EXPORTING SUSTAINABILITY

A proposal to reduce the climate impact
of the Export-Import Bank of the United States

by

Karis Anne Gong

10 April 2006

A Senior Thesis presented to the Faculty of the Woodrow Wilson School of Public and International Affairs in partial fulfillment of the requirements for the degree of Bachelor of Arts.

εἰς δόξαν Θεοῦ

and to my parents, Richard and Alice

ACKNOWLEDGEMENTS

I first would like to thank my adviser, Anne-Marie Slaughter, for her enduring advice and encouragement. I am also grateful to Annie Petsonk and the staff of Environmental Defense's Climate and Air Program for their indispensable guidance in the pursuit of this project, and of course, for the most wonderful summer internship any college student could ask for.

I could not have completed this project without the generous advice and teaching of: Harold Feiveson, under whose advising I first explored the world of export credit agencies; Michael Oppenheimer, whose expertise on climate change and passion for quite literally, saving the world, has been a source of tremendous inspiration; Smita Brunnermeier, who initially introduced me to the discipline of environmental economics; the late David Bradford, whose seminar and enthusiasm for environmental regulation convinced me to pursue environmental policy studies at the Woodrow Wilson School; and Denise Mauzerall, who reminds me that sound policy only comes from the complex and dynamic collaboration of scientists who engage the public and policymakers who engage scientists.

I am also thankful for my family – Mom, Dad, Katie, Paul, and Daisy – and their everlasting support. I owe so much to my parents – they were even willing to read my thesis and provide feedback. While the close friends and colleagues who provided words of encouragement throughout this year are too innumerable to list, I owe particular thanks to Gretchen Boger, Sharon Sampson, David H. Kim, Charlotte Hwa, Angela Hu, Tatiana Lau, Ciccy Yang, Jennifer Lee, my fellow climate-change warrior Steve Anderson, and my carrel-buddy Ashvin Kamath. Finally, I am especially grateful for my roommates Jacqueline Jordan Leahy, Anna Elizabeth Megill, and Lisa Kristin Frist, who are all capable of identifying their names and the correct day of the week.

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ABSTRACT

To date, the U.S. federal government has failed to enact mandatory greenhouse gas emissions limitations. The U.S. rejected the Kyoto Protocol to the United Nations Framework Convention on Climate Change, citing the Protocol's failure to include developing countries and concerns that ratification of the Protocol would create significant economic disruptions. One important mechanism that has not been given much attention in the policy discussion of climate change is the financing of projects that emit large quantities of greenhouse gases. When financial flows from developed countries support inefficient, greenhouse gas-intensive projects in developing countries, the emissions constitute a source of leakage. Although the emissions are financed by developed countries, they are not counted in climate mitigation arrangements.

Export credit agencies (ECAs) are financing organizations whose purpose is to promote exports. Often, they are publicly supported and operate under the governments of developed nations. The Export-Import Bank of the United States is one such ECA, and its effect on international trade is significant. Each year, it authorizes billions of dollars in the form of loans, guarantees, and insurance to facilitate export transactions. A fairly significant amount of this support is disbursed to projects that emit significant amounts of greenhouse gases: roughly one-third of financing is for power projects alone. Other exports, such as those for transportation, heavy industry, and fossil-fuel extraction, also receive significant amounts of support. The resulting emissions would place the Export-Import Bank, if it were a country, among the world's top ten contributors to greenhouse gas emissions.

Reducing the Bank's emissions therefore has the potential to mitigate global climate change. This thesis further argues that taming the Bank's emissions is politically strategic given several facts: first, the Bank historically has shown leadership in pressing other export credit agencies to adopt agreements that promote international public goods; second, the Bank is well-suited to engage developing countries and at the same time its policies do not have the potential to significantly disrupt the U.S. economy; third, if the Bank's emissions are not regulated, they represent a significant source of carbon leakage.

This thesis then examines the existing literature on the types of policies available to regulate emissions, and argues for a cap-and-trade proposal. It addresses the design specifics of a cap-and-trade program for the Bank and responds to potential political counterarguments. It concludes that though enacting an emissions reductions program will not be easy, it is feasible, and the mitigation of the Bank's impact on climate is worth the effort.

PREFACE: THE PROBLEM OF GLOBAL WARMING

For those who find weather sexy, the year 2005 was certainly exciting, although not in a way beneficial to human welfare. For those concerned with human welfare, the record-breaking year 2005 is cause for concern.[1]

In 2005, the global annual temperature for combined land and ocean surfaces was 1.04°F (0.58°C) above the mean temperature recorded for the period 1880-2004. The year 2005 is expected to be only marginally less warm than the warmest year on record, 1998, which was recorded under the influence of "an extremely strong El Nino episode."[2] The lowest ever Arctic sea ice extent was recorded in September of 2005, part of a trend in Arctic sea ice extent decrease – approximately eight percent per decade since 1978.[3] During the 2005 U.S. wildfire season, more than 8.5 million acres burned.[4] The 4.5 million acres burned in Alaska alone broke the old record for acreage burned in a single U.S. wildfire season.[5] "Drought disasters" were declared in Arkansas, Illinois, Iowa, Kansas, Missouri, Texas, and Wisconsin.[6] On the other side of the country, nine Northeastern states recorded their wettest October since 1895 as record precipitation struck the Northeast during the autumn of 2005.[7]

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[1] The data from this section is drawn from National Climactic Data Center (NCDC), "Climate of 2005 – Annual Report" 13 January 2006, Available http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html
[2] NCDC, "Global Temperatures," in Ibid., Available http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html#Gtemp
[3] National Snow and Ice Data Center, "Sea Ice Decline Intensifies," 28 September 2005, Available http://nsidc.org/news/press/20050928_trendscontinue.html
[4] NCDC, "Climate of 2005: Wildfire Season Summary," 13 January 2006, Available http://www.ncdc.noaa.gov/oa/climate/research/2005/fire05.html
[5] Ibid.
[6] NCDC, "Climate of 2005: Annual Review U.S. Drought," 13 January 2006, Available http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/drought-summary.html
[7] NCDC, "2005 Annual Climate Review: U.S. Summary," 13 January 2006, Available http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/us-summary.html#precip

The 2005 Atlantic hurricane season was also record-breaking.[8] In 1933, the former record-setting year, twenty-one storms were named; in 2005, twenty-seven were named. In 1969, twelve hurricanes formed; in 2005, fourteen hurricanes were formed. In 1960 and 1961, only two storms in the season were Category 5; in 2005, Katrina, Rita, and Dennis menaced North and Central America, making their collective mark along with the four other major hurricanes to tie the record for the greatest number of major hurricanes in a season, first set in 1950. The price tag for all the damage wreaked exceeded $100 billion dollars.[9]

Figure A: Significant Climate and Weather Events in the United States, 2005[10]

Amidst the wind, rain, fires, and floods, those responsible for cleaning up the disasters pondered the question – were these the result of global warming? Could 2005 just be an anomalous weather year, or are the extremes a harbinger of more to come? The

[8] Hurricane data for this section from NCDC, "Climate of 2005 Atlantic Hurricane Season," 13 January 2006, Available http://www.ncdc.noaa.gov/oa/climate/research/2005/hurricanes05.html
[9] National Climactic Data Center, "Climate of 2005 – Atlantic Hurricane Season," http://www.ncdc.noaa.gov/oa/climate/research/2005/hurricanes05.html
[10] NCDC, "Climate of 2005 Annual Review," Image at http://www.ncdc.noaa.gov/img/climate/research/2005/ann/us-events2005.gif

scientific evidence, though never universally accepted, is fairly conclusive.

Climate change *is* being induced by anthropogenic greenhouse gas emissions, especially those produced in the combustion of fossil fuels, and the effects of climate change are beginning to be felt now. To understand how "greenhouse gases" contribute to warming of the earth, it is first important to look at the various factors that affect climate; then to consider the geophysical and chemical processes at work when greenhouse gases are emitted; and finally to examine the physical and historical record.

Simply stated, climate is the result of "incident solar energy" and the Earth's response to that energy – by its reflection or absorption of incoming solar radiation.[11] Various factors might affect the earth's response to solar energy. For example, a volcano might emit particulates that increase reflectivity, reducing solar radiation and therefore temperatures. The elliptical orbit of the earth will cause variations in the amount of incoming radiation; variations in the Sun's radiation will also affect incoming radiation. These latter cyclical patterns are natural types of climate "forcing," or "persistent disturbance[s] of a system."[12] Anthropogenically based forcing can also occur. Land-use change will affect the earth's reflectivity and absorption of radiation – desertification for example will increase reflectivity whereas forest growth might increase the amount of radiation absorbed. Humans also can change the chemistry of the atmosphere by combusting fossil fuels and releasing their products into the atmosphere.

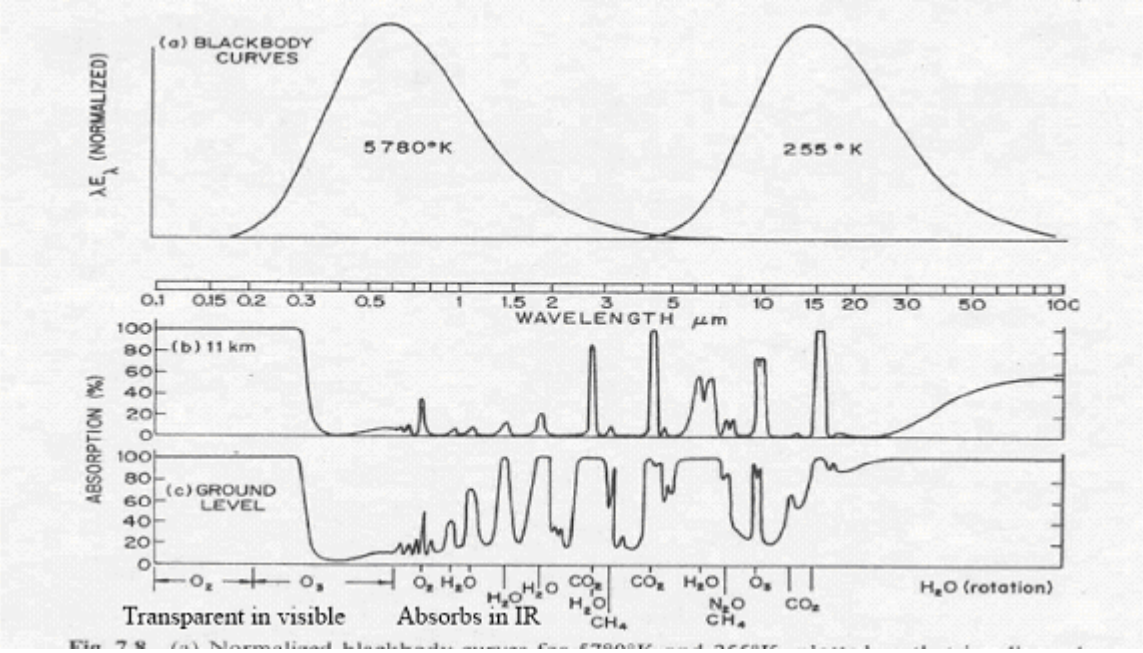
Greenhouse gases (GHGs) affect the climate because they absorb particular wavelengths of radiation. Radiation from the sun enters Earth's atmosphere such that the

[11] Michael Oppenheimer, GEO339: Climate Change: Science and Policy, Princeton University Spring 2005. See also Lee Kump, James Kasting, and Robert Crane, The Earth System, Second Edition, Upper Saddle River, NJ: Pearson Education, Inc, 2004, pp 42-43. The energy balance equation is: $\sigma T_e^4=(S/4)(1-A)$, where T_e is the earth's temperature, A is the radiation reflected by the earth's surface, σ is a constant, and S is the solar flux hitting the earth.

[12] Kump et al, Glossary, p. 400

peak amount of radiation has a wavelength of 0.6 μm, but radiation exiting the earth's surface has much longer wavelengths (Fig. B).

Figure B: Wavelengths Entering and Exiting the Earth[13]



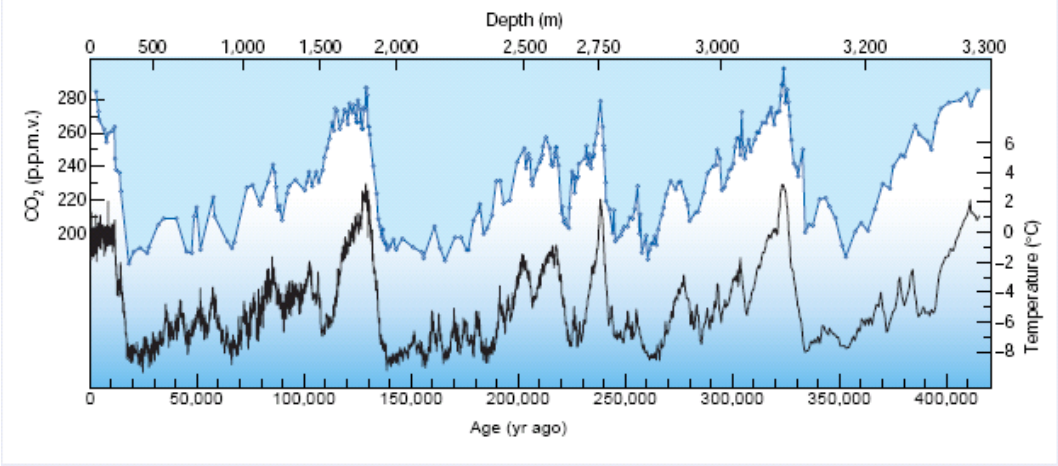
Carbon dioxide (CO_2) has strong absorption properties at about the 15 μm wavelength. This means that radiation reflecting back from the earth's surface with a wavelength of 15 μm is likely to be absorbed by CO_2 molecules and the radiation trapped in the atmosphere, causing more warming than if the CO_2 were not present and the radiation could freely go back into space. Other significant GHGs such as carbon monoxide, methane, and nitrous oxide also absorb radiation in the wavelength range of those leaving the earth's surface and therefore contribute to warming. However, the earth's peak outgoing radiation is fairly close to 15 μm, meaning that the more CO_2 emitted, the more outgoing radiation trapped than if there were high concentrations of gases that absorb at higher or lower wavelengths than 15 μm. If CO_2 were to trap radiation with wavelengths much lower or higher than what the

[13] J.M. Wallace and P.V. Hobbs, Atmospheric Science: An Introductory Survey, Academic Press, Figure 7.8, p. 332

earth actually reflects back, then its effects on climate due to its absorption of outgoing radiation would be insignificant.[14]

The historical record of temperatures and atmospheric chemistry reveals a tight correlation between concentrations of CO_2 in the atmosphere and air temperatures. Ice cores from Antarctica can be analyzed to determine both historic atmospheric concentrations of CO_2 and air temperatures going back 400,000 years. Ice core analysis reveals a concordance of CO_2 concentrations with temperature (Fig. C).[15]

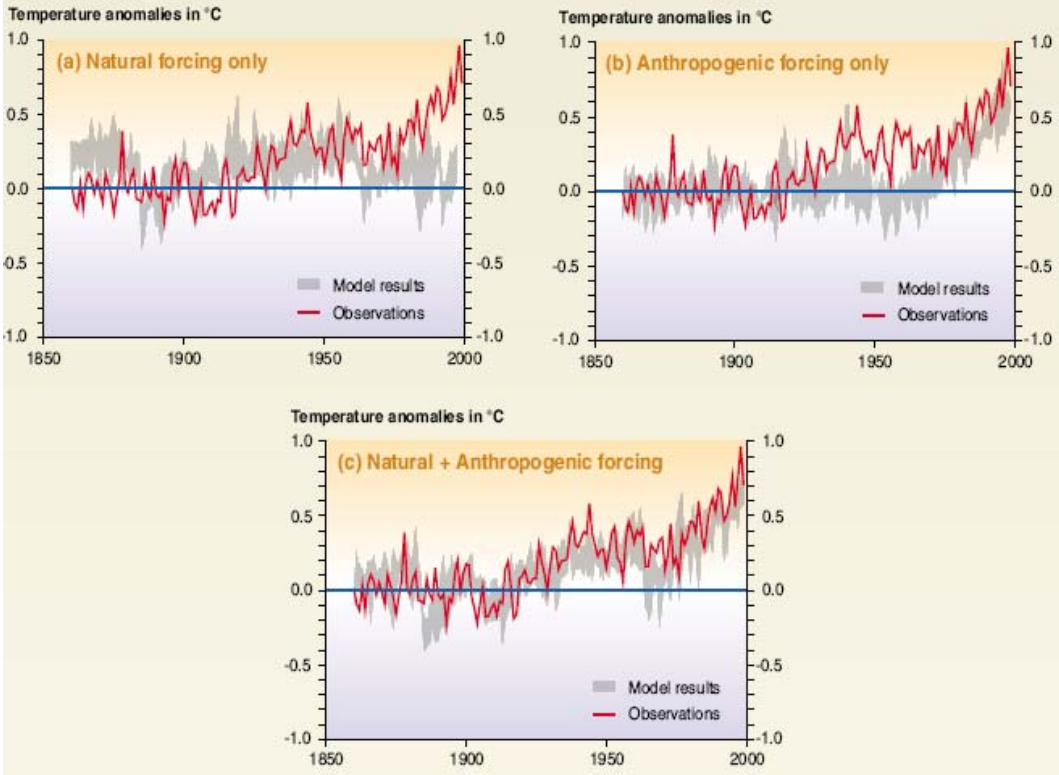
Figure C: CO_2 Concentrations and Air Temperature[16]



Critics of the science of anthropogenic warming acknowledge the linkage between CO_2 and global temperatures; however, they attribute historic and present changes in climate to natural variations in Earth cycles.[17] To show that manmade emissions of CO_2 are responsible for the present trend of warming, it is necessary to model the effects of anthropogenic forcing and natural forcing separately. Comparison with the historical record reveals that only the inclusion of both anthropogenic and natural sources of forcing accurately predict climate behavior in the past (Fig. D).

[14] Kump et al, The Earth System, pp. 47-48.
[15] Lee Kump, "Reducing uncertainty about carbon dioxide as a climate driver," Nature, Vol 419, 12 September 2002
[16] Figure from Kump (2002), ibid., p.189
[17] Hans Labohm, Simon Rozendaal, and Dick Thoenes, Man-Made Global Warming: Unravelling a Dogma, Brentwood, Essex, UK: Multi-Science Publishing Co. Ltd., 2004, pp. 8-9

Figure D: Observations and Model Predictions of Temperature Anomalies[18]



Thus, the record is clear – the accelerated warming experienced since 1976 (a rate of 1.8°C/century or 3.2°F/century[19]) is due to the accumulation of greenhouse gases, most importantly CO_2. The questions for policymakers are what the implications of anthropogenically-forced climate change will be and how to respond to the issue.

Scientists from the Intergovernmental Panel on Climate Change (IPCC) estimate that the effects of a warming earth are not globally uniform, nor can predictions of effects be as precise as weather forecasting. The interlinkages in Earth's systems are complex, and the historical record of specific weather occurrences such as floods or droughts is not very extensive. However, scientists can agree that some responses are certain:

- A general reduction in potential crop yields in most tropical and sub-tropical regions for most projected increases in temperature

[18] IPCC, Synthesis Report: Summary for Policymakers, p. 7
[19] *supra*, n.2

- A general reduction, with some variation, in potential crop yields in most regions in mid-latitudes for increases in annual-average temperature of more than a few °C
- Decreased water availability for populations in many water-scarce regions, particularly in the sub-tropics
- An increase in the number of people exposed to vector-borne (e.g., malaria) and water-borne diseases (e.g., cholera), and an increase in heat stress mortality
- A widespread increase in the risk of flooding for many human settlements (tens of millions of inhabitants in settlements studied) from both increased heavy precipitation events and sea-level rise
- Increased energy demand for space cooling due to higher summer temperatures.[20]

Some beneficial effects are even predicted for some regions:

- Increased potential crop yields in some regions at mid-latitudes for increases in temperature of less than a few °C
- A potential increase in global timber supply from appropriately managed forests
- Increased water availability for populations in some water-scarce regions—for example, in parts of southeast Asia
- Reduced winter mortality in mid- and high-latitudes
- Reduced energy demand for space heating due to higher winter temperatures.[21]

However, the overwhelming conclusion is that both natural systems and human systems are threatened, in some ways irreversibly, by the effects of climate change. The IPCC finds that "climate change will increase existing risks of extinction of some more vulnerable species and loss of biodiversity. It is well-established that the geographical extent of the damage or loss, and the number of systems affected, will increase with the magnitude and rate of climate change"[22] The human systems most likely to be adversely affected are those located in the tropics and along coastlines; the overwhelming majority of those adversely affected

[20] IPCC, Impacts, Adaptation, and Vulnerability: Summary for Policymakers, http://www.grida.no/climate/ipcc_tar/wg2/008.htm#25. Because climate change is expected to cause an increase in extreme events, dry areas will become drier and wet areas may experience more intense precipitation. Water-borne diseases and vector-borne diseases will increase because the extent of tropical climate areas will increase with the trend of warming.

[21] Ibid. Note that many of these benefits will disproportionately help already developed countries, such as the United States and Europe. Countries located in the low-latitudes, which are almost all developing countries, will suffer from sea-level rise, increased disease, and higher risks from extreme weather events. Moreover, there is "high confidence that developing countries will be more vulnerable to climate change than developed countries, and medium confidence that climate change would exacerbate income inequalities within and between countries." See IPCC, Climate Change 2001: Working Group II: Impacts, Adaptation, and Vulnerability, Chapter 19, Executive Summary Available: http://www.grida.no/climate/ipcc_tar/wg2/658.htm

[22] Ibid.

will be the poor living in developing countries.[23] Yet the historical record also reveals that those most responsible for the increased concentrations of atmospheric CO_2 are those in the developed world: from 1850-2000, the developed world contributed 77% of all CO_2 emissions.[24]

In the United States, the effects of climate change will be varied. Major cities on the coastlines will be vulnerable to sea level rise. Although wheat yields nationally may increase, "yields in western Kansas, a key U.S. breadbasket region, are predicted to decrease substantially under the Canadian climate model scenario."[25] Additionally, the U.S. will be vulnerable to the indirect effects of climate change from other parts of the world: these effects could manifest in the form of trade disruptions or inflows of climate refugees from flooded island states or other regions.[26]

Although some scientists will attribute the intensity of the 2005 hurricane season to the effects of global warming while others argue that such statements cannot be scientifically proven, all agree that even if the records of 2005 are not all the result of global warming, more records will be broken in the future and more damage will be done unless action is taken to mitigate and adapt.

The IPCC advocates mitigating the effects of global warming by stabilizing and reducing GHG emissions.[27] Doing so would both reduce the extent of and extent to which

[23] See IPCC, "Distribution of Total Impacts," §19.4.3 in Climate Change 2001: Impacts, Adaptation, Vulnerability. Available, http://www.grida.no/climate/ipcc_tar/wg2/675.htm and "Blowing Hot and Cold," The Economist, 4 July 2002

[24] Kevin Baumert and Jonathan Pershing, "Climate Data: Insights and Observations," Pew Center on Global Climate Change: December 2004, p. 29, http://www.pewclimate.org/docUploads/Climate%20Data%20new%2Epdf

[25] United States Global Change Research Program, "Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change," 2000, Available http://www.gcrio.org/NationalAssessment/overpdf/overview.html

[26] Ibid.

[27] See IPCC, Summary for Policymakers 2001, p.23

natural and human systems are affected, and would allow more time to enact adaptation strategies should further warming occur. The implementation of reductions, however, requires that the institutions responsible for GHG emissions take action now.

INTRODUCTION

The Kyoto Protocol of the United Nations Framework Convention on Climate Change went into effect in 2005, signaling global recognition that it was time for concerted action to be taken to reduce greenhouse gas (GHG) emissions.[28] Yet notably absent from the list of ratifying parties was the United States, currently the largest emitter of GHGs[29] and responsible for 30% of total emissions from 1850-2000.[30] Throughout the international debate over Kyoto's ratification, the U.S. representatives consistently made two arguments against U.S. involvement. First, the Protocol was economically unfeasible. Second, the Protocol did not place restrictions on the emissions of developing countries. Although developing nations are currently responsible for 37% of global carbon emissions, by 2025, business as usual scenarios predict that they will account for close to 50% of global carbon emissions.[31] Such growth would undercut much of the gains made by those who agreed to the restrictions required by Kyoto, and at the same time would disproportionately place the cost burden of emissions reductions on the developed world.

While the national position has been to ignore the problem of climate change, there has been action at the local and state levels to reduce greenhouse gases. For example, Governor Arnold Schwarzenegger of California issued an executive order in July 2005 that the

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[28] "Russian MPs ratify Kyoto treaty," BBC News, 22 October 2004. UK Version. Available Online, http://news.bbc.co.uk/1/hi/world/europe/3943727.stm. Accessed 5 January 2006.
See also: Kyoto Protocol Status of Ratification at http://unfccc.int/essential_background/kyoto_protocol/status_of_ratification/items/2613.php

[29] Kevin Baumert and Jonathan Pershing, "Climate Data: Insights and Observations," Pew Center on Global Climate Change: December 2004, p. 29, http://www.pewclimate.org/docUploads/Climate%20Data%20new%2Epdf, p. 4

[30] Ibid.

[31] Data extrapolated from: Energy Information Administration, "International Energy Outlook 2005," Released July 2005, http://www.eia.doe.gov/oiaf/ieo/emissions.html; Figure 67. World Carbon Dioxide Emissions by Region, 1990-2025, Figure Data at http://www.eia.doe.gov/oiaf/ieo/excel/figure_69data.xls

state develop a plan to reduce its emissions to 80% below 1990 levels by 2060.[32] Nine Northeastern states in the Regional Greenhouse Gas Initiative have also agreed to establish emissions reductions targets and to create a tradable permit market by which emissions reductions from their power plants can be achieved more cost effectively.[33] Two hundred and twenty-four mayors representing more than forty-three million American citizens signed and adopted the Mayors Climate Protection Agreement, which was unanimously approved at the U.S. Conference of Mayors in 2005.[34] In this agreement, the mayors agree to urge state and national government leaders to meet or exceed the targets set by the Kyoto Protocol, and likewise they agree to do so within their own cities.[35] In Congress, individual senators have acknowledged that a continued acceleration of greenhouse gas emissions threatens the well-being of the nation and the world. Some, such as Senators Joseph Lieberman (D-CT) and John McCain (R-AZ) have sponsored legislation with the aim of stabilizing and reducing U.S. GHG emissions. The 2005 Senate passed a Sense of the Senate Resolution declaring that "Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop, and reverse the growth of such emissions…"[36]

Now, as the political attitude towards climate change shifts in the United States, it is important to examine how this country can reduce its contribution towards climate change in a manner that both does not harm the U.S. economy and also engages developing nations. One area where this is possible is through the reform of U.S. development programs. Developing

[32] California Executive Order S-3-05, http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm
[33] Regional Greenhouse Gas Initiative, see www.rggi.org
[34] See "U.S. Mayors Climate Protection Agreement," http://www.ci.seattle.wa.us/mayor/climate/
[35] "ENDORSING THE U.S. MAYORS CLIMATE PROTECTION AGREEMENT," http://www.seattle.gov/mayor/climate/PDF/Resolution_FinalLanguage_06-13-05.pdf
[36] Energy Policy Act of 2005 (Public Print), H.R.6 § 1612 Sense of the Senate on Climate Change, available http://loc.thomas.gov

nations seeking to grow their economies rely on both the financial and technical expertise of developed nations. To lay the groundwork for economic growth, they accept loans and other forms of aid so that energy infrastructure and industrial facilities can be built. Developing nations also host extraction projects in which their natural resources are removed by transnational corporations at some cost, in exchange for the revenues generated by the sale of the resource. A major instrument in the apparatus of development and development project finance is the Export-Import Bank of the United States,[37] which annually mobilizes more than $10 billion to help U.S. businesses export goods and services to other nations.

Unfortunately, the traditional types of energy infrastructure supported by the Bank and accepted by developing countries are almost exclusively fossil fuel projects. In the years 2002-2004, only 2% of all support for energy projects went to renewable energy projects. 98% of support went towards fossil-fuel based projects.[38] This pattern of financing not only encourages the further proliferation of power plants fueled by oil, coal, and natural gas, but also encourages the development of economies based on such energy sources. Since a fossil-fueled power plant's life-cycle is typically twenty years or more, each coal or oil or natural gas power plant built now will likely still be emitting carbon dioxide in the long-term. The long lifespan of carbon dioxide means that the effects of each additional power plant may be felt for the next five or more generations.[39]

Already, power projects financed by the Bank from the beginning of fiscal year 1987 through the end of FY2002 will account for more than 450 million tons of CO_2 *per year* by

[37] Hereafter, the Bank.
[38] See Annual Reports 2002,2003,2004, Available http://www.exim.gov/about/reports/ar/index.htm
[39] The lifespan of carbon dioxide in the atmosphere is 50-200 years. GAO, "CLIMATE CHANGE: Information on Three Air Pollutants' Climate Effects and Emissions Trends," April 2003, http://www.gao.gov/new.items/d0325.pdf

2012.[40] If the Bank continues with its current rate of fossil-fuel project approvals, that number will easily exceed half a billion tons of CO_2 per year, placing the Bank's energy portfolio emissions at a level higher than twenty-five of the OECD nations and comparable to those of Canada or Mexico.[41]

Thus, reducing the Export-Import Bank's contribution to global CO_2 emissions is a significant way in which the United States can engage with developing countries to reduce GHG emissions. The Bank's participation in creating incentives to invest in projects that provide more carbon-efficient sources of energy allows it to respond to climate change in an economically responsible manner. The funds that would have gone to fossil fuel projects can now go towards the development and implementation of renewable and carbon efficient energy technologies. In addition, the increased financing of renewable energy projects would be consistent with the Bank's mission to provide "export financing products that fill gaps in trade financing"[42] because of the current lack of financing products available for renewable energy technology.[43]

By building the renewable energy sector domestically, the Bank prepares U.S. businesses for energy technology advancements over the long term, which is better for the economy in the long run than continued support of traditional, fossil-fuel based technology. By exporting renewable energy technology abroad, the Bank can help developing nations become accustomed to the use of new technology and can leapfrog carbon-based energy

[40] Civil Suit No. C 02 4106 JSW, Friends of the Earth, Inc. et al. v. Peter Watson et al., citing "Ex-Im Bank's Role in GHG Emissions and Climate Change," Export-Import Bank of the United States, rev. August 31, 1999) and calculations from ibid. n.38

[41] *OECD FACTBOOK 2005,* available at www.oecd.org; figures from OECD nations are CO_2 emissions from energy use, which is comparable to estimates from Bank projects, as data is only from Bank-sponsored power projects.

[42] Export-Import Bank, "Mission," http://www.exim.gov/about/mission.html

[43] Karsten Neuhoff, "Large-Scale Deployment of Renewables for Electricity Generation," Oxford Review of Economic Policy, Vol. 21 (2005), p. 96

infrastructure.

Before such a policy can be implemented however, several issues must be resolved. First, the roles of the Bank and other Export Credit Agencies (ECAs) should be clarified. What are the appropriate functions of ECAs, and what types of functions has the Bank historically performed? What is the nature of the relationship between the other ECAs? How do ECAs like the Bank impact the environment, and specifically, what is their effect on climate change? What current policies have been developed to address the environmental concerns of ECA behavior, and are they sufficient to address the issue of climate change?

Second, the available policy measures for reducing the Bank's climate impacts need to be reviewed. If there are not sufficient existing policies to address climate change, what are the options? What type of policy is best suited for the Bank? Should it pursue a market-based approach, or are mandated technology standards a better approach?

Third, specific features of a general policy must be discussed. If the Bank is to implement a specific plan to reduce emissions, what would it look like? What are the particular design features that must be carefully reviewed and addressed? What source of policymaking is best suited to implement the emissions reduction plan?

Fourth, analyzing the political feasibility of the proposal is necessary. What are the obstacles to the Bank's adoption of a climate change mitigation policy? Who are the likely opponents, and what are the strongest counterarguments against implementing a Bank-wide climate mitigation program? What are the strategic advantages to adopting a climate mitigation program?

This thesis seeks to explore and answer these questions and to propose a way that the Export-Import Bank of the United States can responsibly and effectively mitigate its climate impact.

Chapter One sets out a historical sketch of the Bank, describing its origins, relationship with other ECAs, and current role in supporting climate change. It argues that historically, the Bank has served as a leader amongst the ECAs by seeking the resolution of three collective action problems that used to distort trade finance: tied aid credits, corruption, and environmental standards. Additionally, it finds that the Bank's support of climate change is significant and should be addressed. Furthermore, current environmental policies are insufficient to meaningfully reduce the Bank's climate impact.

Chapter Two examines the potential policies that could be adopted by the Bank to address climate change. It argues that the Bank's current Environmental Exports Program, which promotes renewable energy exports, is insufficient to mitigate climate change, and that mandatory emissions reductions are necessary. After providing an analysis of several emissions reducing policies, the chapter concludes that a cap and trade program is ideal for the Bank

Chapter Three then discusses the particular design features of the cap and trade program and proposes several recommendations. It also provides an analysis of the potential policy actors that might implement the program, and ultimately argues for congressional legislation.

Chapter Four examines the political challenges and advantages of the proposal. It responds to potential counterarguments from the program's stakeholders and other potential critics. It also and provides arguments for the adoption of the proposal, citing the domestic, foreign policy, and international environmental benefits at stake.

I
BETWEEN THE STATE AND THE MARKET: THE BANK AND CLIMATE CHANGE

I.1 – A Brief History

The continuing existence of the Export-Import Bank is at once perplexing and yet politically logical. How can an institution largely off of the public's radar with a charter that expires every few years, requiring repeated Congressional reauthorization, weather the changing tides of time and party control? Fairly easily, it appears, for although the Export-Import Bank is a remnant of the FDR New Deal, it is also an institution of adaptation and change.

