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Steve Herz

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THE CLEAN TECHNOLOGY FUND AND COAL:

A CAUTIONARY TALE FOR COPENHAGEN

by Steve Herz*

INTRODUCTION

In the absence of concerted action, global greenhouse gas emissions are projected to almost double by 2050. Much of this increase will come from industrialization in developing countries.¹ Due to resource constraints and the conviction that developed countries must take responsibility for their historical emissions, most developing countries are unlikely to act aggressively to restrain their emissions growth without substantial help from the developed world. Accordingly, the Bali Action Plan calls for a global deal in which developing countries take enhanced “nationally appropriate mitigation actions” supported by technology, financing, and capacity building from the developed world.² This will require a substantial transfer of resources and capacity. The Stern Review estimated the incremental costs of necessary low-carbon investments in developing countries to be at least \$20–30 billion per year.³ So far, however, little assistance has been forthcoming. One of the most important potential outcomes of the United Nations Framework Convention on Climate Change (“UNFCCC”) negotiations at Copenhagen will therefore be the creation of a publicly-funded mechanism that can provide sufficient concessional resources to help developing countries transition to lower carbon growth trajectories.

A critical issue that the negotiators will have to resolve is how to define the mechanism’s funding criteria to ensure that its concessional funds are used most effectively. This poses an important strategic choice: will the mechanism focus exclusively on initiatives that can help catalyze transformational changes in existing emissions patterns, or will it also provide support for marginal improvements in the efficiency of existing technologies and practices? While the case for targeting concessional public funding towards emerging low-carbon technologies is compelling, there undoubtedly will be significant political pressure from developing countries to allow support to also be used for incremental improvements in high-emitting sectors.

The recent decision by the World Bank-administered Clean Technology Fund (“CTF”) to authorize support for certain coal-fired power plants may provide some insights into how the UNFCCC may resolve this issue. The CTF has an explicit mandate to finance “transformational action” to help developing countries transition to a low-carbon development path.⁴ Nevertheless, its new financing criteria authorize support for coal technologies that may be only slightly more efficient than those that are already preferred by the private-sector, and that include carbon capture and storage (“CCS”) readiness criteria that have little chance of ever resulting in the capture or storage of any carbon dioxide (“CO₂”).

The CTF’s willingness and ability to contravene its mandate to catalyze transformational change with regard to coal does not bode well for Copenhagen. The World Bank is likely to have some influence in the structure of a UNFCCC mechanism, and has an institutional interest in promoting the CTF standards. Regardless of whether the World Bank plays a role in the UNFCCC mechanism, the negotiators may look to the CTF standards as precedent.

Moreover, many of the broader political forces that produced the CTF standards will also be at play in Copenhagen. Participating countries have not called the CTF to account for its incrementalism because it largely reflects their policy preferences. Many participating countries are not yet ready to concede that the Earth’s dwindling carbon sink capacity can no longer support development strategies based on the relentless expansion of fossil fuel consumption. Unless this political dynamic is altered at Copenhagen, there is little reason to expect the Parties to agree to markedly more ambitious criteria for a new UNFCCC mechanism.

THE CLEAN TECHNOLOGY FUND

The Clean Technology Fund is one of two Climate Investment Funds (“CIFs”) created by the World Bank and other multilateral development banks (“MDBs”) to provide an interim source of concessional financing while the UNFCCC mechanism is being negotiated.⁵ The CTF will support public- and private-sector investments that contribute to “the demonstration, deployment and transfer of low-carbon technologies with a significant potential for long term greenhouse gas emissions savings.”⁶ Eligible investments include low-carbon power and transportation projects, and large-scale energy efficient initiatives and other demand management projects.⁷

Although the CTF is administered by the World Bank, its decision-making process is partly independent of the governance structure of the Bank and the other MDBs. Every project funded by the CTF must be approved by both the board of the implementing MDB and a separate Trust Fund Committee of the CTF.⁸ Unlike the weighted voting at the MDBs that heavily favors donor governments, votes on the Trust Fund Committee are equally apportioned between eight representatives selected by the donor countries and eight representatives selected by the

* Steve Herz is Climate Finance Advisor for Greenpeace International. Mr. Herz is also the founder of Lotus Global Advocacy, a legal and policy consultancy based in Oakland, California that advises non-governmental organizations on international environmental and human rights law and policy. He can be reached at steve.herz@sbcglobal.net.

