiln production from 40% to 70% by 2010 and completely eliminating outdated production lines like

mechanized vertical kilns by the end of 2008. Progress has been made as the share of dry technology-based production increased from only 12% in 2000 to 45% by the end of 2005, with a 55% target set for the end of 2007.

The NDRC's 2006 notification on the iron and steel industry aims to shut down and phase out outdated capacity. Ten provinces and regions have signed contracts with NDRC with a target of shutting down and phasing out 39.9 Mt and 41.7 Mt of outdated iron and steel production capacity, respectively, by the end of 2010. In the first eight months of 2007, these provinces and regions have shut down or phased out outdated capacity of 9.7 Mt and 8.7 Mt of iron and steel, respectively.

Export tax refunds have been eliminated or reduced for industrial sectors with high energy consumption and pollution in an effort to slow the export-driven growth in these sectors. By the end of 2006, 535 export tax refunds for products had been canceled and as many as 2,268 export tax refund rates had been lowered.

China's vehicle efficiency standard for passenger cars is estimated to be one of the most stringent in the world. *The Maximum Limits of Fuel Consumption (L/100-km) for Passenger Cars* are estimated to produce an equivalent vehicle efficiency of 34 miles per gallon (MPG) in 2005 and 37 MPG in 2008. Phase I of this program went into full effect in 2006, and Phase II will take effect on January 1, 2008, for new models and on January 1, 2009, for existing models.

Vehicle excise taxes are now based on the vehicle engine size—ranging from 3-20% of the vehicle purchase price—with the tax on four-liter engines (e.g., SUVs) more than doubling from 8% to 20% (to about \$8,000 per vehicle).

Some of these actions have been undertaken at a positive economic cost. While precise cost estimates for these unilateral actions are not available, many of the renewable opportunities in China are estimated to cost greater than \$10 per metric ton CO₂e reduced, and the overall investment needed to accomplish the 2020 renewable energy goal is estimated to be about \$267 billion.

A number of reductions are being financed domestically, without support from the Clean Development Mechanism, and are thus becoming China's "contribution to the protection of the atmosphere." China has a total of 860 projects in the CDM pipeline with average total reductions of 224 MMTCO₂e per year. Of this total, 574 are renewable energy (biomass, hydroelectric, wind, and solar energy) electricity generation projects—accounting for an average reduction of around 63 MMTCO₂e per year—far fewer reductions than the 142 MMTCO₂e estimated in the electricity sector for 2020 through "unilateral actions." In addition, there are 118 projects in the cement and iron and steel sectors (but none in pulp and paper production) accounting for 23 MMTCO₂e per year—significantly lower than the 220 MMTCO₂e reductions in 2020 from unilateral actions in these three industrial sectors. Lastly, the improvements achieved from the vehicle efficiency standard have not been developed into a CDM project—so the estimated reductions of 34 MMTCO₂e are not being captured by CDM projects.

BRAZIL'S "UNILATERAL ACTIONS": AN UPDATE

Based on its 2006 study, CCAP and its in-country partners estimated that recent government policies and programs adopted in Brazil between January 1, 2000 and December 31, 2005 in the industrial and transportation sectors would reduce GHG emissions by 14% from BAU levels in 2020—a total cut of 73 MMTCO₂e. New policies and programs have been adopted since the end of 2005, and further progress has been made in implementation of a number of the measures identified in the earlier report. As in the case of China, however, harnessing the full benefits of the measures already undertaken in Brazil will require consistent and successful implementation of each measure in the years to come.

Recent policies have contributed to a decline in the deforestation rate for the past two years.