What is currently recognized as the Export-Import Bank of the United States was originally two separate institutions.[44] The first Export-Import Bank of Washington was chartered under an Executive Order of the President, 2 February 1934. Its existence was justified by the provisions of the National Industrial Recovery Act and the National Recovery Administration (NRA), institutions that allowed the president to take action to

[44] The architecture for this historical sketch of the Bank is influenced heavily by William Becker and William J. McClenahan, Jr.'s book, The Market, the State, and the Export-Import Bank of the United States, 1934-2000, a work commissioned by the Bank in commemoration of its sixty-fifth anniversary and currently, the most chronologically comprehensive work on the Bank in print. The work was commissioned, and reviews regarding the bias of the book are mixed. One reviewer comments that it "does not seem unduly biased in the way that some sponsored histories can be" (Flesher). Another states that "there is no evidence of institutional bias in this organizational history" (Bean). Other reviewers criticize the lack of contextualizing the Bank's actions (Dobson) and while acknowledging the detail of Bank actions, argue that the book casts the institution in a sometimes artificially heroic light (Adamson; Adams, 2004). I acknowledge that the Becker and McClenahan work in its detail might portray the Bank's administrators in a fairly positive light, but the truthfulness of documented actions taken by the Bank are not disputed and are corroborated by other sources referenced in this chapter.
See Book Reviews by: Dale Flesher, in Reviews, Enterprise and Society 5.1 (2004), p.164, Available http://muse.jhu.edu/journals/enterprise_and_society/v005/5.1flesher.pdf; Jonathan J. Bean, Review in Economic History Services, Jul 1, 2003, URL : http://www.eh.net/bookreviews/library/0642.shtml; Frederick C. Adams, Book Review in The Journal of American History, Vol. 91, No. 3, December 2004, p. 1080; Michael R. Adamson, Book Reviews, Business History Review, Autumn 2003, Volume 77, Issue 3, p. 531; Alan P. Dobson, Review in Diplomatic History, Volume 29, Issue 2, pp. 375-378

promote economic recovery during the Great Depression.[45] Since the Roosevelt Administration "believed the problems of international commerce were at the very core of the country's economic dilemma,"[46] it sought to "'to combine with the permanent parts of the present domestic economic program a program of international economic cooperation, based on a more liberal commercial policy and steadily increasing mutually profitable trade with other nations."[47]

Originally, the Bank was to provide support for U.S. trade with the U.S.S.R., a relationship the United States pursued for two main purposes. First, the Bank was to facilitate international diplomacy with the newly recognized Soviet Union. Second, given the ongoing domestic depression, American businessmen saw the Soviet Union as a land of opportunity for exports and economic gain. They therefore strongly supported official policies, such s the establishment of the Bank, that would facilitate U.S.-Russian trade.[48] A second Export-Import Bank of the United States was established only one month later, 9 March 1934, to represent U.S. interests in trade with Cuba for parallel reasons.[49] By July, the services of the second bank were expanded to include all other countries except the U.S.S.R.[50] However, in 1935, after diplomats from both the U.S. and Russia failed to reach an agreement regarding credit terms,[51] and relations between the two nations became tense and eventually hostile, the original Export-Import Bank and the second Export-Import Bank

[45] William H Becker and William J. McClenahan, Jr, The Market, the State, and the Export-Import Bank of the United States. Cambridge University Press, 2003, pp. 14-15
[46] Frederick C. Adams, The Export-Import Bank and American Foreign Policy 1934-1939, Colombia, MO: University of Missouri Press, 1976, p. 66
[47] Adams (1976), 67, citing an address to the Associated Press April 22 1934 by U.S. Secretary of State Cordell Hull, *New York Times*, 23 April 1934, p. 16
[48] Becker and McClenahan, 13; Adams (1976), 126
[49] Becker and McClenahan, 15
[50] Adams (1976), 71
[51] Ibid., 123

were merged.[52]

In the ten years between the 1935 merging of the two Export-Import Banks of Washington and the Export-Import Bank Act of 1945, which formally established the Bank as an independent government agency, FDR moved the Bank several times within the federal bureaucracy. Originally under the umbrella of the NRA, the Bank was placed in the Federal Loan Agency in 1939; it was later transferred to the Department of Commerce in 1942; finally, it was moved to the Office of Economic Welfare in 1943 where it remained until becoming its own entity in 1945 during the Truman Administration.[53] When the Bank was finally authorized as an independent agency in 1945, its function had expanded to no longer promote only the economic recovery of the United States, but also to serve the reconstruction efforts in post-World War II Europe.[54]

As the needs of diplomacy and international economics changed over time, so too did the Bank's primary clients. In the 1950s and 1960s, the Bank focused on development projects in Latin America, consistent with U.S. political and Cold War interests in the region as well as economic desires to contribute to "the development of an industrial base that in turn later would promote markets for U.S. goods."[55] This focus on Latin American finance occurred not gradually as the needs of European reconstruction after World War II decreased, but rather abruptly as Latin American demands for U.S. attention grew louder. In fact, when the Bank's then president, William McChesney Martin, Jr.[56] was attending the 1948 Ninth International Conference of American States in Bogota, Columbia, Latin

[52] Becker and McClenahan, 15
[53] Ibid., 62-63
[54] Ibid., 63
[55] Ibid., 4
[56] President Martin later became Chairman of the Federal Reserve Board in 1951 under President Truman. See "William McChesney Martin, Jr." Biography, published by the Federal Reserve Board of Richmond, Available: http://www.richmondfed.org/publications/economic_research/the_fiftieth_anniversary_of_the_treasury-federal_reserve_accord/biographies/martin.cfm

American leaders lambasted the U.S. for ignoring the region. After riots broke out following the assassination of a Colombian opposition politician at the conference, near to where President Martin was standing, President Martin sent an urgent message to the Bank's Board; between 1948 and 1951, Latin America's share of Bank disbursements increased from 14% to more than 63%.[57]

After the post-WW II economic recoveries of Europe and Japan, officials at the White House and Treasury "expected the [Bank] to cooperate in administration efforts to cope with a growing balance of payments problem."[58] Since the economies of Europe and Japan were improving, the demand for U.S. exports had waned. As a result, the U.S. average payments deficit – which was $957 million between 1951 and 1957 – quadrupled in 1958-1960 to $3.7 billion.[59] In response, and at the urging of other U.S. agencies such as the Departments of State and Commerce, the Bank provided guarantees to noncommercial and political risks in short-term transactions in order to boost exports.[60]

During the Latin American debt crisis of the 1980s and the Asian economic crisis of the late 1990s, the Bank acted as a lender of last resort when all private lenders of capital had fled those regions.[61] After private capital fled and local banks failed, the Bank "stepped in to provide trade finance when private capital had an exaggerated perception of risk."[62] In this way, it sought to facilitate international economic stability, rather than merely stimulate U.S. domestic growth.

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[57] Becker and McClenahan, 78-79

[58] Becker and McClenahan, 104. See also Richard E. Feinberg, Subsidizing success: the Export-Import Bank in the U.S. economy, York: Cambridge University Press 1982, p. 21. It should be noted that the debate about the Bank's effect (or lack thereof) on the U.S. balance of payments is deep and rich. The purpose of this thesis is not to take a position on the nature of the Bank's effect, if any exists, on trade deficits; that is a matter beyond the scope of my argument.

[59] Becker and McClenahan, 104.

[60] Ibid., 104-106

[61] Ibid., 8

[62] Ibid., 283

Consistently throughout its history, the Bank has tried not to assert itself as a replacement for or as a competitor against the private lending sector. Rather, it maintains that its position should be "between the state and the market."[63] When the market fails, the Bank will fill in those gaps where there is a legitimate state interest in providing credit. In the past, these interests have included the rebuilding of war-torn economies with which the U.S. has significant political or economic ties[64] and acting as a lender of last resort in the face of structural market failures.[65]

I.2 – The Bank and other Export Credit Agencies

The Bank has also responded to market failures to resolve the collective action problem of credit wars between the export credit agencies of other developed nations. Export Credit Agencies (ECAs) exist in most other Organization of Economic Cooperation and Development (OECD) nations and are broadly defined as financial institutions whose purpose is to promote the exports of their respective countries by providing loans, guarantees, insurance, technical assistance, and more with the backing or approval of the national government.[66] ECAs are large-scale operations: they directly finance about one out of every eight dollars of world trade, and mobilize significant amounts of credits each year.[67] For example, in 2000, $500 billion in guarantees and insurance to companies in developing countries and $58.8 billion of new export credits were issued by ECAs.[68] These financial services may be offered either to the exporter or to the importing country, with the same

[63] Ibid., 8
[64] As discussed above with respect to post-World War II Europe
[65] As discussed above with respect to the Latin American debt crisis and the Asian economic crisis. See also David P. Baron, "Exim at Fifty: At a Crossroads?" in Rita M. Rodriguez, ed, The Export Import Bank at Fifty: The International Environment and the Institution's Role, Lexington, MA: Lexington Books, 1987, p. 107
[66] Gianturco, Delio, Export Credit Agencies: The Unsung Giants of International Trade and Finance, 2
[67] Gianturco, 1
[68] Noreena Herz, The Debt Threat, New York: HarberCollins Publishers, 2004, p.44

outcome of facilitating the ECA's domestic firm's export transaction. Janet Koren Levit, former Counsel at the Bank illustrates with the following example:

> Consider the following hypothetical transaction. A U.S. company, for example General Electric ("GE"), attempts to sell a gas turbine for U.S. $ 10 million to a power project in Brazil. The Brazilian company entertains bids from GE's foreign competitors, such as Siemens of Germany or Mitsubishi of Japan. Then, the Brazilian buyer compares turbines in terms of price and quality indicators such as reliability, energy efficiency, and energy output. Because the Brazilian buyer likely does not want to expend cash by paying for the turbine in full immediately, it will request proposals from each of the bidders that include financing terms, such as extended terms of payment and favorable interest rates. The Brazilian buyer now chooses a turbine on the basis of price, quality, and the attractiveness of the financing package.
>
> At this point, GE has several choices, including: (1) offer no financing package and (assuming that the foreign competition offered packages) likely lose the sale; (2) provide and carry "debt" to the Brazilian company on its own balance sheet; (3) borrow money from a commercial bank to "pay" for the cost of financing; or (4) contact Ex-Im Bank, the local ECA, to provide official support for the financing package. In this transaction, the first two options are usually unattractive. GE could engage a commercial bank and ask it to participate in the financing transaction, either by having the bank issue a buyer credit n14 or a supplier credit. This option may not be available or could be very expensive (and thus unattractive), depending on the commercial bank's current appetite for Brazilian risk. The fourth option, engaging the U.S. ECA to provide official export credit support for the transaction, becomes GE's most attractive option.[69]

As the example points out, contracts for imported goods and services are often competitively bid, and therefore ECAs also exist to protect their country's exporters from unfair competition. Levit continues, "official export support may be necessary to 'level the playing field;' if Seimens or Mitsubishi receives government support, then U.S. support is necessary to ensure that GE's bid is not at a competitive financing disadvantage."[70]

Export credits competition has the potential to cause economic damage through market distortions: the financing of loans at below-market interest rates, for example, means that the ECA absorbs financial losses for the sake of winning a contract. Since the government-sponsored ECAs that tend to finance large transactions are publicly financed, taxpayers bear the cost of these decisions. Moreover, without coordination among the

[69] Janet Koven Levit, "The Dynamics of International Trade Finance Regulation: The Arrangement on Officially Supported Export Credits," Harvard International Law Journal, Winter 2004, pp65 - ??, 69-70
[70] Ibid., 70

ECAs, these types of credit wars are perpetuated as losses grow larger and larger: the credit race is a collective action problem. Each ECA has an incentive to offer more attractive financing terms or else it will lose the contract; but if no standards are set, then all ECAs will be forced to adopt unfavorable terms as buyers essentially retain the authority to demand better and better offers.[71]

The financing operations of ECAs are influenced by two primary international organizations that seek to establish consensus on standards so that destructive credit competition can be avoided. Since 1934, the Berne Union has existed as a group of private and public export credit insurers to "facilitate cross-border trade by supporting international acceptance of sound principles in export credits and foreign investment and to provide a forum for professional exchanges amongst its members."[72] The Bank joined the Berne Union in 1959. The Organization for European Economic Cooperation (OEEC), which in 1955 first adopted rules in an attempt to prevent "destructive competition" among the ECAs, is the predecessor to the OECD.[73] In 1960, when the OECD was established, it assumed the responsibility of maintaining the guidelines for export credits, and in 1963, established the Group on Export Credits and Credit Guarantees, or the Export Credit Group (ECG).[74] The Bank is also a part of the ECG. While the Berne Union's membership includes private and public export credit insurers, the ECG governs only official ECAs supported by the governments of OECD nations. Both institutions seek to complement the other's work in achieving cooperation among export credit insurers, but the ECG has been more active in "determining a coordinated and consistent approach to the problems facing

[71] Ibid., 72
[72] "History," Berne Union website, http://www.berneunion.org.uk/history.htm
[73] John E. Ray, Managing Official Export Credits: The Quest for a Global Regime, Washington, DC: Institute for International Economics, July 1995, p.35
[74] Ibid., 36 and 45

export credit agencies."[75]

The Bank's involvement in the ECG has not always been influential or cooperative. Although the group itself began negotiations upon its establishment in 1963, the U.S. actually blocked restrictions on export credit practices until 1973.[76] Its stance against limitations to credit offers was in part due to its benefitting from the lack of coordinated lending terms and credit rates. Because of the "depth and size of the North American capital market," it could "extend long-term fixed-rate export credits at relatively cheap market rates."[77] But after the oil shocks in the 1970s, "North American market interest rates rose," and it no longer held a competitive advantage in offering export credits.[78] In 1973, in anticipation of the oil crisis's effect on credit competition, "the U.S. Treasury Department…abruptly assumed the leadership of OECD efforts to regulate export finance."[79] The Bank's involvement in negotiations with the other OECD export credit agencies was a "reversal of position," for prior to the 1970s, the U.S. and Canada had "resisted efforts at cooperation on export credits" because both possessed competitive advantages of "well-developed capital markets" and thus the ability to offer longer-term maturities than the other OECD nations.[80]

But in the 1970s, as the United States became more interested in urgently promoting exports, the information exchange taking place among the other OECD nations became more appealing, and Bank Presidents John Moore and Stephen DuBrul took a special

[75] Ibid., 34
[76] Andrew Moravcsik, "Disciplining Trade Finance: The OECD Export Credit Arrangement," International Organization Vol. 43, No. 1 (Winter 1989), pp. 173-205, 180
[77] Ray, 46
[78] Ibid., 50-51
[79] Moravcsik, 180
[80] Becker and McClenahan, 183

interest in following the discussions that took place among the ECG and the Berne Union.[81] In the ups and downs of negotiating an agreement within the ECG, the Bank took the lead in June 1976 when Bank President DuBrul declared that it would "adhere to policies similar to those laid out in the ["Consensus on Converging Export Credit Policies"] in regard to interest rates, repayment terms, and mixed credits," negotiated in the spring of that year.[82] This declaration, along with the Bank's signaling of "its good faith by raising interest rates above the Consensus minimums," catalyzed the adoption of similar implementation declarations among all other OECD members except Australia and New Zealand.[83] The OECD group "extended and formalized the Consensus" in its "Arrangement on Guidelines for Officially Supported Export Credits," ("Arrangement") adopted in 1978.[84] In the late 1970s and early 1980s, the U.S. and the Bank continued to lead the OECD nations in negotiating a more comprehensive set of guidelines on export credit supports consistent with the interests of free trade.[85]

I.3 – The Bank's Continued Influence: Tied Aid, Corruption, and the Environment

Despite the terms of the original 1978 Arrangement and subsequent updates by consensus, ECAs remain competitive for export contracts – often in developing countries[86] – that provide their home countries' companies with revenue and jobs. These contracts can be highly lucrative. For example, in November 2004, the Bank approved a $137.7 million

[81] Ibid., 183-185
[82] Ibid., 186-187
[83] Moravcsik, 181
[84] Ibid.
[85] Andrew Moravcsik, in *supra* n76, discusses in greater detail the theoretical explanation behind the formation of the U.S.'s position in ECG negotiations and argues that ultimately the strength of the OECD Arrangement and the cooperation of its members is explained by "an institutional theory of state preferences" in the first step of cooperation; "a power-bargaining theory" in determining the outcome of preference negotiations; and "a functional theory of regimes" in the success of compliance (Moravcsik).
[86] "80% of financing for projects and investment in developing countries today comes from ECAs" Herz, 44

contract for a communications satellite system destined for Malaysia.[87] Other new capital contracts were as large as $400 million.[88] As a result, competition remains stiff, and in certain instances, the market fails to account for negative externalities that arise as a result of unbridled competition. The Bank, along with U.S. Treasury officials, has consistently led maneuvers to reduce these negative externalities in its negotiation of and enforcement of additional agreements among ECG Participants. These efforts have not been entirely altruistic: in fact, the U.S.'s pursuit of agreements to reduce market distortions aligns with the institutional interests of the Bank.[89] But the result has been successful campaigns for free trade principles in credit competitions. Three specific issues in which the Bank has demonstrated leadership by addressing negative externalities are the use of tied aid, corruption, and lower environmental guidelines as means to attract export contracts.

I.3.a – *Tied Aid*

Tied aid, "simply stated…is the practice of linking concessional foreign aid grants to procurement in the donor country, where the balance of the export's cost is linked to commercial export credits supported by ECAs."[90] The linking of export credits is not necessarily logical, and instead can be used to create "mixed credits" with more generous repayment terms.[91] These financing packages are more attractive to the host countries entertaining bids from firms than traditional packages that follow the guidelines of the Arrangement. Originally, tied aid was justified because "[d]uring the immediate post[-WWII]

[87] Export Import Bank Annual Report FY2005, p. 29, Available at: http://www.exim.gov/about/reports/ar/ar2005/mission.html
[88] Ibid., 26-33
[89] The Bank has a requirement to be self-sustaining, and possesses strict spending constraints. Therefore, its interest is in extending loans or credits that will be repaid – it strives to balance its budget. Accordingly, credit competition to the extent that institutions become insolvent without the rescue of additional public funding threatens the Bank's operations. See Moravscik, 194
[90] Becker and McClenahan, 224
[91] Ray, 59

period, many countries looked upon officially supported credits as the proper and logical way to promote development in the poorer countries of the world."[92]

However, "[g]radually, both export credit and development aid agencies…felt that the greatest [trade and aid] distortions came from tied-aid credits."[93] Aid financing is primarily viewed as a vehicle to fund "important social objectives – such as peace…democracy…and health and education…for the poor,"[94] and aid might be advanced at concessional rates because not all development projects are implemented for the purpose of profit. On the other hand trade financing was viewed as a mechanism to enable profitable capital projects.[95] Countries that combine the two sources of international outflows could divert funds from aid projects to capital projects in order to win contracts with more attractive financing packages.

For the United States, two separate agencies distribute aid and trade finance: the U.S. Agency for International Development (USAID) sends 100 percent of its support to social, health, and policy initiatives; and the Bank authorizes its support largely for major capital projects.[96] This institutional separation of trade and aid financing combined with self-imposed restrictions on credit financing[97] prevents the U.S. from initiating tied aid offers. Thus, the U.S has had an interest in reducing the amount of tied aid offers that other countries make in commercial transaction competitions. Competing with tied-aid offers requires it to accept concessionary financing terms; else it would outright lose contracts.

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[92] Ibid., 58
[93] Ibid., 59
[94] Rita M. Rodriguez, "Ex-Im Bank: Overview, Challenges, and Policy Objectives," in The Ex-Im Bank in the 21st Century: A new approach?, ed. Gary Clyde Hufbauer and Rita M. Rodriguez, Washington, DC: Institute for International Economics, January 2001, p. 21
[95] Ibid., 21
[96] Ibid
[97] Peter C. Evans and Kenneth A. Oye, "International Competition: Conflict and Cooperation in Government Export Financing," in The Ex-Im Bank in the 21st Century: A new approach?, ed. Gary Clyde Hufbauer and Rita M. Rodriguez, Washington, DC: Institute for International Economics, January 2001, p. 153

To combat the distortionary nature of tied aid, the U.S. has undertaken unilateral efforts to reduce the attractiveness of other countries' tied aid offers, pushed the ECG to adopt restrictions on tied aid offers, and enforced tied aid agreements among ECG Participants. In 1983, after the doubling of OECD financing in tied-aid offers between 1978 and 1981,[98] Congress passed the Trade and Development Enhancement Act, which set aside funds for the Bank and USAID to respond to mixed credit offers initiated by other ECAs.[99] The Bank took the initiative to utilize the funds despite initial opposition from the Reagan Administration and reluctance on the part of USAID: it matched ten foreign mixed credit offers in just eighteen months.[100] As tied aid offers continued to affect American exporters, the administration was motivated to join the effort against foreign tied aid offers. Congress established a Tied Aid War Chest, initially of $300 million per year, as a permanent feature of the Bank in the 1986 reauthorization, and the Bank used it aggressively as it continued match tied aid offers made by other OECD ECAs.[101]

As a result of these measures, the U.S. was able to draw other ECG Participants into discussions with the aim of establishing restrictions on tied aid offers.[102] After two years of negotiations, the Participants adopted the "Helsinki Package," which outlined rules for distinguishing what projects should be financed with tied aid versus official or commercial exports.[103] In general, tied aid could not be extended to commercially viable projects, as this was the type of transaction most likely to perpetuate distortions in international financial flows. Enforcement works because "[t]he agreement works through a notification system,

[98] 1978: total concession and commercial financing in tied aid reported to the OECD was $969 million; 1981: total financing in tied aid was more than $2.3 billion. Becker and McClenahan, 225
[99] Ibid., 226
[100] Ibid.
[101] ibid., 229
[102] Evans and Oye, 117
[103] Ray, 98

with participating countries informing other countries of every tied aid offer made. These offers can be challenged by other members in a consultative process that takes place in Paris."[104] If a tied aid offer is challenged and found to be designated for a commercially viable project, the ECA violating the policy is expected to withdraw its offer.

The Helsinki Package is considered a success in reducing the offering of inappropriate tied aid credits, and the U.S. is an instrumental factor in its success:

> The United States has been the key member in maintaining discipline within the Helsinki group… From the perspective of U.S. exporters, the strategy of challenging appears to deter the use of tied aid to support commercially viable projects. The number of cases challenged as commercially viable dropped from 39 in 1992 to 2 in 1997 and 4 in 1998.[105]

In 2004, no projects required examination by the consultations group.[106] Total trade distortions reductions were estimated at $42 billion for the period between 1993 and 2001, and U.S. taxpayers "may have saved the annual cost of more than $300 million that would have been required to support the same level of exports through competing export subsidies – a total of $2.1 billion [between 1993 and 2001]."[107]

I.3.b – *Corruption*

More recently, the Bank and the United States have been advocates for anti-corruption reforms, which eliminate high commission fees for "agents" who help firms to win contracts "often [by] receiv[ing] or pass[ing] on bribes worth hundreds of thousands of dollars."[108] Bribery historically has played a role in winning export contracts, and ECAs

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[104] Evans and Oye, 118
[105] Ibid.
[106] Export Import Bank Competitiveness Report 2004, Available http://www.exim.gov/about/reports/compet/compet2004.pdf, p. 120. See Figure H3, 120
[107] Lawrence H. Summers, "Continuing the Fight against International Trade Finance Subsidies," in The Ex-Im Bank in the 21st Century: A new approach?, ed. Gary Clyde Hufbauer and Rita M. Rodriguez, Washington, DC: Institute for International Economics, January 2001, p. 259
[108] Edward Alden et al, "Export credit agencies' graft crackdown stalls Germany and Japan are blocking the introduction of international guidelines designed to prevent corruption," The Financial Times, 15 February 2006

facilitate continued corruption by covering these inflated commissions.[109] Deterring bribery for the purpose of winning contracts benefits the international market by increasing access of consumers and suppliers to fairly negotiated contracts.

In 1997, the first anti-bribery convention was approved by OECD nations. Before then, the U.S. had pursued negotiations for more than eight years.[110] However, the effectiveness of this convention is disputed – critics charge that the convention is wrought with loopholes and that monitoring and enforcement are too slow to deter continued corruption.[111] In international efforts to combat bribery, the U.S. has emerged as a leader in anti-corruption measures in its enforcement of the Foreign Corrupt Practices Act (FCPA).[112] Under the FCPA, "several firms that paid bribes to foreign officials have been the subject of criminal and civil enforcement actions, resulting in large fines and suspension and debarment from federal procurement contracting, and their employees and officers have gone to jail."[113]

In early March 2006, the OECD nations negotiated the acceptance of new, more stringent anti-corruption measures governing export credits. These measures would increase transparency by requiring the disclosure of agent identities as well as the purpose and sum of their commissions.[114] Proposed anti-corruption controls by the OECD would bring other OECD nations closer to the U.S.'s policies, but these controls are currently opposed by both Germany and Japan.[115] Despite these current setbacks, the U.S. has communicated its

[109] Susan Hawley, "Underwriting Bribery" Briefing 30, December 2003, The Corner House, http://www.thecornerhouse.org.uk/pdf/briefing/30ecabribe.pdf
[110] Peter B. Clark, Statement at "Symposium on energy and international law: development, litigation, and regulation," Transcript published in Texas International Law Journal, Volume 36, Winter 2001, p. 1
[111] Hawley, 17
[112] This enforcement is disputed as being very effective. See Hawley, supra n.109
[113] U.S. Department of Justice, "Foreign Corrupt Practices Act Antibribery Provisions," January 2006, http://www.usdoj.gov/criminal/fraud/fcpa/dojdocb.htm, hereafter "USDOJ 2006"
[114] Alden, *supra* n.108
[115] Hugh Williamson, "Export credit agencies' graft crackdown stalls," Financial Times Syndication Service, 21 February 2006.

willingness to continue combating bribery, "[hoping that it will] reach a point where the U.S. is joined by each of the other OECD Convention countries in an attempt to eliminate and eradicate transnational bribery of government officials."[116]

I.3.c – *Environmental Guidelines*

A third area where competitive bidding for contracts can result in negative externalities is environmental protection. Since "[e]xporting countries apply different degrees of rigor in evaluating the social and environmental impacts of ECA-financed projects,"[117] higher or lower environmental standards can increase or decrease the cost of compliance. Accordingly, some ECAs might apply lower standards in order to lower the costs of export financing packages. Furthermore, these environmental standards or any lack of environmental standards might actually conflict with the ECA's home country environmental standards or goals.[118] For example, despite the fact that Germany and Japan have ratified the Kyoto Protocol, their ECAs "*Kreditanstalt fur Wiederaufbau* and Export Import Bank of Japan (JEXIM) provide three to four times more direct financing for energy intensive projects than ExIm,"[119] resulting in significant emissions of greenhouse gases (GHGs) that are not accounted for in their own reported emissions or restricted by host developing country policies.

The Bank possesses relatively stringent policies: in the 1992 reauthorization, Congress amended the Bank's charter to require environmental review procedures.[120] Since its first set of interim policies in 1993, it has adopted more and more advanced measures.

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[116] Clark, *supra* n.110
[117] Evans and Oye, 134
[118] Crescencia Maurer, "The Climate of Export Credit Agencies," World Resources Institute: Climate Notes, May 2000, p. 5
[119] Kate Hampton, "Banking on Climate Change: How Public Finance for Fossil Fuel Projects is Shortchanging Clean Development," Washington, DC: Sustainable Energy and Economy Network, 17 November 2000, 7; See also Maurer Figure 3, p 7
[120] 12 USC §635i-5

However, when it realized that its guidelines might place it **"**at a competitive disadvantage to national ECAs that did not have to meet similarly stringent standards,… the United States started lobbying for OECD members to adopt similar standards."[121] These efforts led to four years of negotiations, during which the U.S. even refused to sign one version of an agreement because it was "[holding] out for a stronger text that more closely resembled its domestic laws."[122]

In 2003, a recommendation of the ECG was finally adopted, despite initial opposition by the other Participants and attempts to weaken the agreement.[123] The ECG continues to participate in meetings to discuss terms that might improve environmental standards and improve financing terms for environmental products: in 2005, it approved a temporary program offering 15-year repayment terms for renewable energy technology, which is longer than the repayment term for fossil-fuel plants.[124]

Thus not only do the Bank and U.S. representatives to the OECD urge other ECAs to accept standards that reduce trade distortions and facilitate international public goods like environmental protection, but often their efforts are ultimately successful. Given the Bank's influence, it has the potential to do great good, and it is time that it take advantage of another opportunity to resolve a collective action problem that distorts trade and causes significant environmental repercussions: the emissions of GHGs that cause climate change.

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[121] James Salzman, "Decentralized Administrative Law in the Organization for Economic Cooperation and Development," Law and Contemporary Problems, Volume 68, Summer / Fall 2005, p. 208

[122] Salzman, 209

[123] Stephen Fidler, "Germany blocks U.S. environment guidelines," Financial Times (London,England), July 20, 2000, London Edition, p. 14. For an explanation of German opposition, see also Marcus Schaper (forthcoming) "Export Promotion, Trade, and the Environment: Negotiating Environmental Standards for Export Credit Agencies Across the Atlantic," In: Enlarging TransAtlantic Relations: The Political Economy of Environment, Agriculture, and Energy Trade Politics across the Atlantic. Miranda A. Schreurs, Stacy VanDeveer and Henrik Selin, eds.

[124] Interview with James Mahoney, Vice President of the Engineering and Environment Division of the Export-Import Bank of the United States, 14 March 2006. Transcript on file with the author.

I.4 – The Bank's Role in Climate Change

Because pollution has traditionally been a negative externality, not considered by producers or consumers of goods in their evaluation of costs and benefits, the market has not adequately produced the socially desirable levels of pollution controls.[125] In the case of climate change, only recently and in only select regions of the world has the market begun to internalize the costs of greenhouse gas (GHG) emissions. Currently, the Bank has no explicit procedures with which it may evaluate the potential costs of environmental degradation due to GHG-induced climate change from projects and products it supports. Accordingly, its GHG emissions are high.

If the Export-Import Bank were a country, it would rank seventh out of all other nations in terms of GHG emissions from its electricity sector, behind only the United States, China, Russia, Japan, India, and Germany.[126] Even though the Bank does not visibly emit GHGs – it is not a power plant or an oilfield or a cement factory – it has contributed to climate change in a number of ways. First, by issuing financial support in the form of loans, guarantees, risk insurance, and financing to product exporters and project developers, it has directly facilitated the building of power plants, the development of oilfields, and the operations of several cement factories. Ninety-eight percent of its energy portfolio financing goes to fossil-fuel based nonrenewable energy projects, the results of which are significant levels of carbon-dioxide emissions.

The Bank itself reports that the amount of CO_2 from projects that it supports will

[125] Don Fullterton and Robert N. Stavins, "How Economists See the Environment," in Robert N. Stavins, ed., Economics of the Environment: Selected Readings, Fourth Edition, New York: W.W. Norton and Company, 2000, p. 5

[126] See Kevin Baumert and Jonathan Pershing, Climate Data: Insights and Observations, Washington DC: Pew Center on Global Climate Change, December 2004, http://www.pewclimate.org/docUploads/Climate%20Data%20new%2Epdf, Table 1, "Top 25 in Emissions, Population, and GDP, 2000." See also Becker and McClenahan, iii

reach 425 million tonnes per year by 2012, with its contribution to global CO_2 production peaking at 1.4% per year, according to its assumptions.[127] Even though the 425 million tonnes estimate is conservative because it excludes emissions resulting from capital industrial projects and oil and gas extraction projects that also emit heavily, it remains significant.[128] Many countries with lower levels of emissions have adopted programs to reduce their GHG emissions, including most of the countries in the European Union.[129]

The Bank claims that the projects it supports would have gone forward even if it had withheld financing. This claim requires that either other ECAs or private banks would have financed the projects; if the latter, then the Bank's current energy financing practices violate

[127] Export Import Bank of the United States Engineering and Environment Division, "Ex-Im Bank's Role in Greenhouse Gas Emissions and Climate Change," 1999, p. ii. Copy on file with the author. Hereafter "Ex-Im E&E" Keep in mind that these numbers are based on Ex-Im assumptions and include only projects that request an excess of US$10 million.

[128] Although the Bank estimates its emissions from oil and gas and aircraft, it does not include these estimates in its calculation of its share of global emissions. It claims that this is unnecessary because (1) the GHG production measurements will be tracked when the fuel is burned; (2) current initiatives to curb GHG production exclusively target emitting sources; and (3) attempts to measure the impact on GHG concentrations from production/extraction would be complex and misleading. At the same time, it estimates the CO_2 production from its extraction projects at 14.1 billion tonnes over their lifetimes. "It is noted that this calculated value of equivalent amount of CO_2 emissions resulting from fossil fuel extraction projects is *about 1.5 times* the predicted value of CO_2 emissions from Bank supported fossil fuel plants by the year 2012." The Bank's willingness to calculate a rough estimate of the emissions from its extraction projects demonstrates that attempts to measure extraction project emissions are not as complex or misleading as they argue in point (3) above. Furthermore, even though current initiatives target emitting sources, the literature on GHG controls discusses the possibility of upstream emissions reductions, which does require the measurement of GHG content in extracted fuels. Finally, regarding (1): the Bank estimates actual emissions from its projects, yet these are also "tracked" by countries. Thus it is arbitrary to say that GHG content in extracted fuel should not be measured by the Bank, but that it should measure the emissions from combustion projects that it finances. Instead, it is important that the Bank assess all of the potential GHG emissions it finances in order to prevent leakage, or the allowance of uncovered sectors to continue emitting GHGs without restriction or monitoring. If the Bank were to fully account for all of the sources of GHGs, it might find them even more significant than just the power projects sector.
The Bank's data do not make it feasible to extrapolate what the yearly emissions of its fossil fuel extraction projects are. For context, consider that the world total emissions of CO_2 due to petroleum emissions in 2003 were just over 25 billion tonnes. The Bank's aggregate emissions from fossil fuel extraction projects then is equivalent to more than half of a year's global emissions.
See Ex-Im E&E, p. 25 and 33. See Also, Energy Information Administration (EIA), International Energy Annual 2003, Table H.1co2, http://www.eia.doe.gov/pub/international/iealf/tableh1co2.xls

[129] Notably, Canada, the UK, France, and Italy all are Kyoto signatories and emit comparable levels of GHG emissions. See EIA Table H.1, ibid; see also Status of Ratification at http://unfccc.int/essential_background/kyoto_protocol/status_of_ratification/items/2613.php

its stated claim to fill in financing gaps.[130] But even if other ECAs would have otherwise financed the Bank's projects, the Bank itself is responsible for the projects in its portfolio and thus bears responsibility for the continued operations of its GHG-emitting projects.