recipient countries. The committee also includes a non-voting representative from the World Bank, the other participating MDBs, and the host country of any investment proposal that is under consideration.⁹

THE CTF'S FOCUS ON TRANSFORMATIONAL CHANGE

The stated objective of the CTF is to support “transformational” actions that represent a “step change” over current practice.¹⁰ Towards this end, the CTF provides support for low-carbon technologies that are approaching the point of “market take-off,” and that have the potential to significantly reduce emissions.¹¹ Two categories of technology are eligible for assistance. As a matter of priority, the CTF focuses on technologies that are already available commercially, but need incremental assistance to compete with conventional options in the recipient country.¹² It will also finance technologies that have been proven to be technically viable, but have not yet been commercially deployed at scale. The CTF will not support technologies that are still in the research stage.¹³

In theory, this is a sound strategy for targeting public subsidies. Left to their own devices, private markets may let important new technologies languish in the “valley of death” between laboratory success and commercial viability.¹⁴ Innovations that mitigate social costs are particularly vulnerable to getting bogged down at this stage of development. Well-targeted public subsidies can provide a critical push to accelerate their commercial uptake.¹⁵ Accordingly, the CTF should target its scarce concessional funds at assistance that can help accelerate “near market” renewable energy technologies down the cost and learning curves to the point where they are competitive with fossil fuels.¹⁶ And to its credit, the CTF has recognized that the potential to reduce deployment costs and increase learning for future investments should be key considerations in its decision to support a proposed investment.¹⁷

AN INCREMENTALIST APPROACH TO COAL

Yet, in practice, the CTF has subverted its strategy of facilitating the uptake transformational technologies by authorizing support for certain coal-fired power plants. Under its new guidelines, the CTF may provide subsidies for coal-fired plants that meet specified energy efficiency standards and are considered to be “ready” to capture and store carbon.¹⁸ This is a conspicuously ill-advised use of scarce concessional financing for climate mitigation. Any coal plant financed by the CTF will emit enormous quantities of CO₂ for the foreseeable future. Concessional funds for bringing transformational technologies to market are

relatively scarce. Instead of squandering these limited resources on incremental efficiency improvements for incumbent technologies, the CTF should focus on helping zero-emission alternatives, such as base-load solar, become cost competitive. Indeed, using concessional public money to subsidize coal—however efficient—does nothing to hasten the day when low-carbon technologies can reliably out-compete coal and other fossil fuel-based energy sources.¹⁹

The CTF has compounded this strategic error by adopting permissive criteria for efficiency and CCS-readiness. The CTF ostensibly precludes the use of its funds to support sub- or super-critical coal power plants.²⁰ Its financing criteria, however, are not adequate to the task. *The Criteria for Financing Low-Carbon Opportunities in Coal and Gas Power Investments* (“Criteria”)

Many participating countries are not yet ready to concede that the Earth's dwindling carbon sink capacity can no longer support development strategies based on the relentless expansion of fossil fuel consumption.

note that “typical” supercritical coal-fired power plants with emission factors of 0.80 tons CO₂ per megawatt hour (net) (t CO₂/MWh (net)) are now “the system of choice for new commercial coal-fired plants in many countries.”²¹ Nevertheless, the Secretariat has set the proposed baseline carbon-intensity threshold for CTF investment at 0.795 t CO₂/MWh (net), a mere 0.005 t CO₂/MWh (net) below the emission factor for the current “system of choice.”²² In addition to being incredibly incrementalist, this standard may not be consistent with the commitment not to finance super-critical plants. As the World Bank's own private sector lending arm has noted,

super-critical coal plants can achieve even lower emissions factors.²³

Worse, the 0.795 t CO₂/MWh (net) threshold is only an initial benchmark; it can be adjusted upward based on specified site- and country-specific conditions.²⁴ This flexibility is not clearly constrained in the CTF Criteria. The Criteria do not (a) explain the circumstances in which these upward adjustments will be allowed; (b) propose any guidelines for MDB staff to implement them; or (c) establish maximum allowable adjustments. Under the Criteria, then, the CTF could presumably finance coal projects that are substantially more carbon-intensive than the baseline 0.795 t CO₂/MWh (net) would appear to require, or even than the super-critical plants that the Trust Fund Committee has excluded.