The *Action Plan for Protection and Control of Deforestation in the Legal Amazon (PPCDA)*, launched by the Presidency in 2004, was created to develop measures to reduce deforestation in the Amazon through fiscal incentives to enhance the economic potential of deforested areas, and to encourage programs that can create income through regeneration of degraded areas. In addition, the 2002 *Amazon Regions Protected Areas Program (ARPA)* aims to protect the forest by bringing 50 million ha (12%) of the Brazil Amazon into a network of parks and reserves over ten years. From 2004 to 2006, the annual rate of deforestation declined by nearly 50%, to a level (14 thousand km² in 2006) not seen since the mid-1990s. The fall in the deforestation rate is estimated to have avoided emissions of more than 442 MMTCO₂e in 2006, assuming that the rate of deforestation in 2006 would have been the same as the very high rate observed in 2004 and that this is maintained. The decline has been attributed in part to the government forest protection plan, although macroeconomic factors such as a fall in commodity prices also have played a role.

Renewable energy sources have expanded. The *Program for Incentive of Alternative Electric Energy Sources (PROINFA)*, launched in 2002, sets an overall goal to produce 10% of the total electricity from renewable sources by 2022, in two phases. The first phase is to achieve 3,300 MW of renewables through long-term power purchasing agreements and fiscal incentives. PROINFA has made Brazil the largest wind power producer in Latin America, with total capacity of 1,423 MW expected to be operational by the end of 2008.

Flex-fuel vehicles (which can run on ethanol and/or gasoline) dominate new car sales. Brazil's efforts to expand ethanol production and use since the 1970's laid the important groundwork for the introduction of flex-fuel vehicles. As a result, these vehicles accounted for 84% of new car sales as of June 2007. These types of vehicle now account for 12% of the entire national fleet, and their share is projected to rise to 52% by 2013.

Some of the emissions reductions achieved through these policies are not being developed as CDM projects and are thus becoming Brazil's "contribution to the protection of the atmosphere." Brazil has a total of 240 projects in the CDM pipeline with average total reductions of over 24 MMTCO₂e per year. The introduction of Brazilian flex-fuel vehicles and the associated emissions reductions have not been registered as a CDM project, so the total estimated reductions in the transportation sector from "unilateral actions"—44 MMTCO₂e are estimated to be mitigated in 2020—are not being scored as a CDM project. Similarly, since deforestation emissions reductions are not eligible for CDM credits, the large drop in emissions from deforestation are not being converted to CDM credits.

MEXICO'S "UNILATERAL ACTIONS"

In May of 2007, Mexico formally released its *National Strategy for Climate Change*, or ENACC (its Spanish acronym), which identified the most promising GHG mitigation opportunities in Mexico. The ENACC is now being used to develop an official climate plan for the country. Full and effective implementation of the energy measures identified in the ENACC is estimated to reduce GHG emissions by 106.8 MMTCO₂e annually through 2014. Prior to implementation of these new measures, Mexico has adopted a variety of additional policies and measures that are already serving to reduce its GHG emissions below business-as-usual levels.

Recent policies to expand renewables and increase energy efficiency have been adopted.

The *Law for the Use of Renewable Energy Sources (LAFRE)* establishes a goal of achieving 8% of electricity generation from renewable energy sources, excluding large hydroelectric facilities, by 2012. The National Commission for Energy Conservation (CONAE) established energy efficiency standards for appliances which are estimated to have resulted in GHG emissions savings of 8 MMTCO₂e in 2006. Similarly, energy efficiency programs and the use of daylight savings time in summer adopted under the Electric Power Saving Trust Fund (FIDE) are estimated to have reduced GHG emissions by 5.6 MMTCO₂e in 2005.