Second, a lending policy that exports old technology to countries just beginning to develop their infrastructure sets back the future implementation of more carbon-efficient technology. The Bank's heavy support of fossil-fuel combusting power and industrial projects both takes support away from the renewable energy sector and establishes long-lasting infrastructure that will continue to rely on GHG-emitting technology. This slows down efforts to reduce GHG emissions: the opportunity cost of supporting nonrenewable, fossil-fuel based energy projects is the support of renewable technology. Because 98% of power-sector projects receiving support are from fossil-fuel sources, very little is being directed towards renewable energy projects.

Third, when developed-country ECAs, such as the Bank, finance fossil-fuel technologies in developing countries, they weaken opportunities for multilateral agreements which might reduce carbon dioxide emissions. During the Kyoto negotiations, the U.S. and other developed nations asked for commitments on the part of developing countries to address GHG emissions. The United States Congress even justified its stance on Kyoto by declaring that it would not take part in a GHG reductions plan that did not include developing countries in binding commitments.[131] At the same time, the ECAs of developed countries continue to "facilitate energy-intensive development" and act counter to their

[130] Becker and McClenahan, iii; Export-Import Bank of the United States, "Mission," http://www.exim.gov/about/mission.html

[131] The Byrd-Hagel Senate Resolution 98, entitled "A resolution expressing the sense of the Senate regarding the conditions for the United States becoming a signatory to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change," passed 95-0 on July 25, 1997. Text and related information available http://thomas.loc.gov/cgi-bin/bdquery/z?d105:S.Res.98:

nations' public stances that advocate the reduction of emissions.[132]

This kind of policy inconsistency undermines the credibility of developed-nation representatives who seek to negotiate GHG emissions reductions agreements and undercuts the current progress being made to help developing countries adopt renewable energy and energy efficiency technologies. Because the financial flows directed by ECAs are so vast, the small efforts such as the Global Environment Facility (GEF) of the U.N. Framework Convention on Climate Change are effectively negated.[133] A lack of developed-nation credibility and the overwhelming of current renewable energy technology transfer programs could then pose significant barriers to the developing nations' participation in, and assent to, future multilateral agreements to reduce GHG emissions.

Bank financing of carbon-based energy projects therefore contributes to climate change by directly enabling such projects to go forward, by delaying the implementation of renewable energy technology, and by weakening potential agreements between developed and developing countries to make firm commitments to carbon dioxide emissions reduction. A different approach to project finance ought to be pursued in order to reduce the Bank's contribution to climate change. It is worth examining the Bank's history of environmental regulations to assess what shortcomings must be overcome to construct a successful GHG emissions-reduction strategy.

I.5 – The Bank's Environmental Policy: Shortcomings and Lessons from History

The Bank currently has no standing policy that requires it to limit the projects it

[132] Maurer, 6

[133] Between June 1991 and June 1998, the GEF approved $1.9 billion in financing for the support of renewable energy development and implementation in developing countries. Including government, implementing agency, and private sector financing, the GEF mobilized about $3.8 billion. In fiscal years 1991-1998, the U.S. Export Import Bank alone mobilized more than $6.8 billion for fossil-fuel fired electric projects. See Maurer, 6; see also Ex-Im E&E, Appendix C

finances based on a project's carbon footprint. However, a look at previous efforts to boost environmental quality through exports can still reveal where and why some policies work while others have not.

I.5.a – *The 1992 Mandate and the Common Approaches*

In 1992, Congress passed the first environmental directive during the Bank's reauthorization. The amendment to the Bank's charter required it to "establish procedures that take into account the potential beneficial and adverse environmental effects of goods and services for which support is requested under its direct lending and guarantee programs…"[134] The 1992 amendment also granted the Bank's Board of Directors the authority to withhold financing for environmental reasons.[135]

Subsequent to the passage of the 1992 amendment, the Bank established formal environmental review guidelines in 1995.[136] These guidelines were weak and not always implemented. In fact, in the first eighteen months of the new policy, between February 1995 and September 1996, the Bank approved seven transactions for projects that did not comply with the published environmental impact guidelines.[137] The 1992 Congressional mandate did not require the Bank to withhold financing from projects that violated environmental standards, but merely required the performance of environmental impact assessments. Thus, enforcing compliance with the policy is subject to the discretion of the Bank.

The Bank revised its guidelines in 1996 so as to make them easier to understand, and in 1998, the Bank adopted major revisions that:

> called for disclosure of project [environmental impact assessments (EIAs)] by the Bank,…tracked some of the new …policies [of the International Finance Corporation, an agency of the World Bank,…and] introduced the requirement that the Bank count and

134 12 USC §635i-5
135 ibid
136 Interview with James Mahoney
137 Evans and Oye, 134

> report on the amount of CO_2 emitted by thermal power plants that it financed. This was in response to NGO input.[138]

After the implementation of the Bank's own policy, U.S. officials negotiated with the OECD ECG to establish ECA-wide standards consistent with its own procedures.

In 2003, the OECD ECG adopted a set of environmental guidelines known as the "OECD Recommendation on Common Approaches on Environment and Officially Supported Export Credits; 2003 Revised Version" (Common Approaches). Subsequently, the Bank re-evaluated its standing environmental procedures, which had been revised in 1998; these new guidelines are its current procedures.[139] The new guidelines provide a category of projects that are excluded from financing services due to their environmental effects. The guidelines also list parameters and standards of effluent emissions.

The ECG's adoption of standards strengthened the Bank's existent policy for two reasons. First, due to the advocacy by the U.S. representatives for common standards, potential project proposals could expect that compliance would be required in order for financing to be approved. Therefore, the very act of pursuing universal adoption of standards signaled to project developers that the U.S. was taking seriously its standards and was more likely to enforce them. Second, the actual adoption of the Common Approaches reduced the opportunities that project developers might have had to seek financing from sources that did not enforce environmental standards.

However, the Bank's current policies are not likely to be adapted to address global climate change for two main reasons. First, the language in the statute pointing to projects that the Bank should avoid specifies those "which may have significant environmental

[138] Interview with James Mahoney
[139] "Environmental Procedures and Guidelines," Export Import Bank of the United States, http://www.exim.gov/products/policies/environment/envproc.html

effects upon the global commons or any country not participating in the project, or may produce an emission…that is prohibited or strictly regulated pursuant to Federal environmental law."[140] The definitions of emissions and pollutants traditionally exclude most greenhouse gases that do not possess local side effects. Since carbon dioxide is not considered a significant regional pollutant and has the chemical property of mixing well in the atmosphere, the Bank does not consider it governed by the 1992 statute.[141]

Second, this latter guideline regarding emissions ties the statute to existing Federal law. Therefore, even if the Bank's environmental and engineering department or its board of directors determined that projects involving heavy emissions of GHGs should not be financed, the statute does not expressly permit it to do so because current U.S. policy does not consider CO_2 a pollutant.

The Common Approaches system of categorizing projects based on potential environmental impact is to be applauded – after all, it represents a unified agreement among the ECAs not to fund projects that will significantly negatively affect host country environmental quality. Unfortunately, it fails to acknowledge that projects can have potentially significant global effects without producing substantial regional damage. Thus ECAs are unlikely to consider GHGs as a source of environmental damage requiring attention.

I.5.b – *The Renewable Energy Exports Advisory Committee*

Internally, the Bank has demonstrated interest in the financing of renewable energy projects, and in 2002, it commissioned the Renewable Energy Exports Advisory Committee (REEAC) to "form a panel of outside advisors to obtain specific insight on the global

[140] 12 USC §635i-5
[141] Ex-Im E&E, p. 20

renewable energy marketplace and how Ex-Im Bank could increase its support for exporters in this industry."[142] The REEAC was commissioned specifically under an initiative of the Bank's director at the time, Philip Merrill.[143] Although it met three times before producing its 2003 Report, no further activity has been publicized.

The REEAC's set of recommendations urged the Bank, among other items, to adopt a minimum 10% renewable energy portfolio standard,[144] an effort which is laudable but has not been achieved since the report was released. Some of the REEAC's recommendations have not been implemented because they would not have been permissible under the Arrangement. These include recommendations such as the providing of below-market interest rate loans to wind energy farms.[145] In addition, the Bank has argued that renewable energy portfolio standards are not viable policy requirements because it is demand driven and "does not control who comes in the door to ask for financing."[146]

Since its first report, the REEAC has not met or produced any follow-up evaluation based on its original recommendations. Overall, it is not a strong enough institution to ensure that the Bank pursues climate-friendly environmental policies, such as those that facilitate renewable energy exports, because its influence and existence are dependent upon the interests of the Bank's director. It is not an independent body and thus does not have the authority to effectively critique or influence Bank policy.

I.5.c – *The Climate Lawsuit*

Currently, several American cities, along with the NGOs Greenpeace and Friends of

[142] Report to the Export-Import Bank Board of Directors, Renewable Energy Exports Advisory Committee, 14 March 2003. Copy on file with the author.
[143] Interview with James Mahoney
[144] A renewable portfolio standard mandates that a specific percentage of energy financing by the Bank be disbursed to renewable energy projects.
[145] Interview with James Mahoney
[146] Ibid.

the Earth, are applying external pressure upon the Bank in a lawsuit asserting that the Bank has not followed proper environmental procedures. The lawsuit charges that the Bank has violated the National Environmental Protection Act by failing to perform Environmental Impact Assessments on projects that contribute to climate change.[147]

As of April 2006, the lawsuit had not been decided, although the government's motion for summary judgment was denied in August 2005, indicating that the lawsuit would proceed.[148] If the lawsuit is successful, however, it will not automatically translate into a coherent policy that results in concerted efforts by the Bank to reform its lending practices. Courts can only determine the outcome of lawsuits brought before them; they cannot prescribe long-term policy.

A look at the existing environmental guidelines and attempts at climate-friendly policy reveals some successes in the arena of standardizing environmental reviews and preventing localized environmental damage in host countries. However, these policies are by no means comprehensive enough or specific enough to address climate change mitigation. Thus, additional policies must be designed to provide incentives for the Bank to cut its funding of GHG intensive projects and for the managers of projects to seek support for more climate-friendly projects. Given the Bank's significant contribution to GHG emissions and its current lack of viable policy options to reduce them, the critical question is how it can fill the gaps between existing environmental policies and global desired environmental protection from climate change.

[147] See www.climatelawsuit.org for further details

[148] "In landmark decision against Bush administration, Federal Court recognizes harm caused by global warming," Media Kit, 24 August, 2005, www.climatelawsuit.org

II
MANDATORY, MARKET-BASED CO_2 EMISSIONS REDUCTIONS: THE ARGUMENT FOR A CAP-AND-TRADE PROGRAM

II.1 – A Guided Approach to Climate Change Policy

Policies that address climate change will vary depending on the positions of those motivated to take action. Given the Bank's particular role in international trade, two complementary aspects of its role should drive policy. First, the Bank is in a position to promote the export of renewable energy technology to developing countries, which is beneficial for the atmosphere because it provides energy at low or zero cost in terms of GHG emissions. Second, the Bank is in a position to expand its own influence on mitigating emissions by considering innovative financing policies.

Achieving solid gains in mitigating climate change requires satisfaction of the following objectives: an Export-Import Bank policy that creates incentives for low and zero-emission projects; cuts emissions from existing projects; and discourages the financing of additional high-emissions projects. Currently the Bank has taken some measures to accomplish the first objective, but this alone will not effectively address the Bank's effect on climate change.

II.2 – The Environmental Exports Program: Achievements and Limitations

In an attempt to accommodate and attract potential renewable energy investors, the Bank established its Environmental Exports Program (EEP), which was overhauled in 2005. The EEP provides "short-term environmental export insurance…[and] enhanced medium-term insurance and long-term loans and guarantees for environmentally beneficial export

transactions."[149] In addition to environmental export credit financing, the EEP addresses potential informational barriers to the export of environmentally beneficial technologies. Its informational services include annual conferences and presentations available on their website.[150]

In 2005, along with the rest of the OECD Export Credit Group (ECG),[151] the Bank implemented a program within the EEP to attract investment in environmental exports. The new policy extended loan repayment terms for environmental exports including renewable energy projects, which accommodates the particular financial structure of renewable energy projects. Generally, renewable energy projects tend to have high initial capital costs and low annual costs, whereas fossil fuel-based projects typically have low initial capital costs and higher annual costs.[152] Since renewable energy projects are capable of generating a profit, but require a longer time frame to do so, extending the repayment terms helps potential investors and should attract additional investment.[153]

Despite its ability to partially address the first objective of attracting investment in

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[149] These enhancements are, specifically, for short-term insurance, 95% commercial coverage and 100% political coverage with no deductible, a minimum annual premium of $500, and enhanced provision for assignment of insured receivables; for medium-term and long-term insurance, loans, and guarantees, local cost coverage equal to fifteen percent of the U.S. contract price, capitalization of interest during construction, and maximum allowable repayment terms permissible under the OECD's guidelines and the Bank's Country Limitation Schedule; Source - "Environmental Exports Program," Website of the Export Import Bank of the United States, Updated last 6 October 2005; available online at http://www.exim.gov/products/special/environment.html.

[150] See "Environmental Exports Program," http://www.exim.gov/products/policies/environment/index.cfm. The 2005 conference archives are also available on the website at: http://www.exim.gov/news/annualconf/annual_conf_2005.html. It is worth noting that the annual conferences only began in 2005.

[151] Since the Arrangement specifies loan repayment terms, the Bank could not have unilaterally implemented a program offering longer repayment terms for renewable exports; else, it would have violated the gentlemen's agreement and threatened the authority of the ECG's recommendations.

[152] Neuhoff, 95, *supra* n.43

[153] Interview with James Mahoney, *supra* n. 124. Another approach to resolving the high capital costs of renewable energy technology is through subsidies (Neuhoff, 104). These, however, are inappropriate for the Bank because it is not institutionally designated to distribute concessional credits (credits in which the Bank accepts guaranteed losses). USAID is the U.S. agency designated to provide grants and concessional credits, often for social objectives; however, the deployment of low and zero-GHG emitting technology could be (and possibly should be) construed as a social objective.

zero and low emissions projects, the Environmental Exports Program neither cuts current emissions nor discourages the financing of additional high-emissions projects. The ability of the EEP to mitigate climate change is limited because it is too one-dimensional to overcome what energy economists refer to as "technology lock-out."[154] Karsten Neuhoff of the University of Cambridge defines technology lock-out as referring:

> to processes which favour conventional, established technologies at the expense of innovative technologies…[L]earning-by-doing…an uneven playing field, marketplace, and non-market barriers and adoption costs can also deter new renewables. Because a combination of barriers causes the technology 'lock-out' it might not suffice to remove one barrier to resolve it[155]

While the EEP might help to address the uneven playing field by adapting financing to fit the specific needs of renewable energy technologies, and while it might address informational barriers, it alone cannot address the many other barriers which result in renewable energy technology lock-out. Additionally, the EEP suffers from the uncertainty of being only a temporary policy; this renders it unable to attract significant investments in renewable energy technologies.

II.2.a – *The Significance of Technology Lock-out*

Technology lock-out specifically impairs the efficacy of the EEP because it overwhelms the EEP's attempt to accommodate the particular features of renewable energy. Many of the processes related to technology lock-out cannot be addressed by the EEP. These include the prevalence of subsidies for fossil fuel-based energy, the tendency for energy prices to be inelastic, and existing legal and administrative frameworks.

Disproportionately distributed subsidies distort the energy market by providing price advantages to one technology over another. Currently, subsidies for fossil fuels overwhelm those provided for renewable energy technology. In the U.S., "renewables and energy

[154] Neuhoff, 88
[155] Neuhoff, 97

conservation together receive only 5 percent of total federal energy subsidies."[156] Between 1995 and 1998, non-OECD countries accounted for 66% of global energy subsidies; negligible amounts were designated for renewable energy.[157] The EEP's provision of longer repayment terms is a type of indirect subsidy for renewable energy, but it alone cannot negate the entrenched levels of subsidies that are unlikely to be removed any time soon; indeed, "seeking to change what are perceived as existing rights" is politically difficult.[158]

Furthermore, demand for fossil fuels tends to be price-inelastic and subject to threshold effects. Even when another form of energy is less expensive, consumer demand might persist for fossil fuels because the technology is more widely known and consumers have experience with it.[159] Empirical studies across several countries confirm that demand for crude oil, oil products for transportation, and fossil fuels for electricity generation is insensitive to price increases.[160] In addition, energy prices are subject to threshold effects, meaning that firms respond to policies that affect energy pricing only when prices are relatively high or relatively low.[161] Thus, if energy prices are not near all-time highs, taxes on energy use and subsidies for energy-saving technologies will not be effective. The EEP's effectiveness will be limited even if it helps to deploy renewable energy technology at prices

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156 OECD, UNEP, and the IEA, Reforming Energy Subsidies, 2002, p. 12

157 André de Moor, "Towards a Grand Deal on subsidies and climate change," *Natural Resources Forum* 25 (2001): 167-176. The term non-OECD countries encapsulates levels of development ranging from very low to middle-development countries. Since 1998, the levels of subsidies for renewable energy in non-OECD have almost certainly increased from zero, especially given China's concerted efforts in its 10th Five Year Plan (2001-2005) to provide research and development funding for renewable energy technology and its reduction of the value-added tax on wind energy. See "The 10th Five-Year Plan for Energy Conservation and Resources Comprehensive Utilization," Available at http://www.chinagate.com.cn/english/1938.htm and National Renewable Energy Laboratory (of the United States), "Renewable Energy in China," available http://www.nrel.gov/docs/fy04osti/36045.pdf

158 Neuhoff, 93

159 Björn A. Sandén and Christian Azar, "Near-term technology policies for long-term climate targets – economy wide versus technology specific approaches," Energy Policy Volume 33 (2005), 1559

160 See compilation of studies by World Energy Outlook, Table 7, p. 85. See Also John C. B. Cooper, "Price elasticity of demand for crude oil: estimates for 23 countries," OPEC Review, March 2003.

161 Daan P. van Soest, Gerard H. Kuper, and Jan Jacobs, "Threshold Effects of Energy Price Changes," presented at the World Conference of the Econometric Society, 11 August 2000. Available at the SSRN.

competitive with traditional energy sources because of price inelasticity. Overcoming these price characteristics of fossil fuels requires more extensive governmental policy that begins with exposing consumers gradually to fully internalized fossil fuel energy prices, especially including the cost to the environment.

Existing legal and administrative frameworks also favor fossil-fuel based energy. These frameworks include the procedures that energy project developers might have to complete, which "were developed for existing technologies." [162] An example is the kinds of zoning policies that have accommodated industrial development, but require revisions to adapt to the needs of renewable energy technology.[163] Waiting for these revisions has cost wind project developers time delays in Europe of between 1.5 and 4.5 years. The multiple permit processes required for biogas plants in Germany are relatively costly to the "single general permit process" available for large power plants.[164] Thus, even with the offering of the EEP, potential renewable energy exporters could be deterred by the additional bureaucratic costs that are higher for new energy technology versus conventional projects.

II.2.b – *The Uncertainty of the EEP*

One major design weakness is the EEP's lack of permanence. The extended loan repayment term policy is offered only as a two-year program.[165] Short-term policy may indicate to potential investors that the Bank is uncertain about its long-term stance on renewable energy. More tangibly, the short life-time of the policy reduces predictability for potential investors, and this can be a critical aspect in the decision of whether or not to invest in new technology. Some firms and investors may be interested in exporting

[162] Neuhoff, 96
[163] This example is taken explicitly from Neuhoff, 96
[164] Ibid.
[165] See footnote 1 at Export-Import Bank of the United States, "Environmental Exports Program," Last Updated 6 October 2005, http://www.exim.gov/products/special/environment.html. PDF version Available http://www.exim.gov/pub/pdf/ebd-e-01.pdf, dated 21 September 2005.

renewable energy technology, but are not able to accrue enough capital or other resources to construct a solid project proposal for so short a program.

The effects of short-term renewable energy promotion programs on investment are illustrated in the experience of the U.S. wind industry and the federal production tax credit (PTC). In 2004, after Congress allowed the expiration of a PTC of about one-third the cost of installation, "projects valued in the hundreds of millions of dollars [were] stalled as developers and utilities await[ed] renewal" of the tax credit.[166] While wind installments in terms of generating capacity increased 130% from 2002 to 2003, growth slowed in 2004 due to uncertainty about the PTC's renewal.[167] Growth from 2003 to 2004 was only about 10%. After the renewal of the tax credit, the growth rate increased again to 140%.

The U.S. Energy Information Administration documents that prior congressional decisions to allow the PTC to expire (in 1999 and 2001) were followed by similar lulls in wind power installation immediately after PTC extensions prior to the date of enactment.[168] Bursts of significant growth are documented in the time period leading up to expirations.[169] A study on the effects of PTC policy and investment explains that "the sharp decrease in investment" occurs "as [the probability of PTC renewal] increases above zero, due to the increased option value of postponing investment" until the PTC takes effect.[170] The bursts of installation are explained as well: "firms increase their level of investment as the

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166 Paul Rosta, "Wind Development Flags with Tax Credit's Expiration," Engineering News-Record, Vol 252 (14 June 2004), p. 19

167 Percentages calculated from statistics provided by the Energy Information Administration's Annual Energy Outlook 2005 (for the 2002 figure) and 2006 (for the 2003, 2004, and 2005 figures) and rounded to the nearest ten percent. Table 16, Renewable Energy Generating Capacity and Generation. Available: (2005), http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_16.xls; (2006), http://www.eia.doe.gov/oiaf/aeo/excel/aeotab_16.xls. Actual generation capacity was: in 2002, 5.01 GW; in 2003, 6.39 GW; in 2004, 6.87 GW; in 2005, 9.65 GW

168 See Annual Energy Outlook 2005, "Issues in Focus: Production Tax Credit for Renewable Electricity Generation," Available http://www.eia.doe.gov/oiaf/archive/aeo05/issues.html

169 ibid.

170 Jeffrey Grobman and Janis Carey, "The Effect of Policy Uncertainty on Wind-Power Investment," The Journal of Energy and Development, Volume 28 (Autumn 2002), p.11

probability of PTC removal increases."[171]

The observed dependency on the PTC to stimulate wind energy installation reveals the role that uncertainty plays in energy incentive schemes. If investors and firms perceive a risk that policy incentives are subject to change or are not dependable, they will be more hesitant to take advantage of them. Even when investors take advantage of policy incentives, the outcome is not always beneficial to the industry affected. In the wind PTC case, the two year ebbs and flows of installation revealed ineffective management of the subsidy program.[172] Since the goal of a subsidy program in this case should be the fostering of market experience until the particular technology is cost-competitive, fluctuating levels of installation are unlikely to attract long-term investors, who are in turn vital to the long-term stability of the industry.

Therefore, policy needs to be "stable and predictable over long time periods."[173] The EEP could be more effective if the Bank simply agreed to adopt the policy for a longer time-span, giving investors both time to organize projects and instilling a sense of stability that would decrease their perception of risk.

Unfortunately the current Environmental Exports Program does not address several costs to implementing renewable energy technologies that pale in comparison to the environmental costs of continuing to use carbon-based technology. Since the EEP is so limited in its power to support renewable energy technology exports and because it does not cut emissions or discourage the further financing of high GHG-emitting projects, additional measures are required if the Bank is to stabilize and then reduce its emissions. The Bank has argued, and others may argue, that its emissions are not significant or worth addressing via

[171] Ibid.
[172] Ibid., 12
[173] Sandén and Azar, 1567

official policy. However, its adoption of a policy designed to expressly *cut* emissions is appealing for at least a few reasons.

II.3 – The Benefits of an Ex-Im Bank Emissions Reduction Policy

First, climate change is a result of aggregate emissions and aggregate concentrations of GHGs in the atmosphere. Small fluctuations may not seem to make a large difference. However, as in the tragedy of the commons where the individual cost of grazing is only a fraction of the individual benefit and where such cost-benefit analysis leads to over-grazing and the collapse of the commons, each additional unit of GHGs emitted contributes to untenable aggregate levels of GHGs.[174] Thus, to the extent that the Bank is responsible for some of the emissions, as is the rest of the world, the Bank is responsible for cutting some of the emissions, an action required for stabilizing atmospheric levels of GHGs. In short, it has both the opportunity and responsibility to be environmentally conscientious.

Second, the Bank's role in the global economy is unique. Since it connects the products and expertise of the developed world to the needs of the developing world, it has the opportunity to engage developing countries in responding to climate change. One of the main obstacles in international climate negotiations continues to be the tension between economic development and environmental protection, which draw from concerns for "economic justice."[175]

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[174] "The Tragedy of the Commons," Garrett Hardin, Science, Volume 162 (1968), pp.1243-1248

[175] For overviews on this debate, see: Ambuj Sagar, "Knowledge, Rhetoric and Power: International Politics of Climate Change," Economic and Political Weekly, Volume 32 (December 1997), pp.3139-3148; Chandrashekhar Dasgupta, "The Climate Change Negotiations," in Irving Mintzer and J. Amber Leonard, Negotiating Climate Change, New York: Press Syndicate of the University of Cambridge, 1994; Adil Najam, Saleemul Huq, and Youba Sokona, "Climate Negotiations Beyond Kyoto: developing country concerns and interests," Climate Policy Volume 3 (2003), pp. 221-231; Thomas C. Schelling, "The Cost of Combating Global Warming," Foreign Affairs, November/December 1997, Accessed via Online Archives with access provided by Princeton University

Developing countries understand that "today's rich countries moved first from agriculture to manufacturing industries which use resources intensively, and later to services and less polluting types of manufacturing,"[176] and many hold that it is better to "pollute now and clean up later."[177] They also recognize that the people in developed countries have emitted and continue emitting high levels of greenhouse gases. For many heads of state in the developing world, justice demands that the developed countries bear the brunt of addressing climate change. The Indian delegate to the Intergovernmental Negotiating Committee on Climate Change (INC) session in Geneva argued:

> The problem of global warming is caused not by emissions of greenhouse gases as such, but by *excessive* levels of per capita emissions of these gases. If per capita emissions of all countries had been on the same levels as that of the developing countries, the world would not today have faced the threat of global warming. It follows, therefore, that developed countries with high per capita emission levels of greenhouse gases are responsible for incremental global warming.
>
> In these negotiations, the principle of equity should be the touchstone for judging any proposal. Those responsible for environmental degradation should also be responsible for taking corrective measures. Since developed countries with high per capita emissions of greenhouse gases are responsible for incremental global warming, it follows that they have a corresponding obligation to take corrective action. Moreover, these are also the countries which have the greatest capacity to bear the burden. It is they who possess the financial resources and the technology needed for corrective action. This further reinforces their obligations regarding corrective action.[178]

Developed nations, on the other hand, have argued that their own reductions in emissions will not produce any environmental gains if developing nations do not also agree to emissions targets. Fear that the emissions of developing nations would offset or surpass the emissions reductions gained by implementation of the Kyoto Protocol was one of the major reasons for U.S.'s refusal to even consider the ratification of the Protocol in the Senate.[179] Furthermore, if

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[176] "Dirt Poor" The Economist, 19 March 1998
[177] "Local Difficulties" The Economist, 4 July 2002
[178] Statement by the leader of the Indian delegation, 19 June 1991, in Chandrashekhar Dasgupta, of the Ministry of External Affairs in Delhi India and the Indian Ambassador to China, "The Climate Change Negotiations," in Irving Mintzer and J Amber Leonard, Eds, New York: Press Syndicate of the University of Cambridge, 1994, pp. 133-134
[179] United States Senate, in "Appendix A: Senate Debate over the Byrd-Hagel Resolution, July 25, 1997," in David G. Victor, Climate Change: Debating America's Policy Options, Sponsored by the Council on Foreign Relations, 2004, pp. 117-129

developing countries were not required to take action to reduce their emissions, the U.S. feared that domestic industries would suffer severe economic losses while developing countries hosted new industry growth. Senator Robert Byrd (R-WV), co-sponsor of the Byrd-Hagel Resolution, commented during the senate debate that:

> [He did not] think the Senate should support a treaty that requires only half the world – in other words, the developed countries – to endure the economic costs of reducing emissions while developing countries are left free to pollute the atmosphere, and in so doing, siphon off American industries… In this particular environmental game, there are no winners; the world loses. And any effort to avoid the effects of global climate change will be doomed to failure from the start without the participation of the developing world.[180]

Since the Bank is a public agency in a developed country and its business is principally in developing countries, it has a unique opportunity to address this conundrum. By instituting a policy to reduce its own emissions while maintaining its role as an export financing agent, it can serve as a U.S. example of accepting environmental responsibility. At the same time, the exporting of energy efficiency methodologies and cleaner forms of energy technology in order to achieve emissions reductions benefits and engages developing countries. By requiring the export of cleaner forms of energy to areas where infrastructure is just beginning to be built, the Bank can help establish renewables as feasible foundations of economic development. Introducing renewable energy infrastructure can then also reduce the barriers of consumer unfamiliarity and information asymmetries that currently tend to favor nonrenewable energy forms. Intentioned implementation of technology for the purpose of market experience is the first step toward that technology's gaining more widespread use.[181]

Third, the Bank's adoption of a GHG emissions reduction policy would allow it to

[180] Senator Robert Byrd (R-WV), in a debate Expressing the Sense of the Senate Regarding UN Framework Convention on Climate Change, in David G. Victor, Climate Change: Debating America's Policy Options, Sponsored by the Council on Foreign Relations, 2004, p. 120

[181] Sandén and Azar, 1559, Table 2: adoption of technology reduces uncertainty and allows consumers to learn how to operate it by using it; these mechanisms make the technology more attractive for users and investors in the future. Adoption is necessary to trigger positive feedback cycles that lead to more widespread acceptance of technology and subsequently, additional investment and implementation. See Also David Kline, "Positive feedback, lock-in, and environmental policy," Policy Sciences Volume 34 (2001), pp.95-107

press other export credit agencies under the OECD Common Arrangement to undertake similar measures. Its historic role as a leader among the OECD ECAs might afford it the political capital necessary to pursue widespread adoption of GHG reduction policies.[182] If it is able to do so, the Bank will have influenced a significant proportion global financing policies – ECAs in 2001 covered about $800 billion of exports, and their activity "exceeds that of all multilateral development banks" including the World Bank and Asian Development Bank.[183]

The primary argument against policies that reduce emissions is that they will simply result in capital flight of energy investors from the Bank to the ECAs of other countries or other sources of financing which have lower environmental standards. These claims are similar to the pollution haven hypothesis in the theory of foreign direct investment, which argues that multinational firms will relocate from countries with strict environmental standards to those with weaker environmental standards.[184] In Chapter Four, § IV.1.a., the pollution haven theory will be addressed as it applies to this thesis's particular proposal.

Since there are clear benefits to the Bank's reducing its emissions, it is important to examine what types of general approaches and specific policies exist to accomplish that goal.

II.4 – General Approaches to Reducing GHG Emissions

Policies that place limits on GHG emissions generally take two approaches – "command and control" policies and "market-based" policies.[185] Command and control policies (CAC) typically involve requiring "all enterprises to employ the same control technology," or requiring "[best available control technology (BACT) in a separate, case-by-

[182] See above Chapter I, §I.2 and §1.3
[183] Gianturco, 1
[184] Beata Smarzynska Javorcik and Shang-Jin Wei, "Pollution Havens and FDI" Contributions to Economic Analysis and Policy Volume 3, Issue 2, 2004.
[185] Carlo Carraro, "Climate change policy: models, controversies, and strategies," in Tom Tietenberg and Henk Folmer, eds., The International Yearbook of Environmental and Resource Economics 2002/2003, p. 6

case determination for each enterprise."[186] A less pure version of CAC policy might impose a uniform performance goal, such as an emissions rate, but in practice this has continued to result in standard technology requirements.[187]

The CAC approach can be useful[188] in some circumstances.[189] For example, when the resources available for administering an environmental program are low or when a program needs to be very efficiently administered, administrators might prefer a policy that can be implemented relatively quickly. [190] Additionally, when the activities being controlled are homogenous in terms of their use of technology and costs of controlling emissions, BACT will be an effective policy. Finally, when the particular attributes of a pollutant require its uniform control over varied geographic regions, BACT and emissions or concentration standards might be necessary to prevent hot spots, or high concentrations of

[186] Daniel J. Dudek, Richard B. Stewart, Jonathan B. Wiener, "Environmental Policy for Eastern Europe: Technology-Based Versus Market-Based Approaches," Columbia Journal of Environmental Law, Volume 17 (1992), p.8

[187] Ibid.

[188] The literature on various environmental policy tools almost unanimously prefers market-based mechanisms to command and control policies. The one major exception is for the implementation of environmental policies in developing countries. In the debate over whether or not developing countries are equipped to operate market based mechanisms, the literature is mixed. For the pro-developing country markets stance, see Dudek et al (1992), *supra* n. 186. See also Joe Kruger, Katharine Grover, and Jeremy Schreifels, "OECD Global Forum on Sustainable Development: Emissions Trading," 17-18 March 2003, CCNM/GF/SD/ENV(2003)15/Final, http://www.oecd.org/dataoecd/11/25/2957736.pdf) Hereafter Kruger et al (2003).