The Criteria also fail to require the use of control technologies for capturing other air pollutants, such as flue gas desulfurizers (“FGD”), selective catalytic reducers (“SCR”), and low-nitrogen oxide (“NO_x”) burners. These technologies are not necessarily required in developing countries, and their use reduces the efficiency (and thus increases the CO₂ intensity)

of a coal-fired plant.²⁵ In the absence of specific pollution control standards, the Criteria may allow (or implicitly encourage) operators to meet CO₂ emissions standards at the cost of increased emissions of other pollutants. This, too, is hardly transformational.

THE FALSE PROMISE OF CARBON CAPTURE AND STORAGE-READINESS

Arguably, the CTF could finance coal projects while meeting its strategic objectives by limiting eligibility to CCS demonstration projects that would help drive innovation and force down costs. However, the CTF has explicitly eschewed such a role. Because CCS technology is currently at the research and development stage, it is not eligible for CTF co-financing, even on a pilot or demonstration basis.²⁶ Instead, a new coal-fired power plant need only be “CCS-ready” to be eligible for CTF financing. Under the CTF Criteria, a plant will be considered CCS-ready if the project sponsor has:

- a) provided adequate space in the design of the facility for the equipment needed to capture CO₂;
- b) identified feasible options to transport CO₂ to a storage reservoir that is large enough to hold the lifetime emissions of the plant; and
- c) conducted an analysis of CCS options and the viability of plant with CCS operation.²⁷

Due to cost considerations, capital investment in CCS technology is not required.²⁸

The most likely outcome of this approach is that CTF-financed coal plants will remain “ready” for CCS indefinitely, but will never actually capture or store any CO₂. As one wit has put it, calling these plants CCS-ready is like calling my driveway “Ferrari-ready:” my driveway can certainly accommodate a Ferrari, but the chances of one being parked there are vanishingly small.²⁹ Although the basic technology is well understood,³⁰ commercial-scale CCS is not expected to be widely available for at least 15–20 years.³¹ In the best-case scenario, then, these plants will spew CO₂ for the first third to half of their operational lifetimes. In reality, however, there is little reason to believe that CTF-financed plants will be early adopters of CCS technology. Since the CTF does not actually require retrofitting, and since CCS is expected to be extremely expensive and reduce plant efficiency by as much as a third,³² operators will not retrofit on their own. Only strong regulatory requirements, a steep price on carbon, or a robust concessional financing regime will have the potential to induce a plant operator to undertake such an investment.

None of these potential drivers of CCS uptake currently exists in the developing world, or is likely to be implemented

in the near to middle term. Few if any developing countries are seriously considering carbon emissions regimes that would be stringent enough to eventually induce or require plant operators to retrofit their facilities with CCS technology. And assuming such regulations were to be enacted, there is little reason to be confident that they would be well-enforced. Even in countries with relatively effective regulatory and enforcement regimes, utilities have proven to be remarkably adept at avoiding or delaying mandates to upgrade their facilities to improve environmental performance.³³

It is also unlikely that any country that might host a CTF-financed coal project would implement policies to internalize the cost of carbon. In the current political environment, such a proposal would be a non-starter. But even if that were to change over time, the cost of carbon emissions would have to rise significantly before it would make economic sense to implement

CCS technology. A recent study by McKinsey estimates the cost of emissions reductions through CCS to begin at about \$75–115 per ton, and to decline by half after 2030 when the technology has matured.³⁴ By way of comparison, the price of carbon emissions under the European Trading Scheme is currently about € 13 per ton (approximately U.S. \$17 per ton).³⁵

The most likely way that CTF-financed projects would ever implement CCS technol-

ogy, then, is by accessing further concessional funds to finance the retrofit. But even this is highly speculative and, at best, a distant prospect. First, CCS is not currently eligible for credits under the Kyoto Protocol’s Clean Development Mechanism, the most important existing conduit for such financing.³⁶ While this would likely change if the technology matured, the availability of carbon credits would not provide sufficient incentives for operators to retrofit until the cost of abating emissions through CCS falls below the price of carbon credits. This is not expected to occur until at least 2030.³⁷ Second, it is also possible that a new UNFCCC financing mechanism could support the retrofit CTF-financed projects. But even if concessional funds were made available for CCS retrofits, there is little reason to believe that CTF-financed projects would be the best candidates for these funds. Commercial scale CCS is so embryonic that it is too soon to say which of the currently available coal combustion technologies will prove to be the most cost-effective to retrofit.³⁸