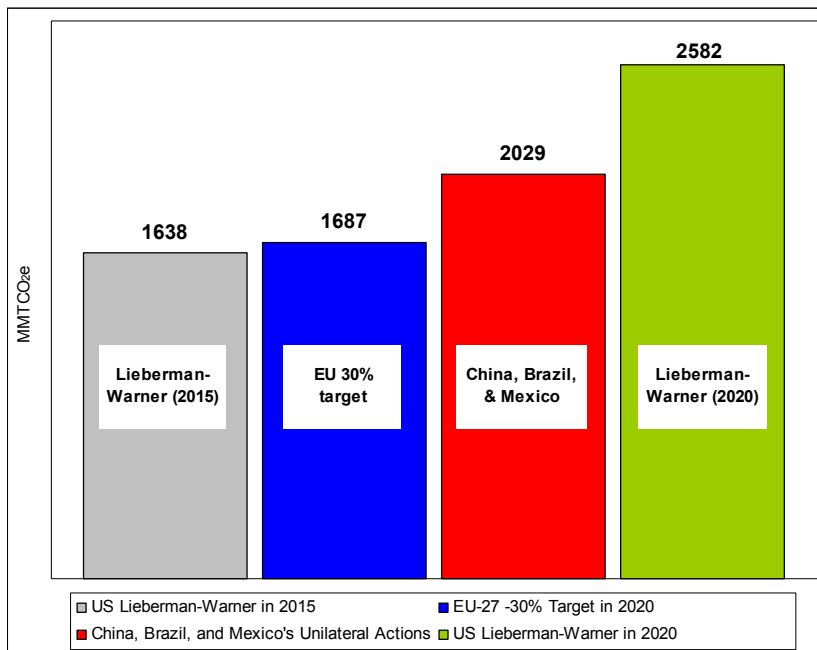
Forestry measures adopted are estimated to reduce emissions. The ProÁrbol reforestation program is expected to avoid 15-35 MMTCO₂e through 2012. Similarly, a program to revive degraded forest lands and promote sustainable commercial forestry projects is estimated to save between 3 and 7 MMTCO₂e from 2001-2008 and up to 30 MMTCO₂e by 2020. Additionally, a fund was established in 2003 to pay owners of forested land to conserve their carbon and water resources.

"UNILATERAL ACTIONS": COMPARING TO OTHER REGIONS

With full implementation, **combining the measures identified in our earlier report with these new measures² yields total annual GHG emissions reductions in China, Brazil, and Mexico that are greater than the annual reductions under the Kyoto Protocol (without the US), EU's reduction commitments in 2020, the reductions estimated in the early years of the main US legislative proposals** (see figure)—with a total reduction of 2,029 MMTCO₂e.³

² Includes only the estimated reductions from: meeting the Chinese economy-wide energy efficiency target in 2010 of 1,500 MMTCO₂e; the impact on emissions in 2010 of Brazilian measures adopted from 2000-2005 and the recent reduction in deforestation emissions in 2006 compared to the 2004 rate (for a total of 515 MMTCO₂e); and reductions in 2005/2006 from energy efficiency programs in Mexico of 13.6 MMTCO₂e.

³ For more details on the numbers used for this and the subsequent comparisons, see the more detailed report available at: http://www.ccap.org/international/Developing_Country_Unilateral_Actions_2007_Update.pdf.



According to one estimate, meeting the Chinese goal to improve economy-wide energy intensity by 20% from 2005-2010 would generate reductions of over 1,500 MMTCO_{2e} in 2010. Combined with forestry and non-CO₂ gas reductions outlined in the Chinese *National Climate Change Programme*—about 280 MMTCO_{2e} cumulative over the 5-year period—even greater reductions could be achieved. **These reductions in China alone would be greater than the reductions required to meet the EU’s commitments for 2020 of 20% below 1990, and are on par with the reductions achieved by the most stringent current US legislative proposal in 2015—1,183 and 1,204 MMTCO_{2e}, respectively.**

The recent reduction in deforestation rates in Brazil is estimated to have produced emissions reductions of 442 MMTCO_{2e} in 2006. Combined with the reductions estimated from policies adopted from 2000-2005—73 MMTCO_{2e} in 2020—implementation of recent Brazilian policies is estimated to generate reductions of 515 MMTCO_{2e}. **This reduction is equivalent to over 40% of the reduction estimated for the EU in meeting its target to unilaterally reduce emissions 20% below 1990 in 2020 and over 30% of the reduction in the most stringent US legislative proposal in 2015.**