For the arguments against developing country adoption of market based mechanisms, see: Ruth Greenspan Bell and Clifford Russell, "Environmental Policy for Developing Countries," Issues in Science and Technology, Volume 18 (Spring 2002), Available Online http://www.issues.org/issues/18.3/greenspan.html; Clifford S. Russell and William J. Vaughan, "The choice of pollution control policy instruments in developing countries: arguments, evidence and suggestions," in Henk Folmer and Tom Tietenberg, eds., The International Yearbook of Environmenal and Resource Economics 2003/2004, Northampton, MA: Edward Elgar, 2003, pp.331-373

[189] See also "Tools of the Trade: A guide to designing and operating a cap and trade program for pollution control," EPA430-B-03-002, June 2003, www.epa.gov/airmarkets. Hereafter EPA 2003. p. 2-5

[190] Bruce A. Ackerman and Richard B. Stewart, "Reforming Environmental Law," Stanford Law Review, Vol. 37 (May 1985), pp. 1335-1336. This was the thinking behind the U.S. Clean Water Act and Clean Air Act policies of the 1970s. Note that the command and control approach *can* be less time-consuming, but is not necessarily so. Ackerman and Stewart describe the determination of best available technology as complex and time consuming if science, economics, and engineering concerns are all accommodated. In addition, the litigation resulting from best available technology enforcement created additional work for administrators.

pollutants in one area, from developing.[191]

Market-based policies typically provide greater flexibility. They will not require a specific type of control technology; rather, they rely on market-based mechanisms such as taxes or trading schemes to achieve emissions reductions. The details of how taxes and trading schemes operate will be described below in § II.5. There are three chief reasons why the Bank should use market-based mechanisms to achieve its GHG emissions reductions.

First, market-based mechanisms will be more cost-effective than CAC policies. This is of particular interest to developing countries, because their chief desire is economic development.[192] Proposals that are unnecessarily costly force the people of developing nations to suffer from the effects of delayed development: continued poverty and lower standards of living. The CAC approach "is insensitive to the costs and benefits of installing a particular control technology at each site…environmental protection could be achieved at less cost if emissions reductions were produced using the least-cost option at each source."[193] Market-based mechanisms allow for greater flexibility and create incentives for additional pollution reductions by allowing sources to adopt least-cost options and by financially rewarding sources that reduce pollutants below the minimum standards.[194] Therefore, market-based mechanisms will achieve greater benefits to environmental quality

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[191] Stephanie Benkovic and Joseph Kruger, "To Trade or Not To Trade? Criteria for Applying Cap and Trade," in Optimizing Nitrogen Management in Food and Energy Production and Environmental Protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy, TheScientificWorld (2001), 1. A current example is mercury regulation. In 2005, the Environmental Protection Agency promulgated a rule to allow for mercury trading. Critics of the policy have alleged that the rule does not adequately address the issue of hotspots, and that the policy may lead to mercury accumulation in freshwater fish. Other critics have alleged that hotspots will occur in poorer urban areas. The rule also has prompted litigation by environmental NGOs, states, and national medical, nursing, and public health groups. The EPA defends the policy, citing its cost-effectiveness and its careful construction based on models to prevent hotspots from arising. See "Activists, States Question EPA Mercury Analysis In Petitions On Rule," Risk Policy Report, Volume 12 (21 June 2005). See also EPA, "Clean Air Mercury Rule – Basic Information," Available http://www.epa.gov/mercuryrule/basic.htm

[192] Kruger et al (2003), 6

[193] Dudek et al (1992), 11

[194] Ibid., 11-12

at a lower cost than CAC policies.

Second, market-based mechanisms uniquely create incentives for innovation. In command and control schemes, no incentives exist to develop technologies that are better than the existing standard of regulation. While they "can ensure the diffusion of established control technologies," because they are required by the government, "they do not provide strong incentives for the development of new, environmentally superior strategies and may actually discourage their development."[195] BACT standards could discourage innovation because they allow one particular technology to "capture the market and force out other technologies."[196] Potential innovators would have to pay the price of research and development for new technology, and their technology would not be able to compete with existing technologies unless they could prove its superiority to the regulators.

Without incentives for innovation, additional gains in environmental quality may be impaired because they are dependent upon the regulator's ability to discover new technologies.[197] The burdens of determining where additional gains are possible and making the changes necessary to implement additional environmental quality gains also fall on the shoulders of the regulator.

However, market-based mechanisms reward innovators within industries. Those who achieve excess emissions reductions may either pay lower fees or sell their additional reductions in a market to firms for whom it is more expensive to adequately reduce emissions.[198] Since the Bank is encouraging the export of new, renewable types of energy technology, such innovation is valuable for the development of the renewable energy sector.

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[195] Ackerman and Stewart, 174
[196] Dudek et al, 12
[197] Ibid.
[198] Ibid., 13

Third, the implementation of market-based mechanisms that govern projects in developing nations is useful for capacity-building. Critics of the use of market-based environmental control mechanisms in developing countries argue that such mechanisms are ineffective due to a lack of established markets from which regulators might understand how to properly implement market-based policies.[199] The implementation of market-based mechanisms by the Bank would create an environment in which policymakers could learn how to implement, monitor, and enforce market-based policies. Such capacity building could then allow for the adoption of additional market-based policies in other realms of environmental regulation.

Thus, control technology requirements are cost ineffective and impose barriers to innovation. The Bank should instead adopt market-based policies to reduce its emissions. Two main types of market-based mechanisms are discussed in the policy literature.

II.5 – Taxes and Caps

The two main types of market-based mechanisms are taxes and emissions markets. By imposing costs on GHG emissions, these market-based mechanisms accomplish what economists describe as "internalizing" the externality.

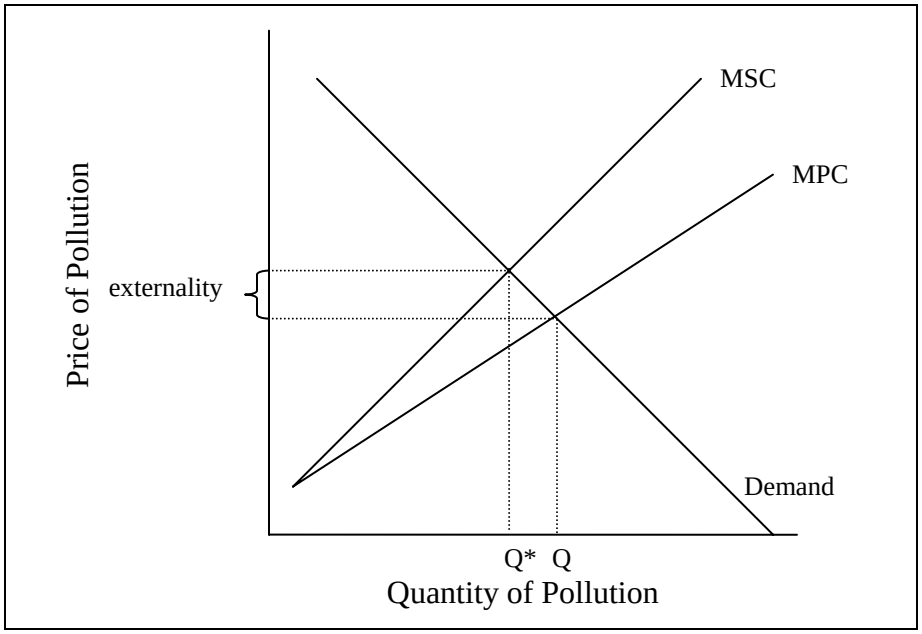
II.5.a - *Externalities*[200]

Market theory states that firms will produce pollution until the marginal private costs (MPC) for each firm equal the marginal benefits of polluting.[201] The difference between marginal private costs and marginal social costs is the externality of polluting. Individual

[199] See Bell and Russell; Russell and Vaughan, *supra* n.188
[200] The following analysis about externalities is adapted from Jonathan Gruber, Public Finance and Public Policy, New York: Worth Publishers, 2005, pp.124-125
[201] The benefits from pollution are the monetary gains from products and processes that pollute.

firms do not include externalities in their cost curves because they experience only a fraction of the effects of their polluting. Figure II.Abelow demonstrates. The difference between the MSC, or marginal social cost of pollution, and the MPC, or marginal private cost of pollution for each firm, represents the externality.

Figure II.A: External Costs[202]



Policies that effectively capture the externality of each additional unit of pollution reduce the level of pollution from Q to the more socially desired level of Q*.

II.5.b - *Taxes*

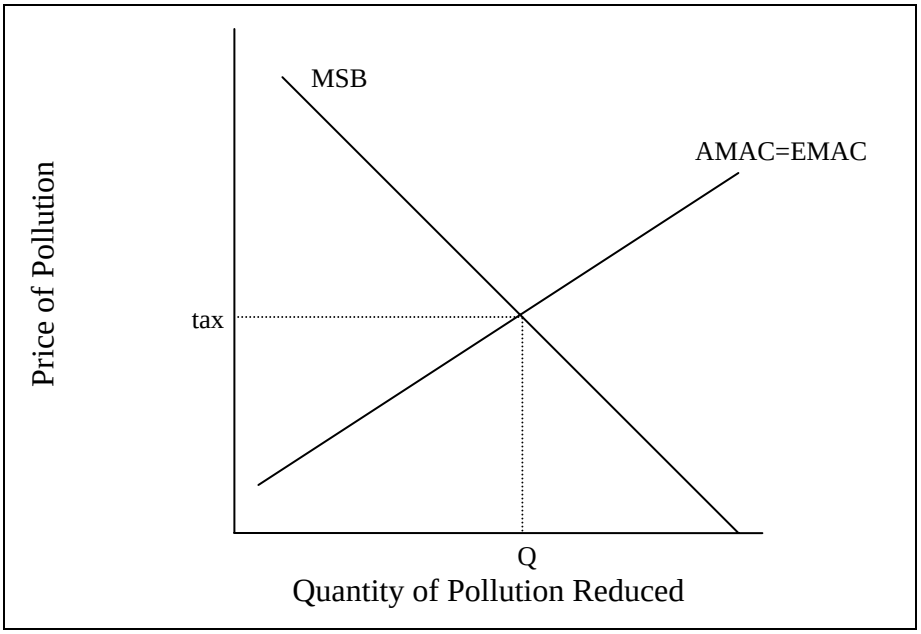
Taxes are defined as "per-ton fee[s] on CO_2 emissions or on the carbon content of fuel. Other GHG emissions, to the extent measurable, would also be taxed."[203] They are designed by assigning a price value to the externality of GHG emissions. The price will be set where the anticipated abatement cost curve amount intersects the marginal social benefit

[202] Adapted from Figure 4.8, Tom Tietenberg, Environmental and Natural Resource Economics, 7th Edition, p. 82

[203] Robert Nordhaus and Kyle Danish, "Assessing the options for designing a mandatory U.S. greenhouse gas reduction program," Boston College Law Review, Volume 32 (2005), p. 146

(MSB) curve.[204] This means that emissions reductions occur until the price of reductions equals the level of the tax. Figure II.B illustrates the ideal tax, which is where the actual abatement cost intersects the expected abatement cost.

Figure II.B: Ideal Tax[205]



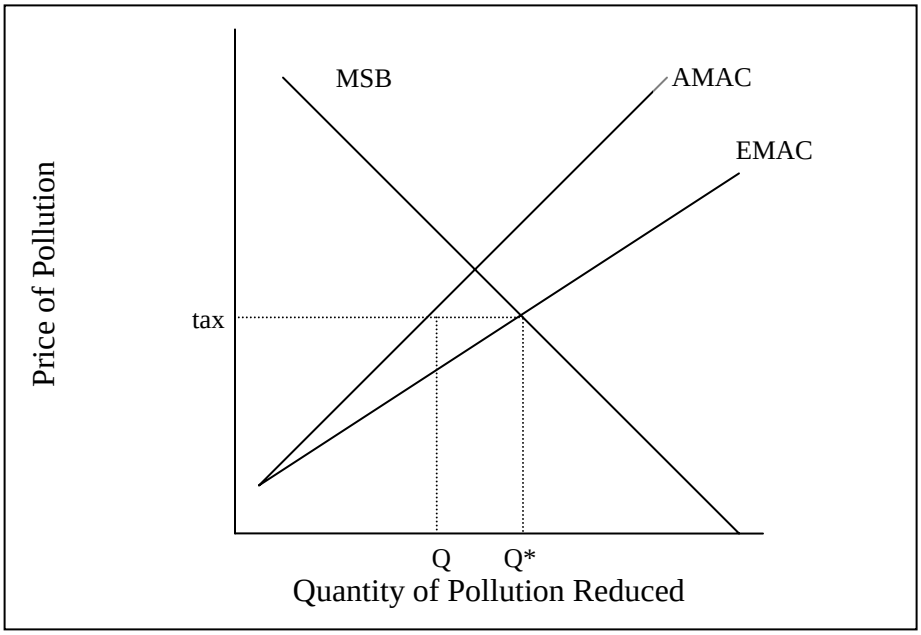
Taxes have several benefits. First, a tax is fairly simple to administer – all that is necessary is that the regulator determine the price per unit of pollution that polluters will pay and then monitor emissions, assigning and collecting the resulting fees as necessary. Moreover, taxes can be relatively cheaper to administer versus cap and trade schemes because "some fiscal institutions…may already have the resources in place to collect and manage [tax] receipts from other tax schemes."[206] Taxes are also fixed, so firms can choose to reduce emissions until reductions are more costly than paying the taxes on additional units of pollution. Finally, taxes inherently generate some revenue – the very nature of a fee is

[204] EPA 2003, 2-6
[205] Adapted from Figure 4.8, Tom Tietenberg, Environmental and Natural Resource Economics, 7th Edition, p. 82
[206] EPA 2003, p.2-7

that it is paid to some entity.[207]

For the Bank, however, a tax is illogical for two reasons. First, one major drawback of the tax is that it does not provide environmental certainty.[208] Since regulators can never be completely certain of the shape of abatement cost curves, assigning the tax to correspond to the desired amount of pollution reductions will not be precise. Thus, a tax may be too high or too low to reach the desired quantity of emissions. If the actual marginal abatement cost (AMAC) exceeds the expected marginal abatement cost (EMAC), the tax will not achieve the anticipated emissions reductions. Figure II.C below illustrates. Note that in II.C, the actual quantity of emissions reduced (Q) is less than the expected quantity (Q*). Since the stabilization of emissions is a time-sensitive objective, certainty in reducing emissions is highly desirable.

Figure II.C AMAC>EMAC: [209]



[207] Nordhaus and Danish, 146
[208] See Nordhaus and Danish, 148; EPA 2003, 2-6
[209] Adapted from EPA 2003, Figure 2, p.2-6

Second, the Bank is not the appropriate authority to tax the same projects that it finances. Such a tax would not only be difficult to determine, but would most likely be perceived as a conflict of interest. The Bank's administration of a revenue-generating tax begs the question of what revenues the Bank would need to raise by taxing pollution and for what purposes the Bank would use such revenues. Thus an emissions tax is not the best policy.

II.5.c – *Cap and Trade Markets*

Emissions markets reduce emissions by setting an aggregate quantity of emissions that the entities covered under the program may not exceed.[210] Covered entities receive (or bid via auction for) emissions credits, each equivalent to a unit of pollution. At the end of a regulatory time period, each entity must possess enough emissions credits to cover the amount of emissions discharged during the regulatory time period. The flexibility of the emissions market is in how reductions can be accomplished, especially via the use of "emissions trading." Such trading can take place intra- or inter-firm, and allows for firms to reduce their emissions in the most cost-effective way possible so long as the total emissions of all regulated sources do not exceed the aggregate cap.[211]

The cost-savings achievable through an emissions market are illustrated with the following example:[212] Take two projects, A and B, which emit equivalent levels of GHGs.

Plant A Emissions Reductions:	
Amount Reduced	Cost
1st 50 tons	\$10/ton
each additional ton	30/ton

Plant B Emissions Reductions:	
Amount Reduced	Cost
1st 20 tons	\$20/ton
each additional ton	50/ton

[210] This discussion is drawn from EPA 2003; Tietenberg, 383-388; Nordhaus and Danish, 120-126
[211] Tietenberg, 384-388
[212] This example is drawn from conversations with Annie Petsonk during the summer of 2005 and class discussions during courses taught by Smita Brunnermeier in the fall of 2002 and David Bradford and Michael Herz in the fall of 2003. For additional background, see Tietenberg, 383-388

Project A is capable of reducing its emissions at a rate of $10/ton up to 50 tons and $30/ton thereafter. Project B is capable of reducing its emissions at a rate of $20/ton up to 20 tons, at which point the price increases to $50/ton. A mandate that each project reduce emissions by 30 tons would cost Project A $300 and would cost Project B $900. The total cost is $1200. However, a cap on total project emissions would allow Project A to reduce its emissions by 60 tons and would require Project B to stabilize its emissions. Then, the total cost would be only $800, but the benefits to the atmosphere would be equal or greater.

Plant-by-Plant Mandate:

Plant	Reductions	Cost
A	30 tons	$ 300
B	30 tons	900

Comprehensive Cap:

Plant	Reductions	Cost
A	60 tons	$ 800
B	0 tons	0

A trading market capitalizes on these differences in project costs and efficiencies. Through a cap and trade proposal, using the above example, Project A could sell its excess reductions to Project B. Selling the additional 30 tons of reductions at cost ($500) would allow Project A to profit from making further reductions; Project B would save $400; the atmosphere benefits the same as if there had been a plant-by-plant reductions mandate.

One potential drawback of the cap and trade program is that while it provides environmental certainty, it does not provide cost certainty.[213] If the marginal abatement cost curve is underestimated, costs will be higher than expected. Figures II.D and II.E, respectively, illustrate the ideal cap and trade program and the unexpectedly high cost version of the program. Q represents the cap. Note in II.E that the actual permit price is greater than the expected permit price (P*). Since stabilizing emissions is a time-sensitive issue, the Bank may prefer to accept cost uncertainty. A potential mechanism that could address the cost certainty concern is a safety valve, which is a price trigger at which the

[213] EPA 2003, 2-6

regulator agrees to issue additional emissions permits in order to prevent prices from being so high that they cause severe economic disruptions.[214]

Figure II.D: Ideal Cap and Trade Program[215]

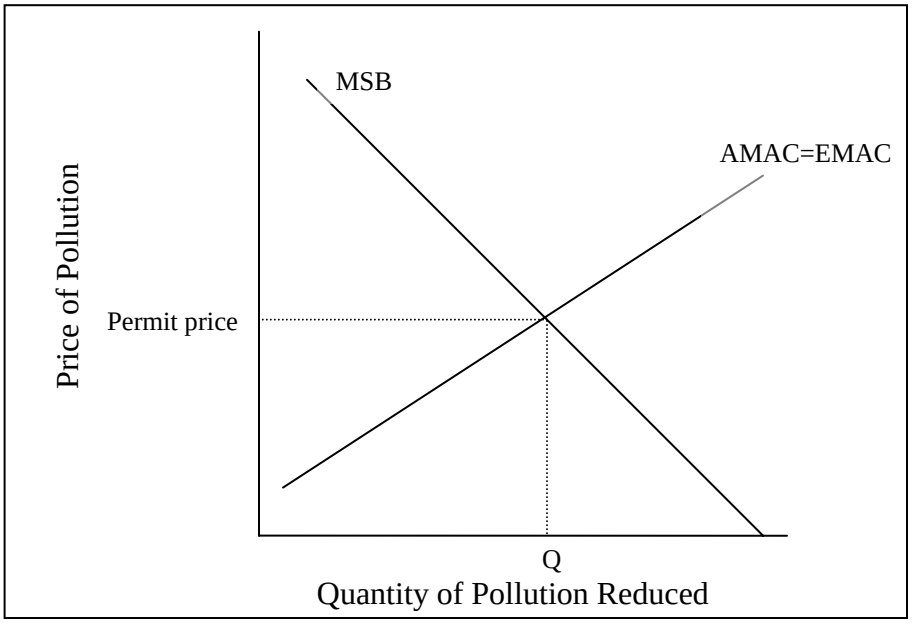
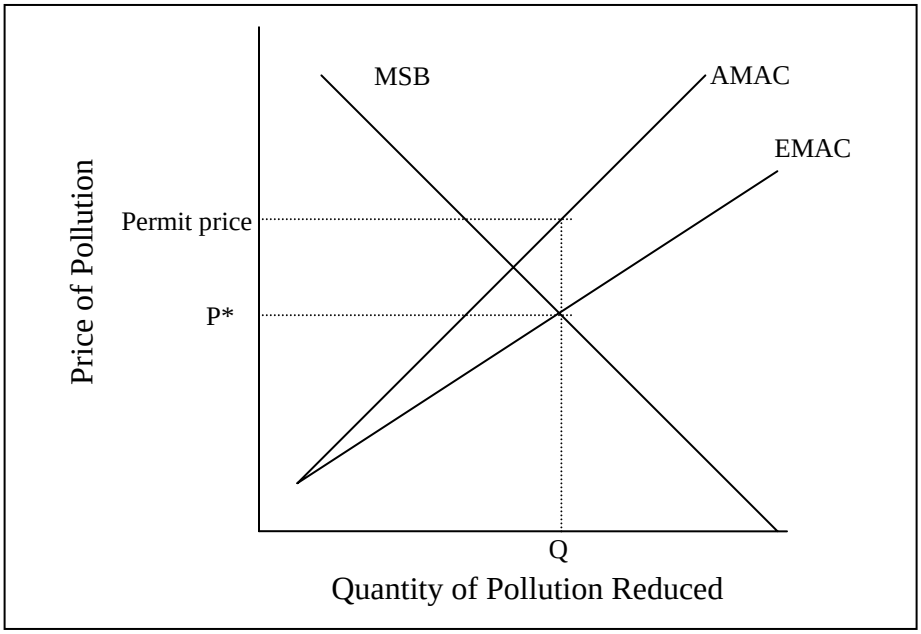


Figure II.E AMAC>EMAC: [216]



[214] See Henry D. Jacoby and A. Denny Ellerman, "The safety valve and climate policy," Energy Policy Volume 32 (2004), pp.481-491. See discussion below in Chapter 3, "Footnote on a safety valve," *infra*, n.242
[215] Adapted from EPA 2003, Figure 2, p.2-6
[216] Adapted from EPA 2003, Figure 2, p.2-6

One reason cap and trade programs are comparatively advantageous to taxes is because they foster inter-firm enforcement. Since buyers are responsible for the permits they purchase, they "will be sure that they purchase from sellers that comply." This means that buyers have an incentive to buy only from reliable sellers that demonstrate compliance through verifiable and transparent reporting.[217]

In addition, a cap and trade program is particularly well-suited to regulate the Bank's GHG emissions for two reasons.. First, the long lifetime of GHGs and their uniform mixing in the atmosphere render the location of their emissions fully fungible. A ton of CO_2 emitted in the United States has the same effect as a ton of CO_2 emitted in Russia. Stephanie Benkovic and Joseph Kruger of the EPA explain further:

> the more a pollutant is uniformly mixed over a larger geographic area, the more appropriate it is for the use of cap and trade…greenhouse gases are particularly well-suited for emissions trading because their impacts upon climate change are not related to the geographic location where they are emitted.[218]

Second, the types of projects sponsored by the bank are heterogeneous and vary in terms of size, fuel source, location, and type of technology. In FY2005 alone, the Bank made over 3,000 authorizations.[219] Its insurance exposure amounted to more than US$ 58 trillion and covered exports in over 160 different countries.[220] The types of projects and exports financed by the Bank included commercial aircraft, construction materials, equipment for an ammonia plant, equipment for a petrochemicals plant, telecommunications network equipment, locomotives, gas field exploration equipment, services for a natural gas liquefaction plant, and gas turbines. In addition to these projects, the Bank continues to

[217] David G. Victor, "International agreements and the struggle to tame carbon," in James M Griffin, ed, Global Climate Change, Northampton, MA: Edward Elgar, 2003, p. 217. Note that Victor actually supports a hybrid approach as "probably better than all the alternatives," p.219
[218] Benkovic and Kruger
[219] Export-Import Bank of the United States, "Annual Report 2005," Financial Report Available http://www.exim.gov/about/reports/ar/ar2005/2005Authorizations.pdf, p. 21
[220] Ibid., 22-25

support projects authorized in previous years. Thus the projects in its overall portfolio vary in terms of technology, location, and age. Heterogeneity facilitates different marginal costs of abatement, which in turn provides "room for a deal" in cap and trade programs.[221]

II.6 – The Benefits of Cap and Trade

In addition to its inherent advantages, a cap and trade program provides the following advantages that are of special interest to the Bank.[222]

II.6.a – *Flexibility*

A cap and trade program could provide flexibility to the Bank in several ways. First, the Bank might have temporal flexibility in the banking of future emissions reductions –if the Bank is able to reduce its emissions by more than its cap requires for a particular regulatory period, it could use those additional reductions as credit in future regulatory periods. Second, the Bank would have portfolio flexibility. A cap covering all major greenhouse-gas emitting sectors and capping the Bank's annual emissions permits the flexibility of making reductions in those sectors where the timing and technology are optimal. Third, the Bank would have inter-gas flexibility. A cap in terms of carbon dioxide equivalents means that the Bank is not required to eliminate equal quantities of each greenhouse gas; instead, it simply must be sure that the aggregate of its emissions in carbon dioxide equivalents does not exceed its cap. Fourth, the Bank has geographic flexibility: it would not have to reduce emissions by the same amount in all areas where it sponsors projects but instead can make reductions where doing so is cost-effective.

[221] Benkovic and Kruger

[222] This section is drawn from conversations with Annie Petsonk, as well as the Nordhaus and Danish article.

II.6.b – *Creating Incentives for Additional Emissions Reductions*

A cap and trade program rewards projects that achieve emissions reductions below their initial allocation of emissions credits. Such projects can sell their excess credits to projects which need to cover additional emissions or they can bank their excess credits for future regulatory periods when they anticipate needing the additional credits. These incentives encourage projects to achieve emissions reductions through energy efficiency gains and/or the incorporation of renewable energy technology in their projects.

II.6.c – *Market Expansion Potential*

If the Bank is able to persuade other ECAs to join its cap and trade policy, it can expand its emissions credit market. The addition of projects from other ECAs will increase the liquidity of the market, allowing for even further cost-savings, and encouraging more projects to take advantage of the benefits of reductions below their original allocation of emissions credits. An ECA emissions market may also ultimately link up with existing emissions trading markets such as the European Trading System[223] or the Chicago Climate Exchange.[224] The linking of these markets would allow developing countries to enter the carbon markets and reap the benefits of emissions trading, thereby also engaging them in efforts to reduce global emissions.

II.6.d – *Administrative Consistency*

Whereas the administration of a tax by the Bank seems illogical, the assignment of credits and the creation of an internal market is consistent with the Bank's powers and

[223] Realistically, the European Trading System will not consider valid the emissions credits from non-Kyoto markets until at least 2012, which is the end of the first compliance period under Kyoto. See Pew Center for Global Climate Change, "Linking U.S. and International Climate Change Strategies," April 2002, Available http://www.pewtrusts.com/pdf/environment_pew_climate_change_strategies.pdf. Hereafter "Pew 2002"

[224] The Chicago Climate Exchange is currently a voluntary program in which members commit to reduce their GHG emissions. The entire exchange is committed to a program-wide net cap equal to 4% below the baseline. See Chicago Climate Exchange, "Overview and Benefits," Available http://www.chicagoclimatex.com/about/pdf/CCX_Corp_Overview_2005.pdf

authority. Since the Bank would not be accruing revenue from an emissions market, it would also avoid conflicts of interest that would arise if it began to tax its projects and exporters. Furthermore, the Bank's expertise in international markets could be applied to its administration of an internal market.

II.6.e – *Environmental Effectiveness*

Finally, and perhaps most importantly, an emissions market provides emissions certainty. All that is necessary is that the Bank establishes the aggregate cap and issues a specific number of tradable credits. Environmental certainty does come at the expense of cost certainty, as discussed above. But ultimately the cap and trade program achieves the primary objective of the reductions policy – that a specific level of reductions is realized within a particular time period.

II.7 – Potential Problems

Before the Bank adopts a cap and trade policy, however, several potential problems must be addressed. Questions of design specifics, such as the method of allocating initial credits and the measures necessary for effective implementation, will be addressed in Chapter Three. Political barriers to policy implementation are discussed in Chapter Four. Theoretical criticisms are addressed below.

First, critics of a Bank-wide cap and trade program might argue that the size of the Bank's portfolio is not adequate enough to produce substantial gains through an emissions market.[225] Without enough actors, it is argued, an emissions market will lack the liquidity

[225] Interview with James Mahoney. Mr. Mahoney questioned the ability of the Bank to implement any proposal that would discriminate against a particular sector without a congressional mandate, and also stated that the Bank's contribution to global GHG emissions is not significant. Additionally, EPA 2003 and Benkovic and Kruger argue that the appropriate number of sources is critical to the success of a cap and trade program.

which produces improvements in cost-effectiveness. However, market simulations suggest that an emissions trading market can function with as few as eight to ten participants.[226] Successful existing trading markets "have numbered between fewer than 100 participants to over 1000."[227] The number of projects supported by the Bank between 1987 and 1999 in the fossil fuel power sector alone was eighty-six.[228] Given that the Bank also supports manufacturing projects, fossil fuel extraction projects, and some renewable energy projects, the number of participants should not be a barrier to market effectiveness.

Second, there may be concern that the consumers of export products – energy or manufactured goods – in developing countries will end up paying for the costs of compliance. This concern can be addressed in a couple of ways:

(A) The Bank could take precautions to eliminate or counteract existing distortionary subsidies that reduce the costs of fossil-fuel based exports.

(B) The Bank could also amend its environmental exports program to address many of the barriers to renewable energy technology implementation discussed at the beginning of this chapter. These actions would reduce barriers to entry in the energy market, and might allow for renewable energy products to become more cost-competitive, reducing the costs of expanded implementation.

Therefore, a cap and trade policy is ideal for the Bank. Chapter Four examines the specific design considerations of a program.

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[226] USEPA, *The United States Experience with Economic Incentives for Protecting the Environment*, 2001

[227] Frances Sussman et al, "Establishing Greenhouse Gas Emission Caps for Multinational Corporations," The Center for Clean Air Policy, June 2004, p. 24

[228] Ex-Im E&E, *supra* n. 127, p. ii

III
FITTING THE CAP: DESIGN CONSIDERATIONS FOR THE BANK

III.1 – Overview of Design Considerations

In any particular cap and trade scheme, a number of different approaches might be applied, depending on the authority of the regulator, the industries of the entities being regulated, and the purpose behind the program. Design considerations affect most stages of the program, from the determination of emissions reductions to the enforcement of emissions requirements. With respect to the Export-Import Bank's cap and trade program, several general design considerations must be addressed to maximize the efficacy of a cap and trade program.[229]

First, the program must determine a schedule of emissions reductions. Second, the program must consider which sectors will be covered under the cap, and where the points of regulation will take place. Third, the program must establish a methodology of allocating initial credits and subsequent credits. Fourth, the program must establish a methodology of monitoring emissions and verifying emissions credits. Fifth, after establishing a trading scheme, the program must consider whether it shall be a closed market or whether it could be open to other carbon trading markets. Finally, the program must determine effective enforcement mechanisms.

In all of these considerations, those designing a Bank-wide cap and trade proposal

[229] The architecture for this chapter is adapted from Robert Nordhaus and Kyle W. Danish's article, "Assessing the options for designing a mandatory U.S. greenhouse gas reduction program," Boston College Law Review, Volume 32 (2005), pp. 97-163 and the Environmental Protection Agency's publication, "Tools of the Trade: A guide to designing and operating a cap and trade program for pollution control," EPA430-B-03-002, June 2003, www.epa.gov/airmarkets. Hereafter EPA 2003. See Also Terry Dinan for the Congressional Budget Office, "CBO Study: An Evaluation of Cap-and-Trade Programs for Reducing U.S. Carbon Emissions," June 2001, Available http://www.cbo.gov/ftpdocs/28xx/doc2876/Cap&Trade.pdf. Hereafter "CBO 2001." Although I consult these sources, analysis specific to the Bank's application of the program is largely my own, with inspiration from conversations with Annie Petsonk.

should keep in mind the following priorities. First, the purpose of the cap and trade program is to cut emissions with certainty in order to mitigate the Bank's climate impacts. Second, the Bank itself does not possess governmental authority, but it does have contracting authority. Third, since the goal of the Bank's program is to maximize the cost-effectiveness of emissions and to attain comprehensive coverage of sectors that contribute to emissions, it should strive to follow features that will allow it to harmonize with other emissions markets.

After examining and making recommendations concerning the design elements of the program, this chapter will consider the various channels through which a Bank-wide cap and trade proposal could be implemented. Historically, environmental reforms have been adopted at the urging of the Bank's board of directors, Congress, and the OECD Export Credits Group (ECG). This chapter will argue that in order to maximize the impact of the proposal, congressional legislation should enact the policy.

III.2 – Scheduling Emissions Reductions

The schedule of emissions reductions answers four broad questions, first, whether the schedule should determine a relative or an absolute cap; second, the length of time that a compliance period shall last; third, the amount of emissions permitted by the initial cap and subsequent caps; and fourth, whether or not "banking" and "borrowing" might be permitted.

III.2.a *Relative versus Absolute Caps*

A relative cap places an energy intensity standard on each regulated industry or sector. Credits are generated when a firm's emissions are lower than the designated energy intensity standard. Firms that exceed their energy intensity standard may purchase these

credits to cover their emissions.[230] An absolute cap places a quantitative emissions ceiling over a particular group of sectors.[231] Credits that in sum equal the quantitative emissions ceiling are allocated to firms covered by the program.[232]

In the context of the Export-Import Bank, the benefits of a relative cap would be that it reduces the complexity of distributing permits and that it "provides a continuous incentive for firms to increase their (relative) environmental performance."[233] However, since the relative cap is an energy-intensity based scheme, it does not provide certainty in emissions reductions. In fact, if firms increase production at a higher rate than emissions, they could end up increasing their emissions while still generating credits. Therefore, a relative cap is not guaranteed to reduce greenhouse gas emissions.