CONCLUSION: A CAUTIONARY TALE FOR COPENHAGEN

The best that can be said for the CTF’s willingness to finance coal-fired power plants is that, on its own terms, it is not likely to have a momentous impact on international efforts to redirect

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developing countries toward lower-carbon development paths. To date, donors have pledged relatively small sums of money,³⁹ some of which may not be disbursed. And at least some of the money that eventually reaches the CTF will go to more appropriate technologies. Indeed, the first three loans under consideration by the CTF, totaling U.S. \$900 million, will support renewable energy and urban transport initiatives, not coal.⁴⁰ In any event, the CTF is intended to be a short-term mechanism that will wind down its operations once the new UNFCCC financial architecture has been put in place.⁴¹

The critical question raised by the CTF's embrace of coal, then, is what that decision may portend for the criteria to be adopted by the UNFCCC financing mechanism that is to be created in Copenhagen in December 2009. That mechanism is expected to be the primary conduit for developed countries to meet their obligations to finance the deployment and diffusion of low-carbon technologies in developing countries. Moreover, under the Bali Action Plan, the mitigation efforts that developing countries will be expected to undertake will be explicitly linked to the kinds of financing and support that is provided by developed countries.⁴² As a result, the financing criteria adopted by the UNFCCC mechanism will be a key component of the effectiveness of the Copenhagen agreements.

The CTF's affiliation with the World Bank is likely to enhance its relevance in the Copenhagen negotiations. The World Bank will continue to be an influential player in Copenhagen, and appears to be positioning itself to play a key role in the implementation of the UNFCCC mechanism. But even if the World Bank is not afforded a direct role in the UNFCCC mechanism, the negotiators may consider the CTF standards to be an important precedent for the UNFCCC's financing criteria. Historically, there have been numerous examples of World Bank internal environmental and social standards being widely treated

as international best practice, regardless of their substantive shortcomings.⁴³

Apart from the World Bank's role, there are other reasons to be concerned that the criteria adopted by a UNFCCC mechanism may not be demonstrably better than those of the CTF. Some developing countries are skeptical of renewable alternatives—particularly those technologies that are not yet commonly employed in developed countries. These countries would prefer to continue to rely on coal despite its environmental disadvantages.⁴⁴ This preference was expressed in the Trust Fund Committee's deliberations over the proposed standards, in which influential recipient country representatives endorsed the inclusion of coal and questioned the need for CCS-readiness criteria. It has also been expressed by the Parties to the Kyoto Protocol. At the CoP-11/CMP-1 in Montreal, the Parties instructed Annex II countries, and Annex I countries “in a position to do so” to give priority to “[c]ooperating in the development, diffusion and transfer of less greenhouse-gas-emitting advanced fossil-fuel technologies, and/or technologies relating to fossil fuels that capture and store greenhouse gases, and encouraging their wider use”⁴⁵

It remains to be seen whether the same political forces that shaped the CTF criteria will define the parameters of the UNFCCC mechanism. There is some reason to believe that the dynamics may be shifting. The U.S. Congress for example, recently refused to fund the CTF out of concern by some members over the coal financing criteria.⁴⁶ And perhaps the leadership of the new U.S. administration, or the urgency and heightened public scrutiny of the Copenhagen meetings, will create space for negotiators to take a more ambitious approach to mitigation financing than was evidenced by the CTF. But unless the political dynamic is changed, there is little reason to expect that the outcomes will be any different.



Endnotes: The Clean Technology Fund and Coal: A Cautionary Tale for Copenhagen

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² See United Nations Framework Convention on Climate Change [UNFCCC], Bali Action Plan, Decision 1/CP.13, at 1(b)(ii), U.N. Doc. FCCC/CP/2007/6/Add.1 (Dec. 3–15, 2007) [hereinafter Bali Action Plan], available at http://unfccc.int/files/meetings/cop_13/application/pdf/cop_bali_action.pdf.

³ NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* xxiv (2007), available at http://www.hm-treasury.gov.uk/stern_review_report.htm.

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⁵ *Id.* at 5.

⁶ *Id.* at 7.

⁷ *Id.*

⁸ WORLD BANK, *GOVERNANCE FRAMEWORK FOR THE CLEAN TECHNOLOGY FUND 5* (2008), available at <http://siteresources.worldbank.org/INTCC/Resources/CTF-GovernanceFrameworkRevisedNov.13.pdf>.

⁹ *Id.* at 6.

¹⁰ WORLD BANK, *CLEAN TECHNOLOGY FUND: INVESTMENT CRITERIA FOR FINANCING LOW-CARBON OPPORTUNITIES IN COAL AND GAS POWER INVESTMENTS 5* (2009)

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¹² See WORLD BANK, INVESTMENT CRITERIA, *supra* note 10, at 2.

¹³ *Id.*

¹⁴ World Bank, *Accelerating the Development and Commercialization of Advanced Energy Technologies in Developing Countries 9* (Nov. 2008) (draft discussion paper).

¹⁵ *Id.*

¹⁶ *Examining the Administration's Proposal to Establish a Multilateral Clean Technology Fund: Hearing Before the H. Subcomm. on Domestic and International Monetary Policy, Trade and Technology*, 110th Cong. 7 (2008) [hereinafter *Hearing*] (statement of David Wheeler, Senior Fellow, Ctr. for Global Dev.).

¹⁷ WORLD BANK, CLEAN TECHNOLOGY FUND: INVESTMENT CRITERIA FOR PUBLIC SECTOR OPERATIONS 6 (2009) [hereinafter PUBLIC SECTOR CRITERIA], available at <http://siteresources.worldbank.org/INTCC/Resources/CTFInvestmentCriteria-revisedcleanJan16.pdf> (requiring proposals for investments to include an analysis of “the expected reduction in the cost of the technology due to technological progress and scale effect at a global level, and/or through organizational learning and scale effects at the country level”).

¹⁸ WORLD BANK, INVESTMENT CRITERIA, *supra* note 10, at 5.

¹⁹ See generally *Hearing*, *supra* note 16.

²⁰ *Id.*

²¹ WORLD BANK, INVESTMENT CRITERIA, *supra* note 10, at 5.

²² *Id.*

²³ See WORLD BANK, INT’L FIN. CORP., ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES FOR THERMAL POWER GENERATION 8 (2008) (working draft) [hereinafter GUIDELINES], available at [http://nonroad.net/download/news/publications/Publications/WBG_EHS_Guidelines_-_Thermal_Power_Plants_\(Draft\)_2008.pdf](http://nonroad.net/download/news/publications/Publications/WBG_EHS_Guidelines_-_Thermal_Power_Plants_(Draft)_2008.pdf) (according to the International Finance Corporation, supercritical plants can achieve emission factors as low as .756 t CO₂/MWh).

²⁴ WORLD BANK, INVESTMENT CRITERIA, *supra* note 10, at 6.

²⁵ ANANTH P. CHIKKATUR & AMBUJ D. SAGAR, POSITIONING THE INDIAN COAL-POWER SECTOR FOR CARBON MITIGATION: KEY POLICY OPTIONS 23 (2009), available at <http://mail.google.com/mail/?ui=2&view=bsp&ver=1qygpcurkovy> (explaining that post-combustion capture of these pollutants can lead to increases of 24 to 40 percent in auxiliary power consumption, thus reducing efficiency).

²⁶ WORLD BANK, INVESTMENT CRITERIA, *supra* note 10, at 7.

²⁷ *Id.*

²⁸ *Id.*

²⁹ U.S. 10-Year Energy Research and Development Outlook: Hearing Before the Subcomm. on Energy and Water Development of the H. Comm. on Appropriations, 110th Cong. 6 (2007) (testimony of David G. Hawkins), available at http://docs.nrdc.org/globalWarming/files/glo_07022801A.pdf.

³⁰ MCKINSEY & CO., CARBON CAPTURE & STORAGE: ASSESSING THE ECONOMICS 13 (2008), available at www.mckinsey.com/clientservice/ccsi/pdf/CCS_Assessing_the_Economics.pdf.