The existing energy efficiency measures in Mexico are estimated to have reduced emissions by around 14 MMTCO_{2e} in 2005/2006. Further, the energy measures identified in the Mexican *National Strategy for Climate Change*, if fully implemented, would yield an estimated reduction of 107 MMTCO_{2e} per year—**equivalent to about 20% of the EU-15’s domestic reductions under the Kyoto Protocol of 573 MMTCO_{2e} in 2010.**

Since 1985, CCAP has been a recognized world leader in climate and air quality policy and is the only independent, non-profit think-tank working exclusively on those issues at the local, national and international levels. Headquartered in Washington, D.C., CCAP helps policymakers around the world to develop, promote and implement innovative, market-based solutions to major climate, air quality and energy problems that balance both environmental and economic interests. For information about CCAP please visit www.ccap.org.



Center for Clean Air Policy
750 First Street, NE • Suite 940
Washington, DC 20002

Tel: 202.408.9260 • Fax: 202.408.8896

Appendix B: The Sector-Based “No-Lose” Approach

THE SECTOR-BASED – “NO LOSE” – APPROACH

WHAT IS A SECTOR-BASED APPROACH?¹

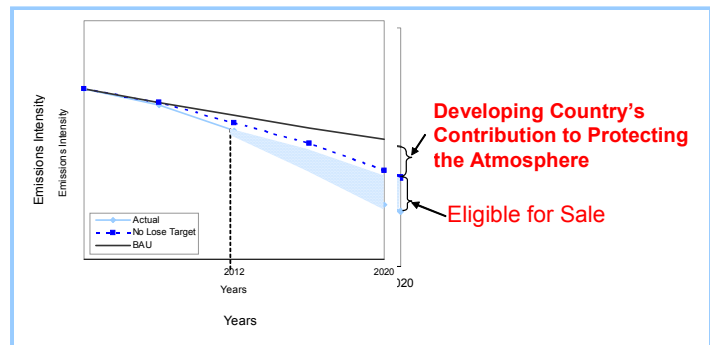
- **Bottom-up method** for encouraging sectoral targets (e.g. steel, cement, electricity) in developing countries and for deriving Annex I country targets. Each sector is rewarded for beating the target, but not punished for falling short (“no lose”).
- There are two overarching structures for sector-based approaches:
 - (1) **country-based** – individual countries are responsible for ensuring the emission levels of the covered sectors meet the targets
 - (2) **transnational** – targets are established for entire sector’s operations worldwide.

WHICH COUNTRIES PARTICIPATE?

- **Developing countries would voluntarily adopt sector-based approaches** in the post-2012 timeframe. **Developed countries** would commit to further economy-wide targets.
- Participation of less than ten developing countries in key sectors account for 80-90 percent of emissions from these sectors in developing countries – so covering global operations and reducing competitiveness concerns can be achieved with the participation of a limited number of countries.

WHAT WOULD DEVELOPING COUNTRIES DO?

- Developing countries would **adopt voluntary “no lose” GHG intensity targets (e.g., GHG / ton of steel)** in key sectors of the economy (e.g., electricity and major industry). Other target structures – such as fixed growth targets (i.e., with a defined growth), benchmark-based (i.e., requiring that a defined benchmark is met), sector credit generation, and harmonized policies and measures – could also be used at the international level.
- The “no lose” target would not be binding, however similar to the Clean Development Mechanism, **emissions reductions achieved beyond the “no lose” target would be eligible for sale** as emissions reductions credits to developed countries.
- Emissions reductions to meet the country’s pledge would be **the developing countries “contribution to protection of the atmosphere”** and would not be eligible for sale.
- A **Technology Finance and Assistance Package would be provided** from developed countries and international financial institutions to adopt more aggressive targets, incentive advanced technology transfer and deployment, and help drive technology cost down over time.