Since the aim of Bank-wide cap and trade system is the actual cutting of emissions, an absolute cap – which guarantees a set number of reductions within a given time period – is a more appropriate instrument. Continuous incentives for environmental performance could still exist so long as the cap becomes tighter over time. Under a continuously tightening cap, firms covered by the cap would have to adopt ever-improving emissions control technology over time.

III.2.b *Compliance Period Length*

The length of the compliance period is important because it affects administrative feasibility. Short compliance periods put "a larger administrative burden on both the regulating authority and emissions sources" because they require increased reporting and

[230] Kuik and Mulder, "Emissions trading and competitiveness: pros and cons of relative and absolute schemes," Energy Policy 32 (2004), p 739
[231] Ibid.
[232] Ibid.
[233] Ibid., 740

verification frequency.[234] A longer compliance period "allows more flexibility for the sources to achieve compliance and reduces the administrative burden for the regulating authority. Lengthening the period between compliance assessments, however, means that cases of noncompliance can persist for longer periods of time, possibly increasing the difficulty of correcting those problems."[235] If the Bank chooses to adopt a longer compliance period, it can overcome this problem by requiring intermittent emissions reporting guidelines.

III.2.c *Determining the Cap*

The emissions reduction requirement determined by the cap is important because it affects the feasibility of linking the Bank's emissions market and other markets, and because it determines whether or not the Bank is making a significant contribution to emissions reductions.

Linking markets together is beneficial because it increases the number of sources contributing to the emissions market, and therefore can help regulated entities to find buyers or sellers of emissions credits.[236] Projects that are funded by the Bank may wish to link up with other emissions trading markets, such as the Regional Greenhouse Gas Initiative in the Northeastern United States or the European Trading System (ETS). Exporters that also operate in countries subject to the Kyoto targets might especially desire linkages between the Bank's market and the ETS so that they can take advantage of applying low-cost reduction technologies in their Bank-sponsored operations.[237]

[234] EPA 2003 p. 3-10
[235] Ibid.
[236] Pew 2002
[237] Analysis drawn from ibid., 1.

The stringency of the Bank's cap affects its ability to link with other markets because differences in stringency create winners and losers.[238] Buyers in the more stringent program benefit because linking with a less stringent program reduces the cost of emissions credits. Sellers in the more stringent program in turn face lower revenues due to the decreased price of credits. Sellers in the less stringent program benefit from higher revenues; buyers in the less stringent program end up paying more for compliance. Depending on what program is more or less stringent, the stakeholders who stand to lose are more likely to block linkage efforts if there are significant differences in program stringencies; holding other variables equal, the greater the difference in stringency, the greater the difference in the price of emissions, and the more the "losing" stakeholders stand to lose.[239] Therefore, if the Bank desires to minimize obstacles to inter-market linking, it should aim to set its cap at a similar stringency to existing markets.

A survey of current emissions reduction schemes reveals that many major programs aim to reach 1990 levels by 2020.[240] However, such a requirement may be unfeasible for the Bank because of the dramatic increase in emissions levels of the projects it supported over the 1990s. The dramatic increase is explained both by the cumulative effects of project credit authorization and by the numerical increase in projects that occurred each year during that time period. The cumulative effects of project authorization refers to the fact that the when the Bank authorizes a loan with a ten-year repayment plan, the project continues to

238 Erik Haites and Fiona Mullins, "Linking Domestic and Industry Greenhouse Gas Emission Trading Systems," prepared for the Electric Power Research Institute, International Energy Agency, and International Emissions Trading System, October 2001, §3.2.2

239 Ibid.

240 This is true of the Regional Greenhouse Gas Initiative (see "Overview," http://www.rggi.org/docs/mou_rggi_overview_12_20_05.pdf), and the California Executive Order (http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm). The Kyoto Targets generally call for reductions below 1990 levels by the end of the first compliance period in 2012, depending on the ratifying country's commitment. See "Kyoto Protocol to the United Nations Framework Convention on Climate Change," Available http://unfccc.int/resource/docs/convkp/kpeng.html

receive support from the Bank during the years that it pays off the loan. This support is not reported as a new authorization for the repayment time period, however. Therefore, if the Bank financed a steady level of projects – for example, ten projects per year – it would be supporting ten projects in the first year that it provided support, then twenty projects in its second year, thirty projects in its third year, and so on.

In addition, the Bank's new annual authorizations for fossil-fuel plants increased dramatically. In 1990, it supported only seven fossil-fuel fired energy projects, approved in the years 1988-1990. [241] In 1992, the Bank approved another eight projects; between 1992 and 1998, the Bank approved thirty-nine additional fossil-fuel extraction projects and sixty-nine additional fossil fuel fired electricity generation projects. However, the records of carbon dioxide emissions were never widely published until 1997, when the Bank began to make the information available in its annual reports, and emissions of other greenhouse gases such as methane were never monitored. Therefore, attempting to schedule a cap of 1990 levels by 2020 is not feasible. In addition, it is not prudent because given the current number of projects that exist due to the Bank's financing, a cap at 1990 levels would require many of them to simply shut down. In their place, it is possible that some other agency would simply pick up the funding without imposing any emissions improving requirements.

Thus, the cap required in a Bank-wide program must be sufficiently tight to achieve substantial reductions, yet sufficiently achievable to prevent the Bank's current projects from fleeing to financiers that impose no environmental standards. In short, the aim of the cap is to rein in projects so that they accept environmental regulations. As the Bank's business as usual emissions due to financed extraction and power projects are due to peak at roughly

[241] Numbers of projects financed by the Bank are taken from "Ex-Im Bank's Role in Greenhouse Gas Emissions and Climate Change," 31 August 1999

2012, it is reasonable to set a cap before that peak ever occurs.[242] Capping emissions below the average of 1998-2002 levels by 2017 would allow the Bank enough time and flexibility to shift its portfolio away from high-emitting projects and provide the Bank's current projects with enough time to adopt proper control technologies. After the first compliance period, in each subsequent compliance period, the Bank should require further reductions.

III.2.d *Banking and Borrowing*

Finally, those scheduling the Bank's emissions reductions must consider whether or not banking and/or borrowing will be allowed. Banking is the practice of reducing emissions below the required cap and using the leftover credits in future compliance periods.[243] Borrowing is the practice of exceeding a current compliance period's cap by reducing emissions below future caps.

Permitting the practice of banking is useful because it encourages early reductions: firms may decide to reduce below the cap in anticipation of more stringent caps in future compliance periods.[244] Banking can be problematic if a particular threshold of emissions reductions must be met at a particular time.[245] However, because the lifetime of most greenhouse gases is on the order of decades to centuries and because the scientific community has not determined that a specific threshold must be met by a certain date, these

[242] Footnote on a safety valve: In the cases that this cap ends up being too stringent, or stakeholders insist on a greater degree of price certainty, designers of the program could offer a safety valve feature. The safety valve should ideally be set much higher than the expected marginal abatement cost, and it should also increase and phase out over time. Otherwise, firms could come to depend on the safety valve as the costs of compliance rise and the caps become more stringent over time. See Jacoby and Ellerman, *supra* n. 214. See also Warwick J. McKibbin and Peter J. Wilcoxen, "The Role of Economics in Climate Change Policy," Journal of Economic Perspectives Volume 16 (Spring 2002), pp. 107-129 for elaboration of a proposal that implies a type of safety valve.

[243] Nordhaus and Danish, *supra* n. 203, 115.

[244] A. Denny Ellerman and David Harrison, Jr., "Emissions Trading in the U.S.: Experience, Lessons, and Considerations for Greenhouse Gases," prepared for the Pew Center on Global Climate Change, Available, http://www.pewclimate.org/docUploads/emissions_trading.pdf, p.37

[245] EPA 2003, 3-19

problems may not be especially relevant for the Bank's program.[246] In addition, the flexibility of banking is likely to make a cap and trade proposal more attractive to the Bank and projects financed by the Bank. Thus, given the benefits of early reductions and the additional flexibility afforded by banking, it is a measure worthwhile including in the Bank's program.

Borrowing within a compliance period – for example, with annual emissions credits – should cause no long-term damage.[247] This simply means that if firm A has enough credits to cover x emissions in year Z, and it actually emits x+y emissions, it must emit x_1-y emissions in order to cover the subsequent year Z_1's allocation of x_1 credits.[248] Borrowing beyond a compliance period can be dangerous because it might encourage a firm to continue putting off emissions reductions until the point at which it cannot make up its debt. Thus borrowing is a useful tool within multi-year compliance periods, but should not be permitted between compliance periods.

III.3 – Determining Covered Sectors

The most obvious sectors that should be covered under the Bank's cap and trade program are the extractive industries and the electricity generation industry. As discussed above, these projects generate emissions on the order of hundreds of millions of tons of carbon dioxide per year.

Another major sector that the Bank should consider regulating, at least in the long term, is the aircraft industry. Although aircraft are not frequently discussed as major contributors to climate change, estimates place aviation's share of global CO_2 emissions at

[246] Ibid.
[247] Nordhaus and Danish, 115.
[248] This summary is drawn from analysis in Nordhaus and Danish, 115; and EPA 2003, 3-19.

2.7% for the year 2000.[249] As the use of air travel increases over the next century, its effect on global concentrations of greenhouse gases will also grow. In fact, "[i]f present trends continue, air transport might have an impact of similar magnitude [to that of cars] by the middle of the 21st century."[250]

The Bank's contribution to increasing global air transport is substantial – in FY2000, the Bank "authorized more than $3.5 billion to finance exports of the U.S. aircraft manufacturing industry," greater even than the amount of financing that went to the energy sector.[251] Between 1998 and 2002, approximately one in five commercial aircraft sold by Boeing to international customers was financed in some form by the Export-Import Bank.[252] Furthermore, technology improvements exist that can reduce aircraft energy intensity, meaning that emissions reductions are possible.[253] In sum, the aircraft, extraction, and energy sectors are all major contributors to GHG emissions that should be included in the Bank's cap and trade program.

It is also important that the Bank consider sectors that have not yet demonstrated large contributions to emissions, but that have the potential to grow and produce emissions. These sectors may include other transport industries such as rail, heavy industry, and the commercial building sector. To include these sectors, the Bank may either initially declare all non-service sectors as covered sectors; or it may indicate a threshold of emissions beyond which a sector becomes eligible for regulation. Regardless of how the Bank decides to include additional sectors, it is important that as many sectors as contribute to emissions are

[249] J. Akerman, "Sustainable Air Transport – on track in 2050," Transportation Research Part D 10 (2005), p.114.
[250] Ibid, 112
[251] http://www.exim.gov/about/reports/ar/ar2000/2_mis_pro_glance_ovrview.pdf
[252] Zehner, Dan, "An assessment of two economic rationales for Export Credit Agencies," Chazen Web Journal of International Business, Spring 2003, published by Columbia University, School of Business, NY, p.4, http://www2.gsb.columbia.edu/journals/files/chazen/Export_Credit_Agencies.pdf
[253] Akerman, 112

covered; otherwise, the Bank's program may be prone to leakage, where financing migrates to uncovered sectors which then continue to emit GHGs, negating the benefits accrued by the original cap and trade program.

In the spirit of reducing leakage, it is also important that the Bank's program count all of a covered project's emissions, regardless of the proportion of the project that the Bank has financed. This may seem initially unfair – after all, it attributes one hundred percent of the emissions to the Bank even if the Bank has only financed 10% of a project. Requiring the Bank to cap "all that it touches" is beneficial, however, for several reasons.

First, such a requirement reduces the complexity of figuring out the quantity of emissions that the Bank is responsible from year to year, especially if the Bank finances at different levels. Second, the requirement encourages the Bank to urge other export credit agencies and financial agencies that co-finance Bank projects to adopt their own cap and trade schemes. Should they do so, the Bank and other agencies could share the accounting of a single project's emissions without incurring leakage problems. Third, this requirement would force the Bank to consider the long-term effects of its portfolio. Since it would be responsible for project emissions as long as the project was creating emissions, the Bank would need to weigh in the long term whether or not the benefits of heavy-emitting projects are worth their GHG emissions.

Finally, this requirement is necessary to prevent leakage from financing around partial coverage schemes. For example, leakage could occur if the Bank was permitted to count fractions of project emissions based on its level of support for the project. Then, it could choose to heavily finance projects for one year and then reduce their financing in subsequent years in order to avoid responsibility for the subsequent emissions, which would constitute leakage.

Another consideration in the determination of sector coverage is where the points of emissions accounting will take place. In the cap and trade literature, emissions can be counted either upstream or downstream.[254] Upstream accounting refers to the measurement and enforcement of emissions reductions at the point of fuel distribution; downstream accounting refers to the measurement and enforcement of emissions reductions at the point of fuel combustion. For example, oil may be accounted for upstream where it is extracted or imported or further downstream after it has been processed into gasoline and is combusted at the individual automobile level. In nation-wide cap and trade systems, regulation is often either upstream or downstream in order to prevent the "double-counting" of a fuel both at the extraction stage and the combustion stage. Since fuel is unlikely to be imported into or produced within one country and then combusted in another country, counting it once should be sufficient to include its effects in a cap and trade scheme.

In the Bank's case, however, extraction and combustion are not always linked. Oil exploration, pipeline laying, and the final combustion of the fuel may take place in entirely different countries; the processes may also be financed in part or in whole by the Bank. Thus, an entirely upstream or entirely downstream approach might fail to account for a significant portion of emissions. If the Bank undertook an entirely downstream approach, none of the extractive projects that it finances would be counted in its emissions; if it took an entirely upstream approach, the power projects that it finances would not be required to reduce their emissions. On the other hand, a program that double-counted emissions from fuels both extracted and combusted by Bank projects would be unpopular and inaccurate.

Adopting a hybrid approach in which the Bank primarily counts upstream emissions based on fuel content, but also includes the downstream emissions of pipelines and energy

[254] Analysis drawn from: EPA 2003, 3-6; Nordhaus and Danish, 126-127; and CBO 2001, 5

projects that are not from fuel provided by the upstream extraction projects, would allow the Bank to fully account for its emissions.[255] Such a strategy would prevent double counting and would also prevent uncovered sectors from "leaking." Choosing to cover projects primarily upstream would also minimize the administrative work because upstream extraction tends to become distributed to several downstream combustion projects. Upstream accounting therefore needs to monitor fewer locations.

III.4 – Credit Allocation

Credit allocation is generally one of the more controversial aspects of cap and trade design because the process inherently benefits some entities while creating costs for others.[256] The questions that arise in designing credit allocation are: (a) how initial credits are to be allocated; (b) if different than (a), how credits for subsequent compliance periods are to be allocated; and (c) how projects that have been approved and financed by the bank prior to the establishment of the cap and trade scheme will be incorporated.

III.4.a – *Initial Allocation*

The two chief methods of allocation are free dispersion or auctions in which regulated entities bid competitively for credits. Supporters of auctions argue that auctioning "could potentially provide a less cumbersome mechanism for distributing the value of the allowances to groups suffering financial losses from a GHG emissions cap" through revenue recycling.[257] Auctions also have the potential benefits of collecting the profits "that might otherwise accrue to emissions sources if allowances are allocated at no charge;" avoiding

[255] See Nordhaus and Danish, 126-134. See also Tim Hargrave, "An Upstream/Downstream Hybrid Approach to Greenhouse Gas Emissions Trading," Center for Clean Air Policy, June 2000, Available http://www.ccap.org/pdf/Hybrid1.PDF

[256] See: Nordhaus and Danish, 134-142; EPA 2003, 3-14 through 3-18; CBO 2001, 7; Ellerman and Harrison, 38

[257] Nordhaus and Danish, 139

"politically contentious issues regarding allocation methodology;" "an efficient distribution of allowances;" providing "an immediate price signal in the allowance market;" and creating "an equal opportunity for new entrants into the allowance market."[258] These benefits are particularly applicable when the regulator of the program is a national government that could appropriately determine how revenue from the auction should be recycled.

For the Bank, however, auctioning poses the difficulty of collecting revenue from the very projects that the Bank is financing because they cannot attract enough private finance on their own. An auctioning scheme that collects revenue from Bank-sponsored projects essentially taxes them even though they are already financially dependent on the Bank. Another difficulty posed by auctions is logistical. Since the Bank approves applications as they roll in, running an annual auction might disadvantage heavily those projects that are approved towards the end of an approval cycle.

Alternatively, the Bank could itself allocate permits to projects as it approves their financing, and it could designate initial allocations in the contracts that it signs with domestic exporters. These allocations should be based on energy intensity requirements in order to provide general equity among the projects that are covered. The benefit of pre-assigning allocations based on energy intensity requirements is that projects have a sense of what commitments they are expected to fulfill, and they are not required to pay a fee to the same entity that is financing them. Furthermore, such allocation would force the Bank to take into account the potential GHG impacts of the projects that it chooses to finance. It would then also have a better sense of when financing a carbon-intensive project is feasible.

Critics of rolling allocation assignments might argue that projects applying late in the fiscal year face a slimmer chance of being approved even if their credit worthiness is equal or

[258] EPA 2003, p.3-17

better than that of projects that are approved earlier in the cycle.[259] The Bank could address this issue by moving to a different schedule of project approval so that it chooses to approve projects either on a quarterly, bi-annual, or annual basis. Or it could encourage projects to simply apply earlier in the fiscal year.

III.4.b – *Allocation in Subsequent Compliance Periods*

After projects have aged past the initial compliance period, their business plans may have changed significantly. Therefore, sticking to the original allocations of emissions credits could hamper innovation or deter energy efficient growth. Thus, in allocations of annual permits to older projects, the Bank could choose to auction permits. This would allow projects to have a better sense of how many permits they will need to bid for. In addition, as projects age, they should be less dependent on or independent of the Bank's financial services, and should be able to pay the designated fee. The fees collected by the Bank could be used to pay for the administration of the program, diverted to set aside concessional funding for renewable energy projects, or recycled back into the available funds for project support.

Therefore, the Bank should allocate credits initially based on energy intensity standards, which may change as technology progresses; subsequent credits should be allocated using an auction. It could designate the pools of credits to be allocated versus auctioned according to energy intensity standards, or according to some other standard such as credit per dollar of support. This mixed allocation scheme of designation and then auctioning provides projects with flexibility after they have had time to develop, and also gives the Bank a sense of how it might responsibly determine its portfolio.

[259] Interview with James Mahoney. Mr. Mahoney, with reference to limiting the financing of power plants, states that "[the Bank] cannot arbitrarily discriminate against a particular sector."

III.4.c – *Existing Projects*[260]

One additional question that must be addressed by the allocation design is how existing projects are to be included in the cap. Because the Bank contracts directly with new projects, stipulations that they possess enough credits at the end of each compliance period to cover their emissions for the period can be considered legally binding. However, projects that have already been approved did not agree to accept such conditions, and the Bank does not possess legal environmental authority over them. Therefore, projects that have been financed in the past and are no longer financially related to the Bank – i.e., are no longer receiving support in the form of insurance, loan guarantees, or loans – may be unreachable. But those projects that are still under Bank support could be required to adopt caps as soon as the first compliance period takes effect, and they should be required to adopt caps in order to prevent leakage.

III.5 – Emissions Monitoring and Credit Verification

For the program to succeed, emissions must be properly monitored.[261] If regulated parties do not believe that their emissions will be counted, they may be less likely to comply; in turn, parties that believe others are cheating will have a lower incentive to comply themselves.[262] Noncompliance can also threaten the integrity of the trading market[263] – extra reductions and the selling of emissions credits will be of little value if those generating the extra reductions are cheating or if purchasing credits is unnecessary because of poor monitoring. In addition, stringent monitoring standards are required in order for the Bank's

[260] The analysis in this section draws heavily upon discussions with Annie Petsonk.
[261] Benkovic and Kruger
[262] EPA 2003, §4
[263] See Werner Betzenbichler, "The Role of the Verifier: Validation and Verification in 'Cap and Trade' and 'Baseline and Credit' Systems," Intereconomics Volume 39 (May/June 2004), pp.123-127

cap and trade program to be integrated into other emissions markets because if other markets do not trust the monitoring procedures, they may not count the Bank's emissions credits as valid and tradable.[264]

Monitoring and verification should ideally be conducted by an independent party so as to preserve the validity of the program; and also because the Bank may not possess the necessary expertise to construct monitoring and verification procedures, and then to audit the reported emissions. In the United States, the designated body for promulgating federal environmental standards is the Environmental Protection Agency (EPA); although the EPA currently does not regulate carbon dioxide, it may in the future consider CO_2 a regulated pollutant.[265] In that case, the EPA could be responsible for the development of monitoring and verification procedures.

If the EPA does not determine CO_2 as a pollutant regulated under its authority, the Bank could contract to a private consulting firm with expertise in environmental regulation. Either way, the best way to ensure the validity and credibility of the Bank's program is through reporting standards and transparent public reporting.[266] These should provide pricing information to participants in the Bank's emission credit market, guarantee the environmental integrity of the program, and generate public trust and support of the Bank's program. The EPA's Sulfur Dioxide Emissions trading program lends much of its success

[264] Haites and Mullins, §3.3.4; Pew 2002, 6

[265] In the recent Massachusetts v. EPA (2005), twelve state attorneys general, three cities, and several NGOs petitioned for an order that the EPA regulate the GHG emissions of motor vehicles. A three-judge panel of the DC District Appeals Court ruled 2-1 with the EPA, which argued that it did not have the authority to regulate carbon dioxide and that if even if it did have the authority to do so, it would opt to not do so. A petition for rehearing before the full panel at the DC court has been filed – given the split decision, a rehearing could change the outcome. The petitioners of the case plan to appeal to the Supreme Court in case the rehearing is not granted. See Peter Glaser, "Court Rejects Activists' Suit to Enforce Federal CO2 Limits," Washington Legal Foundation Legal Opinion Letter Vol 15, No 19, 23 September 2005 and US Court of Appeals Opinion, No. 03-1361, Argued 8 April 2005, Decided 15 July 2005, Reissued 13 September 2005, Commonwealth of Massachusetts Et Al, Petitioners, v. Environmental Protection Agency, Available Online: http://pacer.cadc.uscourts.gov/docs/common/opinions/200507/03-1361a.pdf

[266] EPA 2003, §5

to its requirement of a "publicly accessible electronic database that records each source's actual SO_2 emissions as reported by its emissions monitoring system and each source's allowance holding."[267] Therefore, public reporting and verifiable third party monitoring are essential components to a successful cap and trade program.

III.6 – Establishing the Trading Scheme and Determining Market Linkages

Establishing the particulars of the trading scheme is another element that would be better performed by a third party agent – either another government agency with experience in cap and trade programs such as the EPA or a private entity – so as to avoid conflicts of interest. Once the trading market has been initially established, those designing and operating the market may consider how to link the Bank's market to other emissions trading markets. A common currency or one which is easily exchangeable is crucial to market linking. [268] For this reason, the trading scheme should probably be conducted with emissions credits in terms of carbon dioxide equivalence (CO_2e).[269] Using CO_2e would both make linkages easier and allow the Bank to incorporate additional GHGs, if they are found, into its program.

Market linking – allowing for Bank allowances to be traded in other markets, and allowing other allowances to account for Bank emissions reduction requirements – is useful for increasing the pool of potential buyers and sellers, and therefore liquidity. Liquidity helps to equalize compliance costs across industries and firms. Linking also increases the

[267] Environmental Defense, "From Obstacle to Opportunity: How acid rain emissions trading is delivering cleaner air" September 2000, p. 30. See Also: Kruger and Dean, "Looking Back on SO2 Trading: What's good for the Environment is good for the Market," Public Utilities Fortnightly 1 August 1997, available online http://www.pur.com/pubs/2616.cfm;
[268] Haites and Mullins, 6
[269] This is the currency used by EU Emissions Trading Scheme and the U.S.-based Chicago Climate Exchange (http://www.chicagoclimatex.com/about/program.html)

opportunities for profits to be made, and can attract additional firms to voluntarily accept emissions reductions.[270] The Bank may also desire to encourage other ECAs to adopt similar cap and trade programs so that it might link to them. In so doing, it could share the emissions burden of jointly-financed projects with co-financiers.

Linking can undercut the environmental effectiveness of a program if efficient, well-regulated markets are linked to inefficient, poorly-regulated markets.[271] For example, if a poorly regulated market undervalues the price of an emissions credit because firms are not properly accounting for their emissions, these credits will flood into the more efficient market, reducing the costs of compliance via credit purchases. As a result more firms will purchase emissions credits than to purchase control technologies. Market linking in this case would allow for the spread of poorer control practices. Thus the Bank should be careful to link only with markets that use similar currencies and possess similarly stringent reporting and verification procedures.

III.7 Enforcement Mechanisms

The final major design feature of a cap and trade system is the enforcement mechanisms. Effective enforcement is necessary to ensure compliance and to make up the difference to the atmosphere in terms of illegal emissions in the case of non-compliance.[272] Although the Bank is not itself an agency with police authority, it does have one specific power and one particular institutional feature that would provide deterrence from and recourse in the case of noncompliance.

[270] Pew 2001, 1-2
[271] See generally, Haites and Mullins
[272] EPA 2003, 3-24

First, the Bank has the power to make contracts. It can thus stipulate environmental requirements in exchange for its promise of financial support. If projects fail to meet their obligations, the Bank can declare breaches of contract and bring legal action against non-complying parties. An exporter that failed to meet its obligations would both lose its financing and be subject to litigation.

Second, the Bank is chartered by the Congress, which does have the power to make law affecting international commerce. Therefore, the violation of a congressionally-enacted cap and trade program could result in criminal sanctions.

III.8 – Review of Design Features

Looking back at the design issues of the Bank's particular cap and trade program, the following main features should be included:

- An absolute cap that begins at approximately 2000 emissions levels by 2017, and which decreases in future compliance periods of five years each;
- Inter-compliance period banking and intra-compliance period borrowing provisions;
- Comprehensive coverage of the energy, extraction, and aircraft industries, with flexibility to incorporate additional sectors such as transport and building;
- Upstream accounting except in cases where extraction and fuel transport projects do not contribute to upstream projects already financed by the Bank;
- Initial credit allocations based on energy intensity and subsequent allocations by auction;
- Third party emissions monitoring and verification, and public reporting procedures;
- Third party market execution;
- Openness to market linkages with other verifiably effective international carbon emissions markets; and
- Enforcement mechanisms that render non-compliance more expensive than compliance.

Now that the particulars of the design have been established, it is necessary to determine what agency or authority can best implement the design.

III.9 – Enacting the plan: By What Authority?

Previous environmental reforms at the Bank have been adopted due to policies or legislation passed in at least one of three different arenas: the OECD Working Party on Export Credits and Credit Guarantees (ECG), the Bank's internal Board of Directors, and Congress.

III.9.a – *The OECD ECG*

The OECD ECG is responsible for the negotiation of and adoption of export credit-related actions.[273] Article 5 of the OECD Convention provides for three types of legal action: Recommendations, Decisions, and agreements with other governmental bodies.[274] Its objectives are to "evaluate export credit policies, determine the problems which arise, and resolve or mitigate these problems by multilateral discussion;" and based on this discussion, to work out "common guiding principles" and consider "all possibilities of improving co-operation between Member countries in this field."[275] Under the ECG, the Bank has accepted several Recommendations and Pilot Programs, including the Arrangement on Officially Supported Export Credits ("Arrangement") and the Common Approaches on Environment and Officially Supported Export Credits ("Common Approaches"), which were discussed in Chapter 1.

As an agent for initiating policy change, the ECG is authoritative and has an immense set of resources at its disposal. It operates on the consensus of member countries,[276] and although only official decisions are binding, recommendations carry heavy weight. For example, the Participants to the Arrangement are not bound under an official act of the OECD, but they do report to OECD ministers for guidance and instruction

[273] The Export Credit Group (ECG)
http://www.oecd.org/document/24/0,2340,en_2649_34169_1844760_1_1_1_1,00.html
[274] Salzman, *supra* n. 121, pgs 189 and 192
[275] The Export Credit Group *supra* n. 273
[276] According to Article 6 of the convention, Available
http://www.oecd.org/document/7/0,2340,en_2649_201185_1915847_1_1_1_1,00.html

regarding activities under the Arrangement, and are expected to implement the Arrangement.[277] The resources available at the OECD include the support of the Secretariat, which provides tremendous administrative support.[278] Furthermore, when recommendations and agreements such as pilot programs are adopted, they are often followed up on by through various instruments such as surveys and data collection, to determine their functionality and utility.[279]

Therefore, the ECG institutionally is an appropriate channel through which GHG emissions cap and trade programs might be required of export credit agencies. It has the administrative capacity to even accept the task of running emissions trading markets, and the power to create additional measures that might evaluate the effectiveness of member countries.[280]

In addition, the U.S. has a history of success in campaigning for various pilot programs and Recommendations within the ECG. For example, in 2004 the U.S. advanced a proposal for increased transparency of untied aid offers, which was adopted as a two-year pilot program beginning in 2005.[281] In 2004, the U.S. also urged the extension of longer repayment terms for renewable energy exports, another two-year pilot program adopted in 2005.[282] The initial adoption of the Approaches only came to fruition after the U.S. negotiated for four years, requesting that the other ECAs accept environmental

[277] "The Participants to the Export Credit Agreement," Available http://www.oecd.org/document/29/0,2340,en_2649_34169_1844765_1_1_1_1,00.html
[278] Ibid.
[279] See for example, the efforts on bribery and, environmentally specific, the Member Reports on Export Credits and the Environment, Available http://webdomino1.oecd.org/olis/2005doc.nsf/Linkto/td-ecg(2005)5-final
[280] Evaluations are performed, for example, in the case of measures to counter bribery
[281] See "Agreement on Untied Official Development Assistance Credits Transparency" Announcement at http://www.oecd.org/topic/0,2686,en_2649_34169_1_1_1_1_37431,00.html; document at http://www.oecd.org/dataoecd/14/39/34669230.pdf
[282] Competitiveness Report 2004, Export Import Bank of the United States, p 142

considerations in their determination of financing requests.[283]

However, one of the major strengths of ECG policy-making is also a severe weakness in the case of the current proposal. The same consensus-building requirement that empowers the authority of the ECG could also prevent an ECA-wide cap and trade program from ever moving past the initial discussion stage. Adoption of such a policy is especially unlikely given that the United States has not adopted any domestic GHG emissions-reduction strategy. Once the Bank adopts its own cap and trade policy, or perhaps if the United States adopts a GHG emissions cap, the member countries of the ECG might be willing to discuss broader implementation guidelines. Such guidelines and a potential ECA-wide market would be useful in order to effect broader change and to improve the effectiveness of the U.S.'s program, but are unlikely to be feasible without U.S. action first.

III.9.b – *The Internal Board of Directors*

The Bank's internal board of directors is responsible for adopting Bank-wide policies, including environmental measures.[284] Polices can be proposed either by the board itself, or by sub-departments within the bank. The appropriate department regarding environmental policies, such as GHG emissions policies, is the Department of Environment and Engineering. Internal adoption of policy does not require congressional approval, and can therefore escape some of the political barriers that have thus far forestalled substantive, nation-wide measures to reduce GHG emissions. The design of policy internally is also an attractive option because internal officers of the Bank should have the most knowledge about Bank procedures and could then construct the cap and trade program in ways that would be most efficient institutionally.

[283] Interview with James Mahoney, Export-Import Bank VP of Environment and Engineering, 14 March 2006. Transcript on file with author.
[284] Interview with James Mahoney.

Several problems with the internal institution of a cap and trade program undermine its viability. First, the Bank currently has no position on climate change because it believes that as an agency, its only authority is the determination of credit-worthiness of projects that request financing assistance.[285] This current lack of position means that without significant outside pressure or the appointment of a Bank President who strongly believes that the Bank can and should act to reduce GHG emissions, nothing will be done.

Second, the Bank does not have the appropriate resources to independently construct or monitor an internal cap and trade proposal. According to Vice President James Mahoney, it is "not equipped scientifically or otherwise to have an opinion that matters on climate change."[286] Without suitable technical expertise, the Bank could not implement an effective program.

Third, even if a Bank president decided to address climate change and hired the appropriate personnel, the program would be dependent upon that president's authority. Future Bank presidents who disagreed with the program would be able to dismantle it with little effort. An example of short-lived Bank policy is the Renewable Energy Exports Advisory Committee. A body that received only momentary attention and resources, its effectiveness was severely undermined.[287]

Finally, the Bank alone has limited authority for enforcing a proposal. Since it is a credit agency, its ability to ensure compliance is limited to its contract powers, and these may not be strong enough to deter noncompliance. Taken in sum, the obstacles to internal policy change render it useful only under the assumption that the designed policy comes

[285] Ibid.
[286] Ibid.
[287] The REEAC was appointed in 2002 under President Philip Merrill; current Acting President James Lambright did not re-order the meeting of the REEAC, nor have many of its recommendations been implemented.

from the sincere efforts of a Bank president interested in addressing climate change, and with the intention of more permanently establishing the program through the ECG or congressional legislation. Otherwise, a small and poorly resourced pilot program that eventually fails would cause more harm than good – it would forestall more effective policies.

III.9.c – *Congressional Legislation*

Enacting a Bank-wide cap and trade proposal through Congress is the preferred channel because it is more feasible than ECG action and it is both afforded permanence and enforcement potential that internal policy alone cannot provide.