³¹ *Trouble in Store*, ECONOMIST, Mar. 7, 2009, at 12, available at http://www.economist.com/displaystory.cfm?STORY_ID=13226661.

³² *Id.*

³³ The United States’ experience with “new source review” under the Clean Air Act is instructive in this regard. First, utilities successfully lobbied to ensure that some existing facilities would not be required to immediately comply with new Clean Air Act regulations. Instead, costly upgrades would only be required as plants were upgraded or expanded. Then, many of the country’s largest utilities simply flouted its requirements for as long as twenty years. When Clinton Administration regulators finally uncovered these violations and initiated enforcement actions, many utilities agreed to negotiate the terms of their compliance. But when the Bush Administration came to power, the

utilities persuaded sympathetic regulators and enforcement officials to drop these investigations and to rewrite the regulations in accordance with industry preferences. See generally, Bruce Barcott, *Changing All the Rules*, N.Y. TIMES MAGAZINE, Apr. 4, 2004, available at <http://www.nytimes.com/2004/04/04/magazine/04BUSI.html?ei=5070&en=c3d3462c0c63eb2f&ex=122920000&pagewanted=all&position=>; Nicholas H. Rabinowitsh, Note, *Bringing New Source Review Back: The Supreme Court’s Surprise (and Disguised) Attack on Grandfathering Old Coal Plants in Environmental Defense v. Duke Energy Corp.*, 31 SPG ENVIRONS ENVTL. L. & POL’Y J. 251 (2008).

³⁴ MCKINSEY & CO., *supra* note 30, at 16-17.

³⁵ Point Carbon, EUA OTC assessment (EUR/t), <http://www.pointcarbon.com/> (last visited Apr. 22, 2009).

³⁶ See generally Kyoto Protocol Clean Development Mechanism Executive Board, *Further Guidance Relating to the Clean Development Mechanism*, U.N. Doc. FCCC/KP/AWG/2008/MISC.7/Add.1, available at http://unfccc.int/files/meetings/cop_14/application/pdf/cmp_cdm.pdf (advance unedited version).

³⁷ MCKINSEY & CO., *supra* note 30, at 6-7.

³⁸ JAMES KATZER ET AL., THE FUTURE OF COAL: OPTIONS FOR A CARBON-CONSTRAINED WORLD XIV (2007), available at http://web.mit.edu/coal/The_Future_of_Coal.pdf.

³⁹ See Press Release, World Bank, Donors Pledge Over \$6.1 Billion to Climate Investment Funds (Sept. 26, 2008), available at <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21916602~pagePK:34370~piPK:34424~theSitePK:4607,00.html>.

⁴⁰ See generally, World Bank, Climate Change – CTF Investment Plans, <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0,,contentMDK:22092311~menuPK:5927555~pagePK:210058~piPK:210062~theSitePK:407864,00.html> (last visited Apr. 22, 2009); Lisa Friedman, *World Bank: Money begins to move from controversy-ridden fund to renewable energy projects*, E&E REPORTER, Apr. 20, 2009.

⁴¹ WORLD BANK, THE CLEAN TECHNOLOGY FUND 15-16 (2008), available at http://siteresources.worldbank.org/INTCC/Resources/Clean_Technology_Fund_paper_June_9_final.pdf.

⁴² Bali Action Plan, *supra* note 2, at 1(b)(ii).

⁴³ The International Finance Corporations’ Performance Standards, for example, have gained currency as best practice standards for the management of environmental and social issues within the world of private-sector project finance.

⁴⁴ Jeffrey Logan & Martin Weiss, The World Bank’s Clean Technology Fund (CTF) 5 (Congressional Research Service Report for Congress No. RS22989, 2008).

⁴⁵ UNFCCC, Matters relating to Article 3, paragraph 14, of the Kyoto Protocol, Decision -/CMP.1, ¶ 5(d), U.N. Doc. FCCC/SBI/2008/L.27, available at http://unfccc.int/files/meetings/cop_11/application/pdf/cmp1_04_matters_relatig_to_art3_14.pdf.

⁴⁶ Lisa Friedman, *World Bank: Congress scraps support for clean technology program that funds coal*, E&E REPORTER, Feb. 25, 2009.