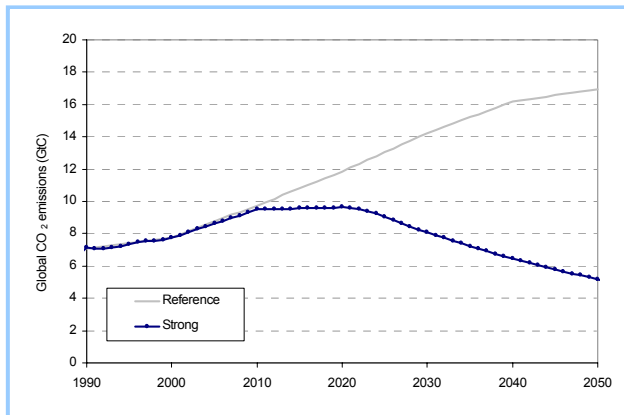
¹ For more details on this approach, see: www.ccap.org/international/Sector%20Straw%20Proposal%20-%20FINAL%20for%20FAD%20Working%20Paper%20-%202008%2025%2006.pdf

WHICH SECTORS WOULD PARTICIPATE?

- **Electricity and major industry sectors** (e.g. cement, iron and steel, oil refining, pulp/paper, etc) are well-suited to such an approach because they are characterized by: a relatively small number of entities, comparatively easy data collection, fairly similar products and participate in international trade. Most importantly, these sectors combined produce approximately 1/3 of developing country emissions and 1/3 of global GHG emissions.
- The approach could be expanded to other sectors, such as passenger vehicles, transportation fuels, appliance standards and LUCF emissions, with some modified design elements.

WHAT IMPACT COULD THIS APPROACH HAVE ON GLOBAL EMISSIONS LEVELS?

- Such an approach could make significant progress toward helping stabilize GHG emissions at a low level based upon preliminary modeling. With a combination of new Annex I country national targets and sectoral targets in the cement, electricity and steel industries within key GHG emitting developing countries, global emissions could be held to around 35 percent above 1990 levels in 2020, a level that arguably maintains the possibility of stabilizing emissions at 450-550 ppm CO₂e. It would require reductions of a little more than 2 percent per year after 2020 to stabilize emissions at 550 ppm CO₂e and 5 percent per year to stabilize at 450 ppm CO₂e. This level provides approximately a 50 percent chance of holding global emissions to less than 2°C increase.



- With only intensity targets adopted in these key sectors across the world, and without further economy-wide developed country targets, global emissions in 2020 would be higher (around 50 percent above 1990 levels) and require even greater reductions after 2020 (around 4 percent per year to stabilize at 550 ppm CO₂e and even greater for 450 ppm CO₂e). This underlines the importance of maintaining economy-wide caps for the developed countries as opposed to shifting to a global intensity-based sectoral approach.

HOW DOES THIS APPROACH IMPROVE UPON THE CURRENT INTERNATIONAL STRUCTURE?

- **Creates explicit recognition and quantification of developing country “unilateral” actions**, such as China’s policies to improve industrial efficiency. Under this approach, developing country “no lose” targets would constitute new contributions to the reduction of atmospheric concentrations of GHG emissions.
- **Moves the post-2012 process significantly towards a “level playing field.”**
- This approach would mean that **all GHG emissions generating facilities in a given sector in a participating developing country would be included in the system**, unlike in the CDM where only a limited number of facilities in a sector participate.
- The new Technology Finance and Assistance Package would **encourage the development and transfer of new climate-friendly technologies in developing countries**, precisely the technological innovation required if the world is to achieve emissions stabilization at safe levels.

Since 1985, CCAP has been a recognized world leader in climate and air quality policy and is the only independent, non-profit think-tank working exclusively on those issues at the local, national and international levels. Headquartered in Washington, D.C., CCAP helps policymakers around the world to develop, promote and implement innovative, market-based solutions to major climate, air quality and energy problems that balance both environmental and economic interests. More information about CCAP can be found at www.ccap.org.