Congressional legislation is more feasible than ECG action because multilateral consensus is not required. In addition, Congress has the appropriate authority to mandate particular Bank procedures[288] and the power to engage other government agencies, such as the EPA or the Treasury, in assisting the promulgation of cap and trade rules. Because the Bank's reauthorization is contingent on Congressional approval, legislation can overcome Bank apathy towards action. Separating the cap and trade policy from the authority of the Bank president also has the benefit of instilling program longevity, which is necessary to provide time for the program to develop and grow. With congressional action, significant efforts would have to be made to repeal the program, and individuals within the Bank should not be able to undermine its efficacy. Perhaps most important to the design of the program, Congressional action affords the opportunity to establish stronger enforcement mechanisms, such as litigation against noncompliant parties, or "debarment," a practice in which companies can be denied future opportunities for export credits for a particular

[288] See all of 12 USC and its amendments governing Export Import Bank procedures. Examples include limitations of particular countries to which the Bank may lend, environmental procedures, tied aid procedures, and restrictions on arms exports.

number of years, and whose names are publicly disclosed.[289]

The major obstacle to Congressional legislation is the politics of the proposal. Without enough votes, legislation is also unfeasible. Potentially significant barriers to legislation will be discussed in Chapter Four. Assuming that these can be overcome, congressional legislation of the cap and trade program is the ideal implementation mechanism, followed by campaigning for ECG adoption of similar policies.

[289] USDOJ 2006, *supra* n. 113

IV
POLITICAL OBSTACLES AND OPPORTUNITIES

If a cap and trade program is ever to be adopted by Congress, proponents will have to overcome hefty political obstacles and effectively communicate to legislators the benefits of the program. This chapter will first address the potential arguments that stakeholders will raise and then describe the strategic benefits of an Export-Import Bank cap and trade system.

IV.1 Addressing the Critics

The likely critics of the cap and trade program fall into three main categories. First, those who have a vested interest in Bank policy, such as the current administration of the Bank and the U.S. exporters who are the clientele of the Bank, are likely to oppose policies that might add costs to the Bank's operations. Second, the program will be opposed by those who have interests in climate change policy, especially those who do not accept climate change as a realistic problem and those who dislike cap and trade programs to control emissions. Finally, those who are concerned about the international effects of U.S. policy, especially the effects on developing countries and international trade law might raise objections.

The critics in the first group are likely to devote the most energy toward opposing the policy because it could substantially affect their businesses. Soundly addressing their concerns should thus be the first priority.

IV.1.a – *U.S. Exporters*

U.S. Exporters are the first set of stakeholders who might oppose a Bank-wide cap

and trade program. There are two claims they might assert. First, a cap and trade program on Bank projects adds costs that domestic firms are not required to pay. Monitoring, reporting, and abatement are all costs that will be imposed on firms within the program, and since the U.S. currently does not have a national restriction on carbon dioxide emissions, firms that work only in the U.S. would be given the benefit of not having to pay for compliance. Second, a cap and trade program increases the costs projected by U.S. exporters and could harm their competitiveness with the firms supported by other Export Credit Agencies.

The first claim is not necessarily true: domestic firms that operate only in the United States often pay greater fees for environmental compliance than firms operating in other countries under host country regulations because the U.S. generally has more advanced environmental regulations. Looking forward, firms located in the Northeastern United States and California will soon be under regional and state-wide climate change cap and trade programs. There they will face similar costs as those programs are implemented. Thus, the claim that the program unfairly adds costs that domestic firms may not face is not entirely true. But even if there are additional costs for some exporting firms versus non-exporting firms, these are imposed only under contract, meaning that only exporters that agree to the conditions of lending will have to pay them.

Competitiveness with firms supported by other ECAs is of concern, and it is possible that large projects with high emissions potentials would incur the costs of reviewing potential emissions, monitoring any actual emissions, and constraining emissions in accordance with the program's policy. In these cases, the additional costs might mean that exporters from other countries could offer comparatively more attractive deals. As a result, U.S. exporters fear that project and export contracts would be won by companies in other

countries whose ECAs have less stringent environmental policies.[290]

This concern parallels the pollution haven hypothesis in international trade theory. The pollution haven hypothesis states that "industry is sensitive to interjurisdictional differences in regulatory stringency."[291] Some empirical studies, such as one conducted in twenty-five transitioning Eastern European countries, "find no support for the 'pollution haven hypothesis.'"[292] But a recent literature review of pollution haven studies finds that those using panel data observe "statistically significant pollution haven effects of reasonable magnitude."[293] On the other hand, the authors of this literature review are careful to note that the existing studies:

> can only tell us whether capital and goods flow are sensitive to regional differences in environmental regulations. It is impossible to draw normative or policy conclusions based on these results alone, that is, the finding that firms are responsive to regulatory differences in their location decisions does not demonstrate that governments purposely set suboptimal environmental regulations to attract business. Indeed, it may be efficient for polluting industries to move to regions that put less emphasis on environmental quality, provided they do so for appropriate reasons (i.e., there is no market failure, political failure, or redistributional concern involved).[294]

Examination of the Bank's financing records does not reveal which projects domestic companies competed for contracting and then subsequently lost, but it does show that despite the environmental policies adopted in 1995, the Bank was able to maintain its previous pattern of financing power projects.[295] Thus, no evidence exists to disprove the

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[290] Salzman, *supra* n. 121, p.208

[291] Smita Brunnermeier and Arik Levinson, "Examining the evidence on environmental regulations and industry location," Journal of Environment and Development, Vol 13, No 1, 1 March 2004, p. 7

[292] Javorcik and Wei, 23

[293] Brunnermeier and Levinson, 38.

[294] Ibid.

[295] The numbers of fossil-fuel fired power plant projects supporter are: 1995 – 17; 1996 – 15; 1997 – 10; 1998 – 7; 1999 – 5; 2000 – 5; in subsequent years, the Bank's Annual Report does not detail the specific number of projects, but does report the amount of financial support it gives to *newly* authorized projects. Although the number of projects cannot be derived from these figures, GHG emissions are also estimated and are significant. The combined picture of dollars authorized in support and expected annual GHG emissions show that the Bank is suffering no shortage of power project applicants. The data are as follows: 2001 - $470 million – 9 million tonnes CO_2 per year; 2002 - $1.1 billion – 5.82 million tonnes CO_2; 2003 - $1 billion – 6

*Footnote continues on the next page.

pollution haven hypothesis with respect to the Bank's prior environmental measures. At the same time, no evidence shows that the environmental standards hindered the Bank's lending practices or significantly affected the demand for Bank financing packages.

One reason that the pollution haven hypothesis may not apply with respect to the capping of emissions is that some developing countries might desire the additional environmental benefits. A country that acknowledges the effects of climate change and wishes to reduce its own GHG emissions may prefer to participate in the Bank's program. Others may view renewable energy projects as more appealing – in 2005, fourteen developing countries had "some type of policy to promote renewable power generation," and several states in India have adopted renewable portfolio standards.[296] These countries might welcome the prospect of additional revenue from the cap and trade program, especially given that the only way they are currently allowed access to such a market is through the Clean Development Mechanism (CDM) of the Kyoto Protocol, and the bureaucracy involved in CDM filings is so complex that very few projects have successfully generated credits.

But even if the pollution haven hypothesis ends up applying when the Bank implements the cap and trade program, the argument that certain U.S. exporters might be less competitive for particular projects is not sufficient to outweigh the benefits of the program. Instead, U.S. negotiators at the OECD should work towards more wide-scale adoption of Bank emissions reduction standards. This is a potentially politically viable position internationally given the United States' history of success in OECD ECG

million tonnes CO_2; 2004 - $450 million – 7.3 million tonnes See "Ex-Im Bank's Role in GHG emissions and climate change," 1999, and Annual Reports, 2000-2004, available online (www.exim.gov)

[296] REN21 Renewable Energy Policy Network, 2005, "Renewables 2005 Global Status Report," Washington, DC:Worldwatch Institute, pp 22-23

negotiations[297] and given the significant number of Annex I Parties to Kyoto whose ECAs are also responsible for funding unregulated GHG emissions in developing countries.[298]

Finally, exporters in the industries most affected by the Bank's policy might express concern that the policy is unfair to its shareholders, whose securities might lose value due to the policy.[299] But shareholders make their investments knowing the risks of the industries in which they invest. Therefore, they accepted the risk of funding companies whose policies with respect to climate change were more relaxed.

Proponents of a cap and trade program should also remind exporters that the program is an opportunity to gain market experience with more advanced energy technologies, which should be more efficient, emit lower levels of GHGs and air pollutants, and contribute towards increasing energy security. The rewards for innovation will last not only inside the trading mechanism of the program, but the experience will pay off as renewable energy technology grows nationally and globally. Thus, rather than posing a hindrance to exporters, the program stands as an opportunity for domestic firms to partner with developing countries and get a head start on developing, implementing, and fine-tuning the technologies that will shape the energy sector of the future.

IV.1.b – *The Bank*

The Bank itself might also oppose the program, claiming that (1) it lacks the necessary expertise to implement the program;[300] (2) its emissions are not significant enough to justify reductions;[301] and (3) "it is demand driven,"[302] and therefore is not capable of

[297] See above, Chapter 1
[298] For example, as discussed above in §I.3.c, Germany and Japan are two of the worst financers, yet both are Kyoto signatories; the emissions from their ECAs are not counted and constitute a "leak" in the Kyoto policy.
[299] This concern is derived from Terry Linan, for the Congressional Budget Office, "A CBO Paper: Shifting the Cost Burden of a Carbon Cap and Trade Program," July 2003 hereafter CBO 2003
[300] Interview with James Mahoney, 14 March 2006
[301] Ex-Im E&E, 33-34

determining the precise number of non-renewable and renewable projects that it might fund in any given year. The first concern can be addressed easily enough – the Bank would simply have to hire the appropriate personnel. Additionally, because the work of managing, monitoring, and enforcing the trading system should be done by third parties, the Bank would only need to focus on determining appropriate allocation schemes.

Regarding the second concern, the Bank and those who take a position on the proposed cap and trade scheme should all recognize that most sources of emissions might consider themselves insignificant in the grander scheme. The reduction of greenhouse gases is a collective action problem: individual preferences are to continue emitting even though doing so threatens the well-being of the entire community. Therefore, all sources, even the Bank, must take responsibility for reducing emissions if concentrations of GHGs are ever to be stabilized and then reduced.

Furthermore, the Bank does emit a significant amount of greenhouse gases. . Sources that are responsible for much lower levels of emissions than the Bank have already committed to reducing their own emissions, including each of the countries in the EU-25, individual companies,[303] states like California,[304] and over 200 U.S. cities.[305] The Bank of America, an institution very similar to the Bank, has adopted a resolution to reduce its indirect emissions from its energy and utility portfolio by 7% in accordance with Intergovernmental Panel on Climate Change targets.[306] Ultimately, emissions reductions and

[302] Interview with James Mahoney
[303] Eric Pianin, "Mexican Company Agrees to Reduce Emissions," Washington Post, 5 June 2001
[304] See California Governor Executive Order S-3-05, http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm
[305] US Mayors Climate Protection Agreement, http://www.ci.seattle.wa.us/mayor/climate/
[306] "Bank of America Climate Change Position," Undated, Available http://www.bankofamerica.com/environment/index.cfm?template=env_clichangepos. Note that the Bank of America does not define what baseline it is using, nor has it reported on the progress of implementing this goal; however the declaration of intent is a good start.

gains in efficiency will need to be made wherever possible in order to stabilize emissions, especially given that with the growing energy demands of developing countries, global energy consumption will continue to increase.

Finally, the demand-driven nature of the Bank, given that it can only finance projects that request letters of credit, does not mean that its policies cannot influence demand. It may not be able guarantee after a change in policies, it will receive applications from the precise number of compliant projects necessary to maintain its current levels of lending; but it does know from experience that changes in policy can alter the types of projects that seek financial support. For example, the current Environmental Exports program has successfully attracted additional renewable energy and water projects.[307] Policies may not immediately influence demand, but over time, the cap and trade program should attract requests from projects that are willing to take on the demands of the emissions reductions requirements. As more and more countries and companies come to adopt climate change mitigation strategies, there will be a greater corresponding demand for projects and products capable of addressing the rising demand for low-carbon technology.

IV.1.c – *Climate Skeptics*

Despite the science and the adoption by other countries and regional U.S. organizations of programs to reduce emissions, climate skeptics remain. Some, such as Senator James Inhofe (R-OK), assert that "anthropogenic climate change is the world's greatest hoax,"[308] while others claim that global warming would be a welcome phenomenon.[309] For these critics, any policy that considers climate change to be a threat is,

[307] "Environmental Exports Program," http://www.exim.gov/products/special/environment.html
[308] Statement of Senator James Inhofe R-OK (http://epw.senate.gov/hearing_statements.cfm?id=246962)
[309] See Hans Labohm, Simon Rozendaal, and Dick Thoenes, Man-Made Global Warming: Unraveling a Dogma, 2004, Chapter 1

at best, a waste of time, and at worst, economically damaging. But even climate skeptics acknowledge that other environmental problems exist and do express a willingntess to devote resources toward preventing and rectifying environmental damage in the form of air pollution or the deposition of toxics.[310]

To these individuals, proponents of a cap and trade program should emphasize that reducing carbon dioxide emissions will entail not only efficiency gains within carbon-based power plants, but also diversify the mix of energy sources and projects that the Bank supports. Renewable energy sources offer the benefits of reduced air pollution emissions, and tend to be less environmentally damaging. For example, photovoltaic panels, wind, geothermal, and small hydroelectric power plants emit negligible emissions because they do not combust any fuel.[311] Biomass when burned emits much lower levels of sulfur and nitrogen than coal; these pollutants are common precursors to acid rain.[312] Even if the cap and trade program does not attract as much additional growth in renewable sources of energy as might be hoped, and projects move instead from coal to natural gas and oil, air quality still benefits. Coal emits greater quantities of sulfur dioxide and nitrous oxides per unit burned and therefore contributes more to the deterioration of regional air quality than oil or gas does.[313]

Another benefit of diversified energy portfolios is energy security. Markets that rely upon fossil fuel-based energy also rely upon stability in the regions from which fuel is extracted and exported. Political unrest and other factors threaten this stability, and in turn,

[310] Labohm, Rozendaal, Thoenes, 13.
[311] "Electricity from Renewable Resources," EPA, http://www.epa.gov/cleanrgy/renew.htm
[312] Ibid.
[313] Average emissions factors for coal: 2249 lbs CO_2 per MWh, 13 lbs SO_2 per MWh, 6 lbs NOx per MWh ; for natural gas, 1135 lbs CO_2 per MWh, 0.1 lbs SO_2 per MWh, 1.7 lbs NOx per MWh; for oil, 1672 lbs CO_2 per MWh, 12 lbs SO_2 per MWh, 4 lbs NOx per MWh. See "EPA – Clean Energy – Air Emissions," http://www.epa.gov/cleanrgy/emissions.htm

threaten the stability of economies which are mostly carbon-based. Renewable energy sources could fill in for energy demand when fossil fuel prices rise abruptly, and have the benefit of not requiring continuous supplies of fuel. When support for renewable energy technology grows, the market responds. Developers of renewable technology and investors are more likely to devote resources to the building of the domestic renewable energy sector if they foresee a return on their investment. With the current subsidization of the fossil fuel industry, renewable fuels may not be as attractive, but a cap and trade system coupled with incentives for additional renewable energy technology development can help to level the playing field. The development of the domestic renewables industry benefits the countries which can then implement more reliable energy sources, and it also benefits the U.S. utilities looking to increase their share of renewable energy sources for the purpose of energy security.

As more data is analyzed, more models are run, and more peer-reviewed studies are performed, the evidence that climate change is a reality becomes stronger. Ideally, climate skeptics would come to recognize the immense body of science that points to the potentially devastating effects of climate change on human health and the environment. But even if some remain skeptical about climate change, the co-benefits of improved air quality and energy security should serve as reasons to take action to change the current world's fossil fuel-based energy economy.

IV.1.d - *Groups that Oppose Cap and Trade Programs*

Certain environmental groups, which oppose cap and trade, might also oppose the program. During the early 1990s, the environmental community was less unified in taking a

stance on cap and trade policies.[314] Sharon Beder, a professor at the University of Wollongong in New Zealand, documents the following statements from various individuals in the NGO community in an article about tradable pollution rights:[315]

> This approach appears like a thinly veiled scheme to privatise air using 'marketable permits.' Industry simply does not have the right, nor should it ever be given the right, to make money off our air. Air is a part of nature that is priceless–it is essential to all life on earth. It must never be allowed to be quantified or traded by industry over the heads of communities, nor should industry be allowed to bribe communities into consenting to allow them to do so. … In my view, it is a highly offensive and dangerous program that should be eradicated at the earliest opportunity.[316]
>
> [Emissions rights trading] takes a public resource and turns it into something that can be traded as if it were property.[317]
>
> The unspoken assumption behind all such models is that the capacity of the environment to tolerate a certain number of renegades is something that we ought, collectively, take advantage of. We ought to make sure that all those slots are taken, we ought allow just as many renegades as nature itself will tolerate.[318]

These concerns run alongside the philosophical concerns that individuals like Michael Sandel have posed, critiquing emissions trading "rights to pollute" as immoral, allowing the wealthy to buy their way out of pollution reductions.[319] The major flaw in each of these arguments against emissions trading is that they pose no counter-solution. Beder notes that they assume the alternative of the "precautionary principle," and "to continually seek to reduce emissions that may harm the environment by reducing allowable discharges to zero over time rather than selling them off or auctioning them."[320] But in the case of reductions that are costly, compliance is difficult to obtain without incentives for positive behavior. Thus

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[314] See Also Robert N. Stavins, "What Can We Learn from the Grand Policy Experiment? Lessons from SO_2 Allowance Trading," The Journal of Economic Perspectives, Volume 12 (Summer 1998), p.72

[315] Sharon Beder, 'Trading the Earth: The politics behind tradeable pollution rights', Environmental Liability, Volume 9 (2001), pp. 152-160.

[316] Beder, Citing Greenpeace campaigner Lisa Bunin

[317] Beder, Citing Richard Ayres, Chair of US National Clean Air Coalition

[318] Beder, Citing Goodin, R. (1992) The ethics of selling environmental indulgences, paper presented to Australasian Philosophical Association Annual Conference, University of Queensland.

[319] Michael Sandel, "It's Immoral to buy the right to pollute," in Economics of the Enviornment: Selected Readings, Stavins, ed., NY: W.W. Norton and Company, 4th Ed, 2000, pp 449-451

[320] Beder

although it might be ideal if emissions reductions could be achieved without economic incentives or strict guidelines, an incentive-less, requirement-less policy for reductions would make little concrete progress.

Currently, the major environmental NGOs have adopted a consensus that emissions trading programs are an acceptable and even useful tool for reducing emissions. When the European Parliament adopted the Emissions Trading Directive in 2002, several NGOs voiced their support, including the European chapters of the Climate Action Network, which is a consortium of several NGOs, Greenpeace, the Royal Consortium for the Protection of Birds, the World Wildlife Fund, and Friends of the Earth.[321]

IV.1.e – *Developing Countries*

Developing countries, which are also stakeholders even though they have no vote on U.S. policy, might argue against the policy, citing several concerns. First, they might argue that imposing environmental regulations and monitoring requirements through U.S. law violates their sovereignty.[322] Second, they might be concerned that compliance costs will be primarily passed on to the consumers in their countries, who are already poor. Third, they might argue that the increased energy prices would be regressive and place "a relatively higher burden on lower-income households than on higher-income ones."[323]

Two responses address sovereignty concerns. First, because the contracts stipulate the procedures that will be followed as conditions for lending packages, countries are free to accept or deny the actual procedures. Therefore, the country deciding which firm should be awarded a trade contract can exercise sovereignty in choosing to reject a project conforming

[321] Press Release, "Emissions Trading Directive a significant step forward, say NGOs" 2 July 2002, Available http://www.climnet.org/pubs/PR%20ET%2002%20July%202003.pdf
[322] See, for example, Frances Sussman, "Establishing Greenhouse Gas Emissions Caps for Multinational Corporations," prepared for the Center for Clean Air Policy, June 2004
[323] CBO 2003, ix

to the environmental requirements posed by the Bank. Second, if existing projects within a developing country will be grandfathered in because they are still under the support of the Bank, those designing the cap and trade program could offer them a choice. Either the project would be required to follow the rules of the trading scheme by ensuring it possessed enough emissions allowances to account for its emissions, and it would be permitted to participate in the trading market; or the project's emissions would need to be monitored and reported, but it would not be permitted to participate in the trading market.

For countries that selected the latter option, the Bank would still be responsible for reducing the amount of distributed emissions allowances so that total emissions does not exceed the sum of emissions from all sources. A precedent for project information sharing exists in current international environmental law: requirements that environmental impact statements (EISs) be compiled is approaching status as an international legal norm. Currently, "[s]ome thirty nations…have signed the Convention on Environmental Impact Assessment in a Transboundary Context, which obligates signatories to notify, fully inform, and grant other signatory nations the right to participate in the planning and execution of new development projects with potential transboundary pollution effects"[324]

In addition, Kormos et al continue and explain that

> as [EDF v.] *Massey* recognizes, NEPA[, which requires the filing of EISs for all major federal actions with potentially significant environmental impacts,] does not conflict with other nations' sovereignty because NEPA is a procedural statute. Federal agencies are not required to take action as a result of an EIS; they are merely required to compile the EIS. Indeed, one could argue the very opposite, that not conducting an EIS would manifest a lack of respect of another country's sovereignty.[325]

Thus, sovereignty need not be violated if the crafters of the program are careful to communicate effectively with affected countries.

[324] Cyril Kormos, Brett Grosko, and Russell A. Mittermeier, "U.S. Participation in International Environmental Law and Policy," 13 Georgetown international Law Review, Spring 2001, 661, 668
[325] ibid

In answering the second two concerns about increased costs overall and regressive costs to the poor, proponents of the cap and trade system might point out two issues. First, the Bank is only able to accept projects for which it has a reasonable expectation of repayment.[326] Therefore, the financial analysts considering the soundness of the project would also take into consideration whether or not the end products distributed to the host country are affordable to consumers. If not, then the project is not likely to be assessed as solvent. In the CBO's analysis of potential economic effects from a national cap and trade system in the United States, costs to consumers will be passed on in the form of increased utility bills and higher prices on manufactured products.[327] These costs are small, representing only about 3% of income for the lowest income brackets. In addition, the Bank's program will span across countries, and is unlikely to cause significant increases in national energy prices. Therefore, the costs are unlikely to be significant for individual consumers.

Second, proponents of the program might point out that developing countries currently deploy significant amounts of energy subsidies – more so than developed countries.[328] These subsidies currently are employed in damaging ways: they tend to be regressive, subject to manipulation by corrupt individuals, and structured to favor traditional energy sources that are carbon intensive.[329] If subsidies are more usefully deployed, the costs of the policy could be offset in a manner to reduce the regressive impact of increased energy prices. In addition, careful design of the overall program could stipulate ties between

[326] 12 U.S.C.§ 635(a)(1)
[327] CBO 2003, ix
[328] An OECD study in 1998 found that in non-OECD, subsidies to the energy sector amounted to approximately US$95 billion that year; OECD subsidies amounted to US$19-24 billion. IEA and UNEP, "Energy Subsidy Reform and Sustainable Development," pp. 7-8. See also above §II.2.a and *supra* n. 157 http://www.iea.org/textbase/papers/2001/sustain_report.pdf
[329] ibid, 8-11

Export-Import Bank lending packages and USAID grants for the purpose of providing the appropriate subsidies to prevent energy price shocks.[330]

In addition to all of the responses to developing country concerns, cap and trade program proponents should remember to emphasize the ways in which the Bank's program ultimately is a service to developing countries. First, the program is reduces climate impacts by reducing carbon dioxide emissions. This helps both in the direct emissions reductions realized and in the way that the program can incite further action by other agencies. The stabilization of emissions and ultimate reduction of GHGs directly benefits developing countries, which are currently the most vulnerable to the negative effects of climate change. Second, the program aids in capacity building. By creating measures that U.S. firms operating in other countries will have to follow, the program creates examples of environmental policy success within developing countries. The very processes of monitoring emissions, implementing control technologies, and participating in a trading scheme would all take place so that local governmental officials and local firms could have access to the procedures. This builds credibility for environmental programs and provides opportunities for local officials to ask questions and learn through experience. Third, the program creates new incentives for transnational corporations to innovate and to increase the quality of their environmental operations in developing countries. These effects will benefit the physical environments of developing countries.

At its core, the cap and trade program is designed to do two things, both of which benefit developing countries. First, it is designed to cut emissions. Second, it is designed to create opportunities and incentives for deploying advanced, clean technologies to developing

[330] For other ways that the U.S. and other developed countries could aid in the deployment of renewables in developing countries, see Ross Gelbspan, "Toward A Global Energy Transition," Petropolitics, Available http://www.irc-online.org/fpif/pdf/petropol/ch5.pdf

countries by leveling the playing field between renewable and non-renewable technologies and by rewarding innovative, cleaner energy technology.

IV.1.f – *The Proposal and International Law*

Finally, some might argue that the policy violates the United States' legal obligations under three agreements – the WTO Agreement on Subsidies and Countervailing Measures, the OECD Arrangement on Officially Supported Export Credits ("Arrangement"), and the Common Approaches on Environment and Officially Supported Export Credits ("Common Approaches"). Currently, although export credits are technically considered subsidies, they are regulated under the OECD Arrangement in accordance with WTO provisions.[331]

[331] "In January 1955, the Council of the Organization for European Economic Cooperation (OEEC; the predecessor of today's OECD) adopted rules committing member countries to abstain from artificial aid to exporters. Specifically listed among the forbidden measures was 'charging of premiums' for government export credit guarantees and insurance 'otherwise than in accordance with sound insurance principles.' … The OEEC revised this provision in 1958 to prohibit, 'in respect of government export credit guarantees, the charging of premiums which are manifestly inadequate to cover the longterm operating costs and losses of the credit insurance institutions.' In addition, the list of prohibited measures was expanded at that time to cover: the granting by governments (or special institutions controlled by governments) of export credits at rates below the cost to them of the funds so employed; and the bearing by governments of all or part of the costs incurred by exporters in obtaining credits. The OEEC also approved the following recommendation: "That the government of each member country shall communicate, confidentially and subject to reciprocal treatment, the financial results of export risk insurance operations practiced either by the government or by institutions controlled by it (OEEC 1955/1960, 193)." When the OEEC was transformed into the OECD in 1960, these obligations for export credits were transferred to the GATT, along with other OEEC obligations on export subsidies. Article XVI(4) of the GATT has included since 1955 a prohibition of subsidies for all exports except those of primary products…The most recent GATT rules are found in the Uruguay Round Agreement on Subsidies and Countervailing Measures, which took effect in January 1995…The Uruguay Round's agreement, like the Tokyo Round code, contains an annex, which gives an illustrative list of export subsidies that come under the no-subsidy rule of Article 3.1(a). This list shows its direct derivation from the OEEC rules. It prohibits:

(j) The provision by governments (or special institutions controlled by governments) of export credit guarantee or insurance programmes, of insurance or guarantee programmes against increases in the cost of exported products or of exchange risk programmes, at premium rates which are inadequate to cover the long-term operating costs and losses of the programmes.

(k) The grant by governments (or special institutions controlled by and/or acting under the authority of governments) of export credits at rates below those which they actually have to pay for the funds so employed (or would have to pay if they borrowed on international capital markets in order to obtain funds of the same maturity and other credit terms and denominated in the same currency as the export credit), or the payment by them of all or part of the costs incurred by exporters or financial institutions in obtaining credits, in so far as they are used to secure a material advantage in the field of export credit terms.

Provided, however, that if a Member is a party to an international undertaking on official export credits to which at least twelve original Members to this Agreement are parties as of 1 January 1979

*Footnote continues on the next page.

However, the creation of an emissions trading market could affect this status. Since the emissions credits would be distributed across country lines and the implementation of the program would affect the production processes of certain goods, the program could be challenged as a violation of GATT rules under the WTO. Such concerns were brought up as a result of a similar proposed program under the Kyoto Protocol.[332] But potential WTO conflicts are not necessarily an insurmountable obstacle to the program. While the details of how to properly construct the program such that it would be fully consistent with WTO regulations are beyond the scope of this work, they should be the subject of future scholarship.

As for the OECD Arrangement and Common Approaches, critics should note that these agreements only specify interest rate requirements, loan policies, repayment terms, environmental review procedures, environmental standards, and other similar measures designed to prevent harmful export credit competition to the detriment of sound market principles or environmental quality. Adoption of an internal cap and trade program need

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> (or a successor undertaking which has been adopted by those original Members), or if in practice a Member applies the interest rates provisions of the relevant undertaking, an export credit practice which is in conformity with those provisions shall not be considered an export subsidy prohibited by this Agreement.

…The final sentence of item (k) was inserted by the Tokyo Round negotiators of the Subsidies Code in order to provide a 'safe harbor' for participants in the OECD Arrangement. At the time the code was negotiated, the Arrangement guidelines on interest rates were considerably more lenient than the basic GATT rule that interest rates be no lower than 'the cost of money to governments.' Many negotiators from the OECD countries were unwilling to agree on rules in the Subsidies Code that would condemn the practices that were condoned by the recently negotiated OECD Arrangement. The wording in question thus provided a safe harbor while allowing other signatories of the code to follow the same practices and allowing for changes in the Arrangement." John Ray, Managing Official Export Credits: The Quest for a Global Regime, Washington, DC: Institute for International Economics, 1995, pp 35-39. See also, WTO, Annex I, AGREEMENT ON SUBSIDIES AND COUNTERVAILING MEASURES, 15/04/1994, Accessible http://docsonline.wto.org/GEN_searchResult.asp?RN=0&searchtype=browse&q1=%28@meta_Symbol+LTüURüA-1Aü9%29+%26+%28@meta_Types+Legal+text%29

[332] For further discussion, see for example, W. Bradnee Chambers, "International Trade Law and the Kyoto Protocol: Potential Incompatibilities," Zhong Xiang Zhang, "Greenhouse-gas Emissions Trading and the World Trading System," and Jacob Werksman, "Greenhouse-gas Emissions trading and the WTO," all in Inter-linkages: The Kyoto Protocol and the International Trade and Investment Regimes, ed. W. Bradnee Chambers, NY: United Nations University Press, 2001, pp.87-190.

not result in abrogation of the Arrangement or the Common Approaches.[333]

International legal obligations are therefore not a detrimental barrier to the implementation of a cap and trade program. Rather, the hope of the program is to shape international norms such that standards of operation with regard to climate change become more broadly accepted. Since climate change is an issue that affects all countries, attention to climate impacts should be a widely accepted responsibility. Those who take action to fulfill their responsibilities therefore should not suffer for doing their part to steward the global commons.

IV.2 Strategic Political Advantages

Strategic benefits in several realms add compelling positive arguments for the cap and trade program. The program would be consistent with domestic movement toward a comprehensive emissions stabilization and reduction policy. It is also an opportunity to regain lost international political capital with respect to climate and energy issues. Finally, the program could play a major role in engaging developing countries in adopting measures to address climate change.

IV.2.a – *Domestic Energy Policy*

Domestically, the Bank cap and trade program is advantageous for three main reasons. First, the program helps to address energy security considerations. Second, the program addresses the concerns of industries that desire predictability in designing their

[333] Although these agreements are not legally binding, the U.S. has a vested interest in maintaining their authority and credibility. Since the Arrangement and the Common Approaches are gentlemen's agreements, the loosening of standards by one Participant so as to gain advantage could lead to weakening of the overall agreements. However, it is unlikely that the Bank's program will be construed as a loosening of standards that in turn leads to the falling away of other countries and the re-institution of the credit wars. More likely, the other ECAs will perceive themselves as gaining some advantage, although given the history of the U.S. pressing for upwards harmonization, they might also find that the Bank's new standards are an indication of future agreements to come.

future business plans, and that also anticipate major changes must be made to address climate change. Third, the program is consistent with trends towards a nation-wide effort to reduce greenhouse gas emissions and it closes a strategic point of potential leakage.

Energy security is not a new concern. Since the 1970s OPEC price bubble, citizens and government officials have sought to reduce national reliance upon foreign energy sources. Yet in 2001, the U.S. imported 25% of its energy sources.[334] With the War on Terror of the early twenty-first century, concerns about future competition for energy supplies with China, and the many episodes of intense political instability in countries that are major suppliers of oil to the United States[335], energy security has risen again to the top of the general public's list of priorities. Now, alternative sources of energy prove strategic because of their environmental benefits and their potential to resolve energy security apprehensions.

At the same time, U.S. commitment to renewable energy has waned significantly despite its role as an early leader in the development of renewable energy technology during the 1970s.[336] In 2001, 15 of the European Union countries made the significant commitment to increase their share of renewables in energy production by 2010 such that its overall share of renewables would constitute at least 22% of all EU electricity generation;[337] in contrast, the 2005 U.S. Energy Bill did not even commit firmly to a renewable portfolio standard of 7.5% of energy purchased by the federal government.[338] Since the peak

[334] OECD and IEA, Renewable Energy: Market and Policy Trends in IEA Countries, 2004. Hereafter, OECD and IEA 2004, p. 643
[335] Venezuela, countries in the Middle East, etc.
[336] OECD and IEA, 2004. See p. 50 – Table 1-5. Share of Renewables in IEA Electricity Production by Country, 1970-2001; Also see p.92 – Figure 4-2. The Introduction of Renewable Energy Policies by Country
[337] ibid, p. 50-51.
[338] See United States Congress, Title II.A.§203(b)(3) of the Energy Policy Act of 2005. Incidentally, the renewable portfolio standard for all electricity produced (which would impose a 10% RPS by 2020), proposed and passed by the Senate, was dropped in the final version of the bill.

financing period of the late 1970s and early 1980s, when more than US$ 1.2 billion was budgeted for research and development, government support for R&D in renewables has not exceeded US$ 300 million annually since the mid-1980s.[339] Between 1970 and 2001 the share of renewables in electricity production actually shrank from 15.5% to 7.4%.[340]

The Bank's cap and trade program has the potential to reverse these trends in domestic renewable energy research and development. By providing incentives for the deployment of renewables as exports, the cap and trade program can stimulate the growth of the domestic renewable energy sector. Incentives already exist in the form of more attractive financing packages, but the added potential revenue from emissions trading and the demand for additional renewable exports as a result of the emissions cap, provide further opportunities to encourage additional renewable supply. The market experience gained from the implementation of renewable energy technology abroad will also be useful for the growth of the domestic renewable energy sector.[341]

Since the rest of the world will increasingly turn to renewable energy to answer the growing demand for electrification, the development of the U.S. renewable market offers an opportunity to invest in future economic security as well as energy security. Unless more attention is paid to the domestic renewable energy technology sector, firms from other countries will gain the competitive advantage; in that case, the U.S. might become reliant upon foreign sources of renewable energy as well.

Consistent with the development of the domestic energy sector, another strategic

[339] OECD and IEA, 2004, 646
[340] Ibid., p. 50
[341] Karsten Neuhoff, "Large-scale deployment of renewables for electricity generation," Oxford Review of Economic Policy, Volume 21 (2005)

benefit of the program is its element of stability.[342] Implementation of regulations now allows companies concerned with the impact that climate change will have on their businesses to begin planning for the future. This can include early shifting of production away from processes that are carbon intensive, resulting in early emissions reductions. Some firms have already demonstrated interest in taking action now to mitigate climate change by participating in programs such as the Chicago Climate Exchange[343] and the U.S. EPA's Climate Leaders Program. In each program, firms accept GHG reduction targets and abide by strict monitoring requirements so as to document their reductions.[344] Firms like these stand to benefit from the Bank's program, and might even lend it political support.

Finally, the cap and trade program is consistent with current U.S. action toward adopting measures independent of Kyoto to mitigate climate change. In 2005, the Congress passed the Energy Act which included a Sense of the Senate Resolution promising to take action to reduce greenhouse gas emissions.[345] Chairman Pete Domenici (R-NM) and ranking Senator Jeff Bingaman (D-NM) of the Senate Committee on Energy and Natural Resources released a follow-up "Climate Change White Paper" ("White Paper") in February

[342] See discussion above about the importance of regulatory stability and certainty, in § II.2.b
[343] This market is discussed above in Chapter 2
[344] Chicago Climate Exchange, "Overview and Benefits," *supra* n. 224; U.S. EPA, "Climate Leaders," Available http://www.epa.gov/climateleaders/
[345] The full text: "(a) Findings.-Congress finds that-
(1) greenhouse gases accumulating in the atmosphere are causing average temperatures to rise at a rate outside the range of natural variability and are posing a substantial risk of rising sea-levels, altered patterns of atmospheric and oceanic circulation, and increased frequency and severity of floods and droughts;
(2) there is a growing scientific consensus that human activity is a substantial cause of greenhouse gas accumulation in the atmosphere; and
(3) mandatory steps will be required to slow or stop the growth of greenhouse gas emissions into the atmosphere.
(b) Sense of the Senate.-It is the sense of the Senate that Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop, and reverse the growth of such emissions at a rate and in a manner that-
(1) will not significantly harm the United States economy; and
(2) will encourage comparable action by other nations that are major trading partners and key contributors to global emissions." See United States Senate, Energy Policy Act of 2005 (Public Print), H.R.6 § 1612 Sense of the Senate on Climate Change, available http://loc.thomas.gov Hereafter, Sense of the Senate Resolution, 2005

2006, marking the beginning of negotiations as to how precisely the Sense of the Senate Resolution might be fulfilled. In April 2006, a Climate Conference is scheduled to discuss responses to the White Paper.[346]

If these steps result in a nation-wide GHG regulatory system with the Bank's practices remaining unregulated, a significant source of leakage goes untouched. The benefit of the Bank's program is that it could be integrated into a domestic program, assuming that the U.S. imposes equally stringent requirements in terms of monitoring, reporting, and reducing. But even if the U.S. is slow to act and no regulatory system is adopted within the next few years, the Bank's program is a useful complement to existing subregional regulatory systems, such as the Regional Greenhouse Gas Initiative and the California plan to reduce its emissions.

A myriad of opportunities for domestic renewable energy markets and policy coherency render the cap and trade proposal advantageous. In addition to these domestic benefits, the proposal has the potential to positively impact U.S. Foreign Policy relations, specifically with respect to international environmental policy.

IV.2.b – *International Political Capital and U.S Foreign Policy*

In July 2005, the Group of Eight (G-8)[347] met at Gleneagles and discussed climate change policy. The resulting Gleneagles Communiqué expressed the G-8's agreement to take immediate steps to curb global warming, but "[does] not set concrete heat-trapping gas

346 "Domenici, Bingaman Announce April Climate Conference," Press Release, Available http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=234869&Month=2&Year=2006

347 The G-8 is a group of highly industrialized nations: the United States, Britain, Canada, France, Germany, Italy, Japan, and Russia.

reductions or specify how much money they will spend."[348] However, this final communiqué represented a fairly toned-down version of the initial drafts.[349] Prior to the Gleneagles Summit, the U.S. was perceived as "trying to water down the international coalition's initiative," pressuring the other seven nations to weaken the proposal on climate change.[350]

Just after the end of the Gleneagles Summit, the U.S. announced an agreement on climate change with several Asian countries, "The Asia Pacific Partnership on Clean Development and Climate."[351] The Partnership does not impose any restrictions on emissions, and its vision statement expressly states that it "will develop a non-binding compact," for the purposes of sharing technology and implementing sustainable development strategies.[352] While members of the European community accepted the agreement, they insisted that it should not replace the work of the U.N. Framework Convention on Climate Change.[353] Some environmental advocates feared that the agreement was a public relations attempt by the U.S. to avoid accepting mandatory emissions reductions in future international agreements.[354]

In December 2005, at the eleventh meeting of Conference of Parties to the UN Framework on Climate Change in Montreal, the U.S. again refused to accept mandatory

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348 Juliet Eilperin, "G-8 Urges Action on Global Warming, With General Goals; U.S Resists Gas-Reduction Levels," The Washington Post, 8 July 2005, p. A19 See text of the Communiqué available on NPR's website, at http://www.npr.org/documents/2005/jul/g8_communique_2005.pdf

349 Ibid.

350 Juliet Eilperen, "U.S. Pressure Weakens G-8 Climate Plan; Global-Warming Science Assailed," The Washington Post, 17 June 2005, p. A01

351 "New Asia-Pacific Partnership on Clean Development, Energy Security, and Climate Change," 27 July 2005, http://www.state.gov/g/oes/rls/prsrl/50334.htm

352 "Vision Statement of Australia, China, India, Japan, the Republic of Korea, and the U.S. for a New Asia-Pacific Partnership on Clean Development and Climate," 28 July 2005, Available http://www.state.gov/g/oes/rls/fs/50335.htm

353 Fiona Harvey and Amy Kazin, "Environmentalists criticize US-led agreement" Financial Times, 29 July 2005, p. 10

354 Ibid.

emissions targets, and negotiators even walked out of a round of late-night informal discussions "aimed at finding new ways of curbing gases beyond steps taken so far."[355]

The U.S.'s failure to cooperate with the European Community on the issue of climate change could represent part of a greater trend in deteriorating U.S.-European relations.[356] The U.S.'s leadership in the Asian Pacific Partnership was viewed by one British editorial as a "slap in the face," especially given its timing.[357] Continued refusal to adopt international climate change agreements or domestic policies that take on mandatory emissions targets will only worsen U.S. political capital internationally: after all, most of the EU perceives climate change to be a fairly significant issue, and the U.S. is the world's leading emitter of GHGs.

The adoption of a Bank-wide cap and trade program is a start to improving the U.S.'s relations with other countries. While it alone may not smooth over the current international political tensions over climate change negotiations, it could be a step forward, especially if the Bank's program is adopted in conjunction with a nationwide program. Ideally, the Bank's adoption of a cap and trade program would then also be the first step toward encouraging ECA-wide action to mitigate their climate impacts.

IV.2.c – *Engaging Developing Countries*

The final realm in which the Bank's cap and trade plan offers strategic advantages is in its engagement of developing countries. This is important because relations between the developed and developing countries are especially tense with regard to climate change and

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355 Andrew C. Revkin, "U.S. Delegation Walks Out of Climate Talks," The New York Times 9 December 2005. Online Edition. Accessed 9 December 2005. Peter Gorrie, "U.S. takes hard-line at post-Kyoto talks," The Toronto Star, 30 November 2005, p.A18

356 Ivo H. Daalder, "Are the United States and Europe Heading for Divorce?," International Affairs, Vol. 73 (2001), pp. 553-567. See also "Special Report: Divisions between Europe and America," The Economist, 7 June 2001

357 Geoffrey Lean, "No Thanks, More a Slap in the Face," The Independent (London) 31 July 2005, p. 30

perceptions of responsibilities. It is also an explicit concern of the U.S. that any action it takes engage developing countries.[358] As discussed earlier, the Bank's plan can help engage developing countries in the process of adopting more advanced environmental regulations. The thorough, effective, and efficient execution of the Bank's policy enables developing countries to recognize the usefulness of market-based mechanisms; access to the Bank's model allows them to determine what key features are necessary for regulatory success in their particular countries. Thus the implementation of the Bank's policy has the potential to raise the bar of environmental regulation within developing countries.

In addition, developing countries are engaged because they are afforded the opportunity to build their economies on renewable energy technology. In essence, this is leapfrogging. Development based on renewable energy technology allows the citizens of developing countries to avoid the pollution troubles that current carbon-based economies endured. Additionally, the deployment of cleaner technologies, even if not renewable, provides opportunities for cooperation in innovation. This can provide developing countries with the technical resources necessary for the building of their economies.

The political concerns and the strategic advantages of the Bank-wide cap and trade proposal illustrate that careful design of the program is crucial to its success. A regulatory design process that incorporates the comments of all relevant stakeholders is most likely to maximize the benefits of the proposal and avoid the potential legal difficulties. But given the opportunities for environmental benefits, the advancement of domestic renewable energy industries, and cooperation with developing countries in sustainable development, the proposal is well worth the effort required to fully design and implement it.

[358] Sense of the Senate Resolution, 2005. See also Byrd-Hagel Resolution *supra* n. 131

CONCLUSION

Where to, next? This thesis has examined the particularities of only one of many potential approaches to addressing climate change. The Export-Import Bank of the United States currently makes large contributions to global climate change, and its climate impact should be mitigated. However, the Bank's adoption of a cap and trade program cannot and should not be the single solution to addressing global climate change.

The reduction of greenhouse gas emissions in order to prevent extreme and costly climate consequences is a pursuit that ought to be a priority for all governments and citizens of the world. Achieving sufficient emissions reductions to stabilize concentrations of greenhouse gases will not be easy. Therefore, policymakers should seek to take advantage of every potential opportunity. In this thesis, a proposal has been mapped out that transforms an existing institution from a facilitator of continually increasing greenhouse gas emissions into an active champion of renewable energy-based development. This same approach – the capping of financed emissions – could be used by other governments that operate export credit agencies and other financial institutions.

Ultimately, the point is that action needs to be taken now, and innovative approaches that engage existing institutions are crucial if the world is to effectively mitigate global climate change.

APPENDIX: PROPOSED BILL TEXT[359]

The Export-Import Bank Climate Mitigation Act

The Export-Import Bank Act of 1945 (12 U.S.C. 635 et seq.) is amended by adding at the end the following new sections:

"SECTION __. CLIMATE CHANGE POLICY AND PROCEDURES.

- (a) Findings
- (b) Definitions
- (c) Export-Import Bank Greenhouse Gas Database
- (d) Public Reporting
- (e) Greenhouse Gas Reductions
  - (1) Requirements
  - (2) Credit for Early Action
  - (3) Banking
  - (4) Offsets
  - (5) Market-Based Permitting
  - (6) Accounting
  - (7) Reporting
  - (8) Auditing
  - (9) Certified Emissions Reductions
  - (10) Compliance
  - (11) Penalties
- (f) Cohesion with other International Financial Institutions
- (g) Renewable Energy Technology Promotion

(a) Findings.

The Congress finds that--

(1) greenhouse gases accumulating in the atmosphere are causing average temperatures to rise at a rate outside the range of natural variability and are posing a substantial risk of rising sea-levels, altered patterns of atmospheric and oceanic circulation, and increased frequency and severity of floods and droughts;

(2) there is a growing scientific consensus that human activity is a substantial cause of greenhouse gas accumulation in the atmosphere;

(3) mandatory, market-based limits on emissions of greenhouse gases are required to slow, stop, and reverse the growth of greenhouse gas emissions into the atmosphere emissions at a rate and in a manner that--

  a. will not significantly harm the United States economy; and
  b. will encourage comparable action by other nations that are major trading partners and key contributors to global emissions;

(4) the Export-Import Bank is required to have established policies and procedures to take into account the potential beneficial and adverse environmental effects of goods and services for which support is requested under its direct lending and guarantee programs;

(5) currently, the Export-Import Bank does not analyze the effects of its lending and guarantee programs upon the emissions of greenhouse gases in host countries, nor the effects of such emissions on the environment of the United States;

(6) between 1992 and 2002, following the environmental policy and procedure amendment to the

[359] The drafting of this text is based heavily on drafts of the McCain-Lieberman Climate Stewardship and Innovation Act, a proposed amendment to the Energy Policy Act of 2005. I am grateful for Annie Petsonk, who reviewed several drafts of this proposed text. This text is not designed to be the only possible method of implementing the proposal I advocate in my thesis, but has been created to illustrate what a potential legislative act might look like.

Export-Import Bank Act, the Export-Import Bank provided $23.1 billion in financial support to fossil fuel projects that will emit in their lifetimes at least 32.7 billion tons of carbon dioxide; and

(7) the Export-Import Bank should play a constructive and positive role in assisting the United States and other nations in slowing, stopping, and reversing the growth of greenhouse gas emissions.

(b) Definitions.

(1) ADMINISTRATOR – The term 'Administrator' means the Administrator of the Environmental Protection Agency.

(2) ALLOWANCE – The term `allowance' means an authorization, allocated to a covered project by the Administrator under this title, to emit, during or after a specified calendar year, one ton of carbon dioxide equivalent.

(3) BANK – The term 'bank' means the Export-Import Bank of the United States.

(4) BASELINE – The term 'Baseline' means the average of the historical aggregate annual emissions from all covered projects for the years 2000-2004.

(5) CAP – The term 'cap' means the annual amount, in carbon dioxide equivalents, of greenhouse gas emissions that the Bank's covered projects shall not exceed.

a. For the years 2013-2017, the cap shall equal the baseline
b. For the years 2018-2022, the cap shall equal 90% of the baseline
c. For the years 2023-2027, the cap shall equal 85% of the cap for the years 2018-2022, defined above in (b)(5)b.
d. For the years 2028-2032, the cap shall equal 85% of the cap for the years 2023-2027, defined above in (b)(5)c.
e. For the years 2033-2037, the cap shall equal 85% of the cap for the years 2028-2032, defined above in (b)(5)d.
f. For the years 2038-2042, the cap shall equal 85% of the cap for the years 2033-2037, defined above in (b)(5)e.
g. For the years 2043-2047, the cap shall equal 85% of the cap for the years 2038-2042, defined above in (b)(5)f.
h. For the years 2048-2052, the cap shall equal 85% of the cap for the years 2043-2048, defined above in (b)(5)g.
i. For the years 2053-2057, the cap shall equal 85% of the cap for the years 2048-2052, defined above in (b)(5)h.
j. For the years 2058-2062, the cap shall equal 85% of the cap for the years 2053-2057, defined above in (b)(5)i.

(6) CARBON DIOXIDE EQUIVALENTS- The term `carbon dioxide equivalents' means, for each greenhouse gas, the amount of each such greenhouse gas that makes the same contribution to global warming as one metric ton of carbon dioxide, as determined by the Administrator.

(7) CERTIFIED EMISSIONS REDUCTIONS– 'The term 'certified emissions reductions' means emissions reductions certified under the Clean Development Mechanism of the 1997 Kyoto Protocol to the 1992 United Nations Framework Convention.

(8) CLIENT – The term 'client' means any individual, corporation, or public body receiving support from the Bank for a covered project.

(9) COMPLIANCE PERIOD – The term 'compliance period' means any of the consecutive five-year periods beginning in 2013.

(10) COVERED PROJECT – The term 'covered project' means any project in a covered sector currently or at any time after the date of this Act's enactment supported in part or in whole by the Bank for a client.

(11) COVERED SECTORS – The term `covered sectors' includes, but is not limited to, the aerospace, agriculture, aircraft, chemical, fossil fuel transport, fossil fuel extraction, mineral extraction, fossil fuel distribution, construction, electricity, transportation, petrochemical, refining, telecommunications, waste management, rail, industry, and commercial sectors. 'Covered sectors' also includes any sector related to deforestation, including but not limited to, the logging and land-clearing sectors.

(12) DATABASE – The term 'database' means the Export-Import Bank Greenhouse Gas Database established in (c) of this Act.

(13) EMISSIONS- The term ` emissions' means greenhouse gas emissions from

a. a facility operated or owned, wholly or in part, by a client as part of a covered project;
b. the subsequent combustion of fossil fuels extracted, shipped, and/or transported by a client as part of a covered project.

(14) EXPORT CREDIT AGENCY – The term 'export credit agency' means any public agency that provides financial support through government-backed loans, guarantees, credits and/or insurance to private corporations from their home country for the purpose of doing business abroad.

(15) FACILITY- The term `facility' means a building, structure, or installation located on any one or more contiguous or adjacent properties of a client.

(16) GREENHOUSE GAS- The term `greenhouse gas' means--

a. carbon dioxide;
b. methane;
c. nitrous oxide;
d. hydrofluorocarbons;
e. perfluorocarbons;
f. sulfur hexafluoride; and
g. any other gas(es) so designated by the EPA Administrator.

(17) INVENTORY – The term 'inventory' means the Export-Import Bank Greenhouse Gas Emissions Inventory established under (c) of this Act.

(18) MULTILATERAL DEVELOPMENT BANK – The term 'multilateral development bank' means any institution that provides financial support and professional advice for economic and social development activities in developing countries and that possesses:

a. broad membership, including developing borrowing countries and developed donor countries; and
b. independent legal and operating status.

(19) NEW COVERED PROJECT – The term 'new covered project' means any covered project for which allocation of support first occurs during the reporting year.

(20) ONGOING COVERED PROJECT – The term 'ongoing covered project' means any covered project which:

a. has received financial support from the Bank during a year prior to the reporting year; and
b. continues to operate and produce emissions

(21) PRESIDENT – The term 'President' means the President of the Export-Import Bank.

(22) REGISTRY – The term 'registry' means the Export-Import Bank Greenhouse Gas Emissions Reductions Registry established in (c) of this Act.

(23) SECRETARY – The term 'secretary' means the Secretary of Commerce.

(24) SUPPORT – The term 'support' shall include any financing, loans, guarantees, credit extensions (including participation in credit extensions), risk insurance, and/or any other financial assistance provided in part or in whole by the Bank to a client for the purpose of a covered project.

(25) YEAR – the term 'year' shall mean the calendar year beginning January 1 and ending December 31.

(c) Export-Import Bank Greenhouse Gas Database.

(1) Establishment – As soon as practicable after the date of enactment of this Act, and no later than June 30, 2007, the President, in coordination with the Administrator, Secretary, the Secretary of Energy, the Secretary of Agriculture, and private sector and nongovernmental organizations, shall establish, operate, and maintain a database, to be known as the 'Export-Import Bank Greenhouse Gas Database,' to collect, verify, and analyze information on greenhouse gas emissions by covered projects.

(2) Export-Import Bank Greenhouse Gas Database Components – The database shall consist of –

a. an inventory of greenhouse gas emissions; and
b. a registry of greenhouse gas emission reductions

(3) In General.

Not later than 2 years after the date of enactment of this Act, the Administrator shall promulgate regulations to design a comprehensive system for greenhouse gas emissions reporting, inventorying, and reductions registration to be used by clients.

(4) Requirements.

The Administrator shall ensure, to the maximum extent practicable, that--

a. the comprehensive system described in (c)(3) is designed to--
   i. maximize completeness, transparency, and accuracy of information reported; and
   ii. minimize costs incurred by clients in measuring and reporting greenhouse gas emissions; and
b. the regulations promulgated under (c)(3) establish procedures and protocols necessary--

i. to prevent the double-counting of greenhouse gas emissions or emission reductions reported by more than 1 reporting client;
ii. to provide for corrections to errors in data submitted to the database;
iii. to provide for adjustments to reflect new technologies or methods for measuring or calculating greenhouse gas emissions;
iv. to account for changes in registration of ownership of emission reductions resulting from a voluntary private transaction between reporting clients; and
v. to clarify the responsibility for reporting in the case of any facility owned or controlled by more than 1 client.

(5) SERIAL NUMBERS.

Through regulations promulgated under paragraph (c)(3), the Administrator shall develop and implement a system that provides--

a. for the verification of submitted emissions reductions registered under (e).;
b. for the provision of unique serial numbers to identify the registered emission reductions made by an entity relative to the baseline of the entity;
c. for the tracking of the registered reductions associated with the serial numbers; and
d. for such action as may be necessary to prevent counterfeiting of the registered reductions.

(d) Public Reporting.

(1) Beginning in 2007, the Bank shall transmit to the Congress and to the Secretary, no later than 31 December of each year, a complete and detailed report of its operations under this Act. This report shall also be published and available to the general public in electronic form. Such report shall be as of the close of business on the last day of each year. The reporting shall be in accordance with the accounting measures set out in (e)(5). The report shall specify:

a. New Covered Projects –
i. the location of each new covered project;
ii. the actual annual emissions and/or offsets in carbon dioxide equivalents of each new covered project for the reporting year;
iii. the expected aggregate of emissions over the lifetime of the project in carbon dioxide equivalents;
iv. the expected aggregate of offsets over the lifetime of the project in carbon dioxide equivalents;
v. the total financing in dollars of each new covered project; and
vi. the covered sector of each new covered project.

b. Ongoing Covered Projects –
i. the location of each ongoing covered project;
ii. the actual annual emissions and/or offsets in carbon dioxide equivalents of each ongoing covered project for the reporting year;
iii. the expected remaining aggregate emissions over the lifetime of the project in carbon dioxide equivalents;
iv. the expected aggregate of offsets over the lifetime of the project in carbon dioxide equivalents;
v. any financing approved during the reporting year for each ongoing covered project; and
vi. the covered sector of each ongoing covered project.

c. Aggregate Emissions –
i. the actual emissions from all new and ongoing covered projects during the reporting year;
ii. the actual offsets from all new and ongoing covered projects during the reporting year;
iii. the net of emissions minus offsets from all new and ongoing covered projects during the reporting year;
iv. the expected emissions and/or offsets for the next year from ongoing covered projects that shall continue to operate during that year; and
v. the actual emissions and/or offsets from all covered projects during each of the five previous reporting years.

d. Energy Security –
i. The Bank shall annually assess its contribution towards promoting domestic energy

security.

ii. The Bank shall transmit a report no later than June 30 of each year detailing its impact on energy security, including but not limited to—

1. its contribution to geographic diversification of energy projects; and
2. its contribution to developing domestic energy technologies for export.

(2) Baseline Emissions Report.

No later than June 30, 2008, the Bank shall report to the Congress and the Secretary its Baseline. The Baseline Emissions Report shall specify—

a. the Baseline in terms of carbon dioxide equivalents, specifying:

i. gas-by-gas measurements of greenhouse gas emissions during the baseline period
ii. cumulative greenhouse gas emissions during the baseline period; and

b. aggregate annual emissions for all covered projects for each year of the baseline period.

The report shall also be available to the public electronically. The reporting shall be in accordance with the accounting measures set out in (e)(5).

(e) Greenhouse Gas Reductions.

(1) Requirements.

a. Consistent with the objectives of 12 USCS § 635(b)(1)(A), the Bank shall establish procedures to take into account the potential emissions of goods and services for which support is requested under its financial lending, guarantee, and insurance programs. Such procedures shall apply to all covered sectors.

b. Consistent with 12 USCS § 635i-5(a)(2), the Bank shall have the authority to withhold funding from projects, the support of which would create emissions found by the Bank to be either excessive.

c. The Bank shall withhold funding from projects, the support of which would cause the Bank to violate the emissions reductions requirements of this Act.

d. For the years 2013-2017, annual aggregate emissions from all new and ongoing projects for the reporting year shall not exceed the baseline. No later than 30 June 2017, the Bank shall transmit to Congress and the Secretary a report detailing its status under this requirement. The report shall also be available to the public electronically.

e. For the years 2018-2022, annual aggregate emissions from all new and ongoing projects for the reporting year shall not exceed 90% of the baseline. No later than 30 June of each year, the Bank shall transmit to Congress and the Secretary a report detailing its status under this requirement. The report shall include whether or not the Bank successfully met its cap in the preceding year and whether or not the Bank is scheduled to meet its current year cap. The report shall also be available to the public electronically.

f. For the years 2023-2062, annual aggregate emissions from all new and ongoing covered projects for each year shall not exceed each year's designated cap defined in (b)(5)c-j of this Act. Not later than June 30 of each year, the Bank shall transmit to the Congress and the Secretary a report detailing its status under this requirement. The report shall include whether or not the Bank successfully met its cap in the preceding year and whether or not the Bank is scheduled to meet its current year cap. The report shall also be available to the public electronically.

g. In 2060, Congress shall re-evaluate the effect of the cap and may continue or reduce the cap for subsequent compliance periods.

(2) Credit for Early Action –

The Bank shall receive credits in the amount of one ton of credit against any future emissions compliance period(s) per ton of avoided emissions if:

a. reductions below the baseline occur before 2013; and
b. the Bank demonstrates to the Secretary in accordance with accounting procedures set out in (5) of this section that such reductions have occurred.

(3) Banking –

The Bank shall receive credit in the amount of one ton of credit against any future emissions compliance period(s) per ton of avoided emissions if:

a. reductions below a compliance period cap occur during that same compliance period; and
b. the Bank demonstrates to the Secretary in accordance with accounting procedures set out in (5) of this section that such reductions have occurred.

(4) Offsets

a. Agricultural Sequestration – The Bank shall receive credits in the amount of one ton of credit against --
   i. the current compliance period's cap; or
   ii. any future compliance period(s)
per ton of avoided emissions if the Bank demonstrates to the Secretary in accordance with accounting procedures set out in (5) of this section that such reductions have occurred.

b. Forest Protection – The Bank shall receive credits in the amount of one ton of credit against –
   i. the current compliance period's cap; or
   ii. any future compliance period(s)
per ton avoided if the Bank demonstrates that the avoided deforestation is the result of actions by a covered project in accordance with accounting procedures set out in (5) of this section.

(5) Market-Based Permitting.

a. Generally--
Prior to the end of each year beginning 2008, each client shall submit to the President as many allowances as necessary to account for the emissions of all of its covered projects.

b. Allocation –
   i. The Bank shall by 2007 establish a procedure by which it allocates allowances to the covered projects to which it lends support.
   ii. The total sum of allowances allocated shall not exceed the emissions limits of the Bank established in (e)(1)d-f of this Act.
   iii. Allowances will be allocated within the provisions of project support contracts for all covered projects –
      1. that will continue operating in part or in whole through and after 2012; and
      2. that are approved after the date of enactment.
   iv. After the date of enactment, all contracts for covered projects will require project managers to be responsible for monitoring emissions throughout the project's lifetime.

c. Trading--
The Bank shall develop a system compatible with the regulations promulgated under (c)(3) for the purpose of providing a market in which allowances may be traded among clients. The Bank shall promulgate regulations to create an independent agency in order to manage the allowance-trading market.

(6) Accounting.

a. Measurement and Verification.
   i. STANDARDS-
      1. IN GENERAL- Not later than 1 year after the date of enactment of this Act, the Secretary shall establish by rule, in coordination with the Administrator, the Secretary of Energy, and the Secretary of Agriculture, comprehensive measurement and verification methods and standards to ensure a consistent and technically accurate record of greenhouse gas emissions, emission reductions, sequestration, and atmospheric concentrations for use in the registry.
      2. REQUIREMENTS- The methods and standards established under paragraph (3)(5)a.i.1. shall include--
         a. a requirement that a covered project use a continuous emissions monitoring system, or another system of measuring or estimating emissions that is determined by the Secretary to provide information with precision, reliability, accessibility, and timeliness similar to that provided by a continuous emissions monitoring system where technologically feasible;
         b. establishment of standardized measurement and verification practices for reports made by all covered projects participating in the registry, taking into account--
            i. protocols and standards in use by covered projects

requiring or desiring to participate in the registry as of the date of development of the methods and standards under paragraph ---;

ii. boundary issues, such as leakage;

iii. avoidance of double counting of greenhouse gas emissions and emission reductions; and

iv. such other factors as the Secretary, in consultation with the Administrator, determines to be appropriate;

c. establishment of methods of--

i. estimating greenhouse gas emissions, for those cases in which the Secretary determines that methods of monitoring, measuring or estimating such emissions with precision, reliability, accessibility, and timeliness similar to that provided by a continuous emissions monitoring system are not technologically feasible at present; and

ii. reporting the accuracy of such estimations;

d. establishment of measurement and verification standards applicable to actions taken to reduce, avoid, or sequester greenhouse gas emissions;

e. establishment of such other measurement and verification standards as the Secretary, in consultation with the Secretary of Agriculture, the Administrator, and the Secretary of Energy, determines to be appropriate;

f. establishment of other features that, as determined by the Secretary, will allow clients to adequately establish a fair and reliable measurement and reporting system.

ii. REVIEW AND REVISION- The Secretary shall at least annually review, and revise as necessary, the methods and standards developed under subsection (e)(5)a.i.

iii. PUBLIC PARTICIPATION- The Secretary shall--

1. make available to the public for comment, in draft form and for a period of at least 90 days, the methods and standards developed under subsection (e)(5)a.i; and

2. after the 90-day period referred to in paragraph (e)(5)a.iii.1, in coordination with the Secretary of Energy, the Secretary of Agriculture, and the Administrator, adopt the methods and standards developed under subsection (e)(5)a.i for use in implementing the database.

iv. EXPERTS AND CONSULTANTS-

1. IN GENERAL- The Secretary may obtain the services of experts and consultants in the private and nonprofit sectors in accordance with section 3109 of title 5, United States Code, in the areas of greenhouse gas measurement, certification, and emission trading.

2. AVAILABLE ARRANGEMENTS- In obtaining any service described in paragraph (e)(5)a.iv.1., the Secretary may use any available grant, contract, cooperative agreement, or other arrangement authorized by law.

b. The annual aggregate emissions shall include--

i. total annual emissions for the reporting year from any covered project supported in part or in whole by the Bank unless the project is exclusively supported by the Bank and one or more other agencies that apply at least as stringent emissions reductions requirements as this Act requires. In such a case, the Bank shall enter into consultations with other agencies and governments to ensure that the objective of this act is met while respecting the sovereign authority of other nations. If the only other agency or agencies are agents of the United States, the emissions shall be divided according to the proportion of support provided by each source.

ii. total annual emissions from any covered project for the reporting year from any project that was financed in whole or in part by the Bank at any time after the date

of this Act's enactment and is not receiving financing during the current reporting year, unless

1. the project is supported exclusively by the Bank and another agency (or agencies) as described in (e)(5)b.i.; or
2. the project is supported exclusively by or within one or more countries that have applied at least as stringent emissions reductions requirements as set forth in this Act. In such a case, the Bank shall enter into consultations with other governments to ensure that the objective of this act is met while respecting the sovereign authority of other nations; or
3. the project is no longer receiving funding because of client to produce sufficient allowances to account for its emissions in accordance with (e)(10)b . In such a case, the Bank shall only account for the annual emissions from that project during the time it supported the project plus one year's worth of emissions.

c. Emissions from the extraction and/or transportation of fossil fuels shall be accounted for using standard emissions factors from the Energy Information Administration.

(7) Reporting.

a. Beginning the date of enactment, all parties submitting project proposals under covered sectors shall be required to estimate the emissions of their proposed covered projects in terms of carbon dioxide equivalents. This information shall be made available to the public electronically on the website of the Export-Import Bank for review and comment. Interested members of the public shall have no fewer than ninety (90) days to submit comments regarding proposed projects before the Bank Board of Directors is permitted to vote for or against such projects.

b. Beginning in 2007, all clients shall transmit to the President reports no later than June 30 and no later than December 31 of each year detailing the following information for each covered project—

i. project location;
ii. project sector;
iii. actual annual emissions and/or offsets in carbon dioxide equivalents;
iv. expected aggregate of emissions and/or offsets over the lifetime of the project in carbon dioxide equivalents; and
v. any change between the actual annual emissions and/or offsets and the predicted emissions and/or offsets.

c. Beginning in 2010, all clients shall transmit to the President reports no later than June 30 of each year detailing the following additional information for each covered project in accordance with the standards set out in (e)(5)a.i.—

i. any difference in carbon dioxide equivalents between the actual emissions and/or offsets for that year and the allowances covering those emissions; and
ii. any explanation for a failure to provide enough allowances to cover the actual emissions for the reporting year.

(8) Auditing.

a. The Bank shall establish a procedure by which a third-party auditor verifies its compliance with the accounting requirements set forth in this Act.

b. The Bank shall establish a procedure by which one or more separate third-party auditors verify client compliance with the accounting requirements set forth in this Act.

(9) Certified Emissions Reductions.

The Bank may not obtain and/or submit Certified Emissions Reductions credits issued under the Kyoto Protocol in order to meet its emissions reduction requirements.

(10) Compliance.

The Bank shall in good faith carry out the requirements set forth by this Act.

a. The Bank shall require accurate estimates from any party proposing a covered project and requesting support.

b. It shall establish procedures to verify the estimation and accounting measures of such parties.

c. The Bank shall have the authority to verify client compliance at any time. Clients must possess no fewer than 80% of the allowances necessary to account for the emissions

generated by their covered projects at the time of inquiry in the case that the Bank inquires prior to the end of the year.

d. The Secretary shall verify annual accounting and reporting practices of the Bank and report to the Congress. The Secretary shall have the authority to investigate Bank accounting procedures at any time.

(11) Penalties.

The Bank shall penalize non-compliant clients in the following manners--

a. Clients that fail to provide sufficient allowances to account for the emissions of covered projects shall be required to make up the difference to the atmosphere at a ratio of 1.3 tonnes per one tonne of carbon dioxide equivalent that exceeds the presented allowances within 3 months of the date of non-compliance.

b. The Bank shall withdraw support from clients that do not comply with (e)(10)a.

c. Clients that do not comply with (e)(10)a are also subject to civil action.

Failure of the Bank to comply with emissions reductions requirements will result in:

a. Reduced appropriations for the year following the first non-compliant year by at least the value of the support offered to projects contributing emissions and receiving approval chronologically after the Bank first failed to comply.

b. De-authorization following five consecutive non-compliant years.

The Bank shall also be subject to civil action should it fail to comply with any requirements of this Act.

(f) Cohesion among other International Financial Institutions.

(1) The Secretary shall seek to encourage the adoption and application of comparable emissions reductions practices by other Multilateral Development Banks and Export Credit Agencies. S/he shall transmit a report to Congress no later than 30 August 2012 detailing its progress; and s/he shall transmit reports to the Congress no later than 30 August annually beginning in 2013 until all other Multilateral Development Banks and Export Credit Agencies have adopted and applied comparable emissions reductions practices.

(2) The Bank shall not provide assistance or advice in finding alternate external financing to projects that it has rejected as a result of determining such projects to be significant and unnecessary causes of greenhouse gas emissions.

(3) The Bank shall prepare a report not later than June 30 of each year following the enactment date of this Act, cataloging the projects that it rejects, including the reasons why such projects are significant and unnecessary causes of greenhouse gas emissions. It shall circulate the catalog of rejected projects to other International Financial Institutions.

(g) Sustainable Energy Technology Promotion.

(1) Generally--

The Bank shall promote the research and development of sustainable energy technology.

(2) Sustainable energy technology shall be redefined for all official Bank business to exclude large hydroelectric projects as defined by the World Commission on Dams unless large hydroelectric projects comport with the standards set forth by the World Commission on Dams.

(1) The Congress in its annual appropriations may allocate a particular amount of funding that shall only be allocated by the Bank, or jointly with the U.S. Agency for International Development for the support of projects designed to incorporate and/or research sustainable technologies.

BIBLIOGRAPHY

Ackerman, Bruce A. and Richard B. Stewart. "Reforming Environmental Law." *Stanford Law Review* 37 (1985): 1335-1336.

"Activists, States Question EPA Mercury Analysis In Petitions On Rule." *Risk Policy Report* 12 (21 June 2005).

Adams, Frederick C. Book Review in *The Journal of American History* 91(2004): 1080.

---. *The Export-Import Bank and American Foreign Policy 1934-1939.* Colombia, MO: University of Missouri Press, 1976.

Adamson, Michael R. Book Review. *Business History Review* 77 (2003): 531.

Akerman, J. "Sustainable Air Transport – on track in 2050." *Transportation Research Part D* 10 (2005): 111-126.

Alden, Edward et al. "Export credit agencies' graft crackdown stalls Germany and Japan are blocking the introduction of international guidelines designed to prevent corruption." *The Financial Times*, 15 February 2006.

Bank of America. "Bank of America Climate Change Position." Undated. Available <http://www.bankofamerica.com/environment/index.cfm?template=env_clichangepos> Accessed 9 April 2006.

Baron, David P. "Exim at Fifty: At a Crossroads?" in Rita M. Rodriguez, ed. *The Export Import Bank at Fifty: The International Environment and the Institution's Role.* Lexington, MA: Lexington Books, 1987.

Baumert, Kevin and Jonathan Pershing. *Climate Data: Insights and Observations.* Pew Center on Global Climate Change: December 2004. Available <http://www.pewclimate.org/docUploads/Climate%20Data%20new%2Epdf> Accessed 9 April 2006.

Bean, Jonathan J. Review, Economic History Services, Jul 1, 2003. Available <http://www.eh.net/bookreviews/library/0642.shtml> Accessed 4 April 2006.

Becker, William H and William J. McClenahan, Jr. *The Market, the State, and the Export-Import Bank of the United States.* Cambridge University Press, 2003.

Beder, Sharon. "Trading the Earth: The politics behind tradeable pollution rights." *Environmental Liability* 9 (2001): 152-160.

Bell, Ruth Greenspan and Clifford Russell. "Environmental Policy for Developing Countries." *Issues in Science and Technology*, Vol. 18 (Spring 2002). Available

<http://www.issues.org/issues/18.3/greenspan.html>

Benkovic, Stephanie and Joseph Kruger. "To Trade or Not To Trade? Criteria for Applying Cap and Trade," in Optimizing Nitrogen Management in Food and Energy Production and Environmental Protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy, *TheScientificWorld* (2001), 1.

Berne Union. "History." Berne Union website, <http://www.berneunion.org.uk/history.htm> Accessed 5 April 2006.

Betzenbichler,Werner. "The Role of the Verifier: Validation and Verification in 'Cap and Trade' and 'Baseline and Credit' Systems." *Intereconomics* 39 (2004): 123-127.

"Blowing Hot and Cold." *The Economist.* 4 July 2002.

Bradford, David and Michael Herz. WWS 467: Environmental Regulation: Law, Science, and Policy. Princeton University, Fall 2003.

Brunnermeier, Smita. FRS 155: The Economics of Environmental Protection. Princeton University, Fall 2002.

Brunnermeier, Smita and Arik Levinson. "Examining the evidence on environmental regulations and industry location." *Journal of Environment and Development* 13 (2004): 6-41.

Carraro, Carlo. "Climate change policy: models, controversies, and strategies." in Tom Tietenberg and Henk Folmer, eds., *The International Yearbook of Environmental and Resource Economics 2002/2003*. Northampton, MA: E. Elgar, 2002.

Chambers, Bradnee, ed. *Inter-linkages: The Kyoto Protocol and the International Trade and Investment Regimes*. NY: United Nations University Press, 2001.
W. Bradnee Chambers, "International Trade Law and the Kyoto Protocol: Potential Incompatibilities,"
Zhong Xiang Zhang, "Greenhouse-gas Emissions Trading and the World Trading System,"
Jacob Werksman, "Greenhouse-gas Emissions trading and the WTO,"

Chicago Climate Exchange. "About" 2005. <http://www.chicagoclimatex.com/about/program.html> Accessed 9 April 2006.

---. "Overview and Benefits." 2005. Available <http://www.chicagoclimatex.com/about/pdf/CCX_Corp_Overview_2005.pdf> Accessed March 2006.

Chinese Department of Resources Conservation and Comprehensive Utilization of State Economic and Trade Commission. "The 10th Five-Year Plan for Energy Conservation and Resources Comprehensive Utilization." Available at <http://www.chinagate.com.cn/english/1938.htm>

Clark, Peter B. Statement at "SYMPOSIUM ON ENERGY AND INTERNATIONAL LAW: DEVELOPMENT, LITIGATION, AND REGULATION." Transcript published in *Texas International Law Journal* 36 (2001): 1

Congressional Budget Office (CBO). Terry Dinan for the CBO. "CBO Study: An Evaluation of Cap-and-Trade Programs for Reducing U.S. Carbon Emissions." June 2001. Available <http://www.cbo.gov/ftpdocs/28xx/doc2876/Cap&Trade.pdf>

---. Terry Dinan, for the Congressional Budget Office. "A CBO Paper: Shifting the Cost Burden of a Carbon Cap and Trade Program." July 2003.

Cooper, John C. B. "Price elasticity of demand for crude oil: estimates for 23 countries." *OPEC Review,* March 2003.

Daalder, Ivo H. "Are the United States and Europe Heading for Divorce?." *International Affairs* 73 (2001): 553-567.

Dasgupta, Chandrashekhar. "The Climate Change Negotiations." in Irving Mintzer and J. Amber Leonard, *Negotiating Climate Change*. New York: Press Syndicate of the University of Cambridge, 1994.

de Moor, André. "Towards a Grand Deal on subsidies and climate change." *Natural Resources Forum* 25 (2001): 167-176.

"Dirt Poor." *The Economist*. 19 March 1998.

Dobson, Alan P. Review in *Diplomatic History* 29 (2005): 375-378.

Dudek, Daniel J., Richard B. Stewart, and Jonathan B. Wiener. "Environmental Policy for Eastern Europe: Technology-Based Versus Market-Based Approaches." *Columbia Journal of Environmental Law*, Vol 17 (1992), p.8.

Eilperin,Juliet. "G-8 Urges Action on Global Warming, With General Goals; U.S Resists Gas-Reduction Levels." *The Washington Post*, 8 July 2005, p. A19.

---. "U.S. Pressure Weakens G-8 Climate Plan; Global-Warming Science Assailed." *The Washington Post,* 17 June 2005, p. A01.

Ellerman, A. Denny and David Harrison, Jr. *Emissions Trading in the U.S.: Experience, Lessons, and Considerations for Greenhouse Gases*. Prepared for the Pew Center on Global Climate Change. May 2003. Available <http://www.pewclimate.org/docUploads/emissions_trading.pdf> Accessed 9 April 2006.

"Emissions Trading Directive a significant step forward, say NGOs." Press Release. 2 July 2002. Available http://www.climnet.org/pubs/PR%20ET%2002%20July%202003.pdf. Accessed

March 2006.

Energy Information Administration. *Annual Energy Outlook 2005*. Table 16, Renewable Energy Generating Capacity and Generation. Available <http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_16.xls>

---. *Annual Energy Outlook 2006*. Table 16, Renewable Energy Generating Capacity and Generation. Available <http://www.eia.doe.gov/oiaf/aeo/excel/aeotab_16.xls>

---. *International Energy Annual 2005*, "Table H.1co2," Available <http://www.eia.doe.gov/pub/international/iealf/tableh1co2.xls>

---. *International Energy Outlook 2005*. Released July 2005. Available <http://www.eia.doe.gov/oiaf/ieo/emissions.html>

---. "Issues in Focus: Production Tax Credit for Renewable Electricity Generation." *Annual Energy Outlook 2005*. <Available http://www.eia.doe.gov/oiaf/archive/aeo05/issues.html>

---. Figure 67. "World Carbon Dioxide Emissions by Region, 1990-2025." In EIA, *International Energy Outlook 2005*. Figure Data at <http://www.eia.doe.gov/oiaf/ieo/excel/figure_69data.xls>

Environmental Defense. "From Obstacle to Opportunity: How acid rain emissions trading is delivering cleaner air." September 2000. Available < http://www.environmentaldefense.org/documents/645_SO2.pdf > Accessed 9 April 2006.

Evans, Peter C. and Kenneth A. Oye. "International Competition: Conflict and Cooperation in Government Export Financing," in Gary Clyde Hufbauer and Rita M. Rodriguez, ed.s *The Ex-Im Bank in the 21st Century: A new approach?* Washington, DC: Institute for International Economics, January 2001.

Export-Import Bank of the United States. 2005 Annual Environmental Exports Program Conference Archives. Available, <http://www.exim.gov/news/annualconf/annual_conf_2005.html>

---. Annual Reports 2002, 2003, 2004, 2005. Available <http://www.exim.gov/about/reports/ar/index.htm> Accessed 9 April 2006.

---. "Environmental Exports Program." Last Updated 6 October 2005, <http://www.exim.gov/products/special/environment.html.> PDF version Available <http://www.exim.gov/pub/pdf/ebd-e-01.pdf> dated 21 September 2005.

---. "Export Import Bank Competitiveness Report 2004." Available <http://www.exim.gov/about/reports/compet/compet2004.pdf> Accessed March 2006.

---. "Environmental Procedures and Guidelines." Revised 9 April 2006. Available <http://www.exim.gov/products/policies/environment/envproc.html> Accessed 9 April 2006.

---. "Mission." Undated. <http://www.exim.gov/about/mission.html> Accessed March 2006.

Export Import Bank of the United States Engineering and Environment Division (Ex-Im E&E). "Ex-Im Bank's Role in Greenhouse Gas Emissions and Climate Change," 1999. Copy on file with the author.

The Federal Reserve Board of Richmond. "William McChesney Martin, Jr." Biography. Available: <http://www.richmondfed.org/publications/economic_research/the_fiftieth_anniversary_of_the_treasury-federal_reserve_accord/biographies/martin.cfm >

Feinberg, Richard E. *Subsidizing success: the Export-Import Bank in the U.S. Economy.* New York: Cambridge University Press, 1982.

Fidler, Stephen. "Germany blocks U.S. environment guidelines." Financial Times (London,England), 20 July2000. London Edition, p. 14

Flesher, Dale. Reviews, *Enterprise and Society* 5 (2004). Available <http://muse.jhu.edu/journals/enterprise_and_society/v005/5.1flesher.pdf> Accessed 4 April 2006.

Fullterton, Don and Robert N. Stavins. "How Economists See the Environment," in Robert N. Stavins, ed., *Economics of the Environment: Selected Readings*, Fourth Edition. New York: W.W. Norton and Company, 2000.

Gelbspan, Ross. "Toward A Global Energy Transition," *Petropolitics* Available <http://www.irc-online.org/fpif/pdf/petropol/ch5.pdf. Accessed 9 April 2006.>

Gianturco, Delio. *Export Credit Agencies: The Unsung Giants of International Trade and Finance.* Westport, CT: Quorum Books, 2001.

Glaser, Peter. "Court Rejects Activists' Suit to Enforce Federal CO2 Limits," *Washington Legal Foundation Legal Opinion Letter* Vol. 15, No. 19 (23 September 2005).

Gorrie Peter. "U.S. takes hard-line at post-Kyoto talks." *The Toronto Star,* 30 November 2005, p.A18.

Government Accountability Office (GAO). "CLIMATE CHANGE: Information on Three Air Pollutants' Climate Effects and Emissions Trends." April 2003. Available < http://www.gao.gov/new.items/d0325.pdf>

The Governor of California. *California Executive Order S-3-05.* Available

<http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm.>

Grobman, Jeffrey and Janis Carey. "The Effect of Policy Uncertainty on Wind-Power Investment." *The Journal of Energy and Development* 28 (2002): 1-14.

Group of Eight (G-8). "Gleneagles Communiqué." 2005. Available on NPR's website, <http://www.npr.org/documents/2005/jul/g8_communique_2005.pdf > Accessed 9 April 2006.

Gruber, Jonathan. *Public Finance and Public Policy*. New York: Worth Publishers, 2005.

Haites, Erik and Fiona Mullins. "Linking Domestic and Industry Greenhouse Gas Emission Trading Systems." Prepared for the Electric Power Research Institute, International Energy Agency, and International Emissions Trading System, October 2001.

Hampton, Kate. "Banking on Climate Change: How Public Finance for Fossil Fuel Projects is Shortchanging Clean Development." Washington, DC: Sustainable Energy and Economy Network, 17 November 2000.

Hardin, Garrett. "The Tragedy of the Commons." *Science* 162 (1968): 1243-1248.

Hargrave, Tim. "An Upstream/Downstream Hybrid Approach to Greenhouse Gas Emissions Trading." Center for Clean Air Policy. June 2000. Available <http://www.ccap.org/pdf/Hybrid1.PDF> Accessed 9 April 2006.

Harvey, Fiona and Amy Kazin. "Environmentalists criticize US-led agreement." *Financial Times,* 29 July 2005, p. 10.

Hawley, Susan. "Underwriting Bribery" Briefing 30, The Corner House, December 2003. Available <http://www.thecornerhouse.org.uk/pdf/briefing/30ecabribe.pdf>

Herz, Noreena. *The Debt Threat.* New York: HarperCollins Publishers, 2004.

Hoel, Michael. "International trade and the environment: how to handle carbon leakage." in Henk Folmer et al., eds. *Frontiers of Environmental Economics*. Cheltenham, U.K. and Northampton, Mass.: Elgar, 2001.

Hull, Cordell. "Address to the Associated Press April 22 1934 by U.S. Secretary of State Cordell Hull." *New York Times*, 23 April 1934, p. 16

Inhofe, James. Statement of Senator James Inhofe R-OK before the U.S. Senate Committee on Environment & Public Works. Hearing on "Kyoto Protocol: Assessing the Status of Efforts to Reduce Greenhouse Gases." 5 October 2005. Available <http://epw.senate.gov/hearing_statements.cfm?id=246962> Accessed 9 April 2006.

International Energy Agency (IEA). *World Energy Outlook: Looking at Energy Subsidies: Getting the Prices Right,* 1999.

IEA and UNEP. "Energy Subsidy Reform and Sustainable Development: Challenges for Policymakers." Submission to the 9th Session of the United Nations Commission on Sustainable Development. April 2001. <Available http://www.iea.org/textbase/papers/2001/sustain_report.pdf> Accessed 9 April 2006.

Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2001: Working Group II: Impacts, Adaptation, and Vulnerability*. Chapter 19. Executive Summary. Available <http://www.grida.no/climate/ipcc_tar/wg2/658.htm>

---. *Climate Change 2001: Impacts, Adaptation, and Vulnerability,* Summary for Policymakers. Available <http://www.grida.no/climate/ipcc_tar/wg2/008.htm#25>

---. "Distribution of Total Impacts," §19.4.3 in *Climate Change 2001: Impacts, Adaptation, Vulnerability.* Available <http://www.grida.no/climate/ipcc_tar/wg2/675.htm>

---. *Synthesis Report.* Summary for Policymakers. 2001

Jacoby, Henry D. and A. Denny Ellerman. "The safety valve and climate policy." *Energy Policy* 32 (2004): 481-491.

Javorcik, Beata Smarzynska and Shang-Jin Wei. "Pollution Havens and FDI." *Contributions to Economic Analysis and Policy* 3 (2004): 1244-1244.

Kline, David. "Positive feedback, lock-in, and environmental policy." *Policy Sciences* 34 (2001): 95-107.

Kormos, Cyril, Brett Grosko, and Russell A. Mittermeier. "U.S. Participation in International Environmental Law and Policy." *Georgetown international Law Review* 13 (2001): 661-696.

Kruger, Joseph, Katharine Grover, and Jeremy Schreifels. "OECD Global Forum on Sustainable Development: Emissions Trading." 17-18 March 2003. Document No. CCNM/GF/SD/ENV(2003)15/Final, Available <http://www.oecd.org/dataoecd/11/25/2957736.pdf>

Kruger, Joseph and Melanie Dean. "Looking Back on SO2 Trading: What's good for the Environment is good for the Market." *Public Utilities Fortnightly* 1 August 1997, Available <http://www.pur.com/pubs/2616.cfm> Accessed April 2006.

Kuik, Onno and Machiel Mulder. "Emissions trading and competitiveness: pros and cons of relative and absolute schemes." *Energy Policy* 32 (2004): 737-745.

Kump, Lee. "Reducing uncertainty about carbon dioxide as a climate driver." *Nature* 419 (2002): 188-190.

Kump, Lee, James Kasting, and Robert Crane. *The Earth System.* Second Edition. Upper

Saddle River, NJ: Pearson Education, Inc, 2004.

Labohm, Hans, Simon Rozendaal, and Dick Thoenes. *Man-Made Global Warming: Unravelling a Dogma*. Brentwood, Essex, UK: Multi-Science Publishing Co. Ltd., 2004.

Lean, Geoffrey. "No Thanks, More a Slap in the Face." *The Independent* (London) 31 July 2005, p. 30

Levit, Janet Koven. "The Dynamics of International Trade Finance Regulation: The Arrangement on Officially Supported Export Credits." *Harvard International Law Journal* 45 (2004): 65-158.

"Local Difficulties." *The Economist*. 4 July 2002.

Mahoney, James. Interview, 14 March 2006. Transcript on file with the author.

Maurer, Crescencia. "The Climate of Export Credit Agencies." *Climate Notes*. World Resources Institute, May 2000.

McKibbin, Warwick J. and Peter J. Wilcoxen. "The Role of Economics in Climate Change Policy." *Journal of Economic Perspectives* 16 (2002): 107-129.

Moravcsik, Andrew. "Disciplining Trade Finance: The OECD Export Credit Arrangement." *International Organization* 43(1989): 173-205.

Najam, Adil, Saleemul Huq, and Youba Sokona. "Climate Negotiations Beyond Kyoto: developing country concerns and interests." *Climate Policy* 3 (2003): 221-231.

National Climactic Data Center (NCDC). "2005 Annual Climate Review: U.S. Summary." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/us-summary.html#precip > Accessed 8 April 2006.

---. "Climate of 2005 –Annual Report." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html > Accessed 8 April 2006.

---. "Climate of 2005 Annual Review." Image at <http://www.ncdc.noaa.gov/img/climate/research/2005/ann/us-events2005.gif> Accessed 8 April 2006.

---. "Climate of 2005: Annual Review U.S. Drought." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/drought-summary.html> Accessed 8 April 2006.

---. "Climate of 2005 Atlantic Hurricane Season." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/hurricanes05.html> Accessed 8 April 2006.

---. "Climate of 2005: Wildfire Season Summary." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/fire05.html> Accessed 8 April 2006.

---. "Global Temperatures." 13 January 2006. Available <http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html#Gtemp> Accessed 8 April 2006.

National Renewable Energy Laboratory (of the United States). "Renewable Energy in China." Available <http://www.nrel.gov/docs/fy04osti/36045.pdf> Accessed April 2006.

National Snow and Ice Data Center. "Sea Ice Decline Intensifies." 28 September 2005. Available <http://nsidc.org/news/press/20050928_trendscontinue.html. Accessed 8 April 2006.

Neuhoff, Karsten. "Large-Scale Deployment of Renewables for Electricity Generation." *Oxford Review of Economic Policy* 21 (2005): 88-110.

Nordhaus, Robert and Kyle Danish. "Assessing the options for designing a mandatory U.S. greenhouse gas reduction program." *Boston College Law Review* 32 (2005): 97-163.

Oppenheimer, Michael. GEO339: Climate Change: Science and Policy. Princeton University, Spring 2005.

Organization for Economic Cooperation and Development (OECD). "Agreement on Untied Official Development Assistance Credits Transparency." Announcement at http://www.oecd.org/topic/0,2686,en_2649_34169_1_1_1_1_37431,00.html, document at <http://www.oecd.org/dataoecd/14/39/34669230.pdf> Accessed 9 April 2006.

---. "Convention." Undated. Available <http://www.oecd.org/document/7/0,2340,en_2649_201185_1915847_1_1_1_1,00.html> Accessed 9 April 2006.

---. "EXPORT CREDITS AND THE ENVIRONMENT: REVIEW OF RESPONSES TO THE REVISED SURVEY ON MEMBERS' PROCEDURES AND PRACTICES REGARDING OFFICIALLY SUPPORTED EXPORT CREDITS AND THE ENVIRONMENT - AS AT 6 APRIL 2005." 6 April 2006. Available <http://webdomino1.oecd.org/olis/2005doc.nsf/Linkto/td-ecg(2005)5-final> Accessed 9 April 2006.

---. "The Export Credit Group (ECG)." Undated. Available <http://www.oecd.org/document/24/0,2340,en_2649_34169_1844760_1_1_1_1,00.html> Accessed 9 April 2006.

---. *FACTBOOK 2005: An Essential Tool for Following World Economic, Social and Environmental*

Trends. 2005. Available at http://www.oecd.org/document/15/0,2340,en_2649_201185_33912015_1_1_1_1,00.html> Accessed 9 April 2006.

---. "The Participants to the Export Credit Agreement." Undated. Available <http://www.oecd.org/document/29/0,2340,en_2649_34169_1844765_1_1_1_1,00.html> Accessed 9 April 2006.

OECD and IEA, Renewable Energy: Market and Policy Trends in IEA Countries, 2004.

OECD, United Nations Environment Programme (UNEP), and the International Energy Agency, Reforming Energy Subsidies, 2002

Pew Center for Global Climate Change. "Linking U.S. and International Climate Change Strategies." April 2002. Available <http://www.pewtrusts.com/pdf/environment_pew_climate_change_strategies.pdf>

Pianin, Eric. "Mexican Company Agrees to Reduce Emissions." *Washington Post*. 5 June 2001.

Ray, John E. *Managing Official Export Credits: The Quest for a Global Regime*. Washington, DC: Institute for International Economics, July 1995.

Regional Greenhouse Gas Initiative. Website at <www.rggi.org>

---. "Overview," Available <http://www.rggi.org/docs/mou_rggi_overview_12_20_05.pdf)> Undated. Accessed March 2006.

REN21 Renewable Energy Policy Network. 2005. "Renewables 2005 Global Status Report." Washington, DC:Worldwatch Institute.

Renewable Energy Exports Advisory Committee of the Export-Import Bank of the United States. Report to the Export-Import Bank Board of Directors. 14 March 2003. Copy on file with the author.

Revkin, Andrew C. "U.S. Delegation Walks Out of Climate Talks." *The New York Times* 9 December 2005. Online Edition, Accessed 9 December 2005.

Rodriguez, Rita M. "Ex-Im Bank: Overview, Challenges, and Policy Objectives." in Gary Clyde Hufbauer and Rita M. Rodriguez, ed.s *The Ex-Im Bank in the 21st Century: A new approach?* Washington, DC: Institute for International Economics, January 2001.

Rosta, Paul. "Wind Development Flags with Tax Credit's Expiration." *Engineering News-Record* 252 (2004): 19.

Russell, Clifford S. and William J. Vaughan. "The choice of pollution control policy instruments in developing countries: arguments, evidence and suggestions." in Henk

Folmer and Tom Tietenberg, eds., *The International Yearbook of Environmenal and Resource Economics 2003/2004*. Northampton, MA: Edward Elgar, 2003.

"Russian MPs ratify Kyoto treaty." BBC News, 22 October 2004. UK Version. Available Online, <http://news.bbc.co.uk/1/hi/world/europe/3943727.stm.> Accessed 5 January 2006.

Sagar, Ambuj. "Knowledge, Rhetoric and Power: International Politics of Climate Change." *Economic and Political Weekly* 32 (1997): 3139-3148.

Salzman, James. "Decentralized Administrative Law in the Organization for Economic Cooperation and Development." *Law and Contemporary Problems* 68 (2005): 208-224.

Sandel, Michael. "It's Immoral to buy the right to pollute." in Robert N. Stavins, ed., *Economics of the Enviornment: Selected Readings*. NY: W.W. Norton and Company. 4th Ed. 2000. pp. 449-451.

Sandén, Björn A. and Christian Azar. "Near-term technology policies for long-term climate targets – economy wide versus technology specific approaches." *Energy Policy* 33 (2005): 1557-1576.

Schaper, Marcus (forthcoming). "Export Promotion, Trade, and the Environment: Negotiating Environmental Standards for Export Credit Agencies Across the Atlantic," In: *Enlarging TransAtlantic Relations: The Political Economy of Environment, Agriculture, and Energy Trade Politics across the Atlantic.* Miranda A. Schreurs, Stacy VanDeveer and Henrik Selin, eds.

Schelling, Thomas C. "The Cost of Combating Global Warming." *Foreign Affairs*, November/December 1997, Accessed via Online Archives with access provided by Princeton University.

"Special Report: Divisions between Europe and America." *The Economist,* 7 June 2001

Stavins, Robert N. "What Can We Learn from the Grand Policy Experiment? Lessons from SO_2 Allowance Trading." *The Journal of Economic Perspective* 12 (1998): 69-88.

Summers, Lawrence H. "Continuing the Fight against International Trade Finance Subsidies." In Gary Clyde Hufbauer and Rita M. Rodriguez, ed.s *The Ex-Im Bank in the 21st Century: A new approach?* Washington, DC: Institute for International Economics, January 2001.

Sussman, Frances et al. "Establishing Greenhouse Gas Emission Caps for Multinational Corporations." The Center for Clean Air Policy, June 2004.

Tietenberg, Tom. *Environmental and Natural Resource Economics*. 7th Edition. Addison-Wesley, 2005.

United Nations Framework Convention on Climate Change. "Kyoto Protocol Status of

Ratification." Available <http://unfccc.int/essential_background/kyoto_protocol/status_of_ratification/items/2613.php>

---. "Kyoto Protocol to the United Nations Framework Convention on Climate Change." Available <http://unfccc.int/resource/docs/convkp/kpeng.html>

United States Congress. *Energy Policy Act of 2005 (Public Print).*

---. H.R.6 § 1612 Sense of the Senate on Climate Change. In U.S. Congress, *Energy Policy Act of 2005*. Available <http://loc.thomas.gov>

United States Court of Appeals Opinion, No. 03-1361, Argued 8 April 2005, Decided 15 July 2005, Reissued 13 September 2005, Commonwealth of Massachusetts Et Al, Petitioners, v. Environmental Protection Agency, Available < http://pacer.cadc.uscourts.gov/docs/common/opinions/200507/03-1361a.pdf > Accessed March 2006.

United States Department of Justice. "Foreign Corrupt Practices Act Antibribery Provisions." January 2006. Available <http://www.usdoj.gov/criminal/fraud/fcpa/dojdocb.htm> Accessed 9 April 2006.

United States District Court of California San Fransisco Division. Civil Suit No. C 02 4106 JSW, Friends of the Earth, Inc. et al. v. Peter Watson et al., Available <http://www.climatelawsuit.org/documents/Complaint_2Amended_Declr_Inj_Relief.pdf> Accessed 9 April 2006.

United States Environmental Protection Agency. "Tools of the Trade: A guide to designing and operating a cap and trade program for pollution control." Document Number EPA430-B-03-002, June 2003. Available <www.epa.gov/airmarkets>

---. "Clean Air Mercury Rule – Basic Information." Undated. Last accessed 9 April 2006. Available <http://www.epa.gov/mercuryrule/basic.htm>

---. "Climate Leaders." Available <http://www.epa.gov/climateleaders/> Accessed 9 April 2006.

---."Electricity from Renewable Resources." EPA. Undated. Available <http://www.epa.gov/cleanrgy/renew.htm > Accessed 9 April 2006.

---."EPA – Clean Energy – Air Emissions." Undated. Available <http://www.epa.gov/cleanrgy/emissions.htm> Accessed 9 April 2006.

---. *The United States Experience with Economic Incentives for Protecting the Environment.* 2001.

United States Global Change Research Program. "Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change," 2000.

Available <http://www.gcrio.org/NationalAssessment/overpdf/overview.html> Accessed 9 April 2006.

United States Mayors Climate Protection Agreement. "U.S. Mayors Climate Protection Agreement." Available <http://www.ci.seattle.wa.us/mayor/climate/> Updated 7 April 2006. Accessed 9 April 2006.

---. "ENDORSING THE U.S. MAYORS CLIMATE PROTECTION AGREEMENT." Available <http://www.seattle.gov/mayor/climate/PDF/Resolution_FinalLanguage_06-13-05.pdf >

United States Senate. "Appendix A: Senate Debate over the Byrd-Hagel Resolution, July 25, 1997." in David G. Victor, *Climate Change: Debating America's Policy Options*. Sponsored by the Council on Foreign Relations, 2004, pp. 117-129.

---. The Byrd-Hagel Senate Resolution 98, entitled "A resolution expressing the sense of the Senate regarding the conditions for the United States becoming a signatory to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change." Passed 95-0 on July 25, 1997.. Text and related information available <http://thomas.loc.gov/cgi-bin/bdquery/z?d105:S.Res.98:>

United States Senate Committee on Energy and Natural Resources. "Domenici, Bingaman Announce April Climate Conference." Press Release. 22 February 2006. Available <http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=234869&Month=2&Year=2006> Accessed 9 April 2006.

United States State Department. Fact Sheet. "Vision Statement of Australia, China, India, Japan, the Republic of Korea, and the U.S. for a New Asia-Pacific Partnership on Clean Development and Climate." 28 July 2005. Available <http://www.state.gov/g/oes/rls/fs/50335.htm> Accessed 9 April 2006.

---. News Release. "New Asia-Pacific Partnership on Clean Development, Energy Security, and Climate Change." 27 July 2005. <http://www.state.gov/g/oes/rls/prsrl/50334.htm> Accessed 9 April 2006.

van Soest, Daan P., Gerard H. Kuper, and Jan Jacobs. "Threshold Effects of Energy Price Changes." Presented at the World Conference of the Econometric Society, 11 August 2000. Available at the SSRN.

Victor, David G. *Climate Change: Debating America's Policy Options*. Sponsored by the Council on Foreign Relations, 2004.

---. "International agreements and the struggle to tame carbon." in James M Griffin, ed., *Global Climate Change*. Northampton, MA: Edward Elgar, 2003, p. 217.

Wallace, J.M. and P.V. Hobbs. *Atmospheric Science: An Introductory Survey*. San Diego: Academic

Press, 1977.

Williamson, Hugh. "Export credit agencies' graft crackdown stalls." *Financial Times Syndication Service*, 21 February 2006.

World Trade Organization. "AGREEMENT ON SUBSIDIES AND COUNTERVAILING MEASURES**,** 15/04/1994." Accessible <http://docsonline.wto.org/GEN_searchResult.asp?RN=0&searchtype=browse&q1=%28@meta_Symbol+LTüURüA-1Aü9%29+%26+%28@meta_Types+Legal+text%29

"WWW.CLIMATELAWSUIT.ORG" Accessed 9 April 2006.

---. "In landmark decision against Bush administration, Federal Court recognizes harm caused by global warming," Media Kit. 24 August, 2005.

Zehner, Dan. "An assessment of two economic rationales for Export Credit Agencies." *Chazen Web Journal of International Business* (2003): 1-11, published by Columbia University, School of Business, NY. Available <http://www2.gsb.columbia.edu/journals/files/chazen/Export_Credit_Agencies.pdf> Accessed 9 April 2006.

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