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International trade in clean technology is still a nascent market and requires encouragement from multilateral agreements, public-private partnerships, and tax incentives. This article will survey various drivers of North-South and North-North cleantech trade including the Clean Development Mechanism, the Private Financing Advisory Network, and tax incentives, and explore potential issues involved in their implementation.

The Clean Development Mechanism ("CDM") aims to incentivize North-South trade of clean technology. A provision of the Kyoto Protocol, the CDM allows developed countries to gain carbon credits by funding clean technology projects in the developing world.[1] In theory, the CDM lowers the cost of reducing carbon emissions for developed countries,[2] while stimulating an influx of clean technology into developing countries.[3] As of 2008, the CDM's 3,296 proposed projects represented $95 billion in potential investments.[4] However, the money currently invested in approved projects does not exceed $5 billion.[5] On average, thirty-six percent of CDM projects require technology transfer.[6] This percentage increases dramatically when examining different types of projects.[7] For instance, ninety-two percent of agricultural CDM projects benefit from cleantech trade.[8] Based on the amount of money spent through CDM and the percentage of projects that encourage clean tech trade, the CDM is responsible for roughly $1.8 billion of actual clean technology trade.[9] If the trends continue, the CDM could potentially encourage roughly $34 billion in cleantech trade.[10]

In spite of its potential to encourage cleantech trade, the destination of CDM financing raises questions about the equitable geographic distribution of CDM projects.[11] Currently, China, India, Brazil, Mexico, and Malaysia account for eighty percent of the total number of CDM projects.[12] These countries also have some of the lowest rates of clean tech transfer,[13] which indicates that the CDM is increasingly encouraging projects that draw from the host country's domestic technology. As countries like China, India, and Brazil internalize clean tech, countries financing CDM projects should invest in countries that have less advanced technology to increase the rate of clean tech trade.

Further encouraging clean tech trade is the Private Financing Advisory Network ("PFAN"), a public-private partnership that finances clean tech projects in countries where clean tech is currently unavailable.[14] PFAN is supported by the Clean Technology Initiative, the United Nations Framework Convention on Climate Change's ("UNFCCC") Expert Group on Technology Transfer, government agencies such as the U.S Agency for International Development ("USAID"), and various private companies.[15] PFAN provides guidance on clean technology projects in the developing world, matches investors, and arranges financing directly from PFAN members.[16] PFAN primarily benefits developers working on mid-size projects who would not otherwise have access to financial advisory services.[17] PFAN's projects include a twenty-megawatt ("MW") wind farm in Chile, a 9.3 MW geothermal plant in Georgia, and a bio-ethanol plant in the Philippines.[18] Over the next three years, PFAN will leverage roughly $500,000 in government funds to generate $255-550 million in private sector financing for thirty to forty-five clean tech projects.[19] PFAN is still a small initiative compared to the CDM and may not adequately address the need for clean tech trade with the developing world. Although the partnership plans to expand over the next few years,[20] PFAN's members should invest more money so that as the economies of the developing world grow, they can grow with clean tech.

Tax incentives largely drive the North-North clean tech trade. In the United States both federal and state governments offer industry support, tax incentives, loans, and rebates to encourage the use of clean tech.[21] For instance, the United States provides tax credits to individuals who buy qualified hybrid vehicles,[22] which historically have been foreign hybrids.[23] Additionally, the American Recovery and Reinvestment Act provides tax credits to consumers for the first 200,000 plug-in electric vehicles sold by a company.[24] The credit may range from $2,500 to $7,500 depending on the vehicle's battery capacity.[25] This tax credit could encourage more North-North clean tech trade as Toyota, Mercedes-Benz, and Mitsubishi have announced plans to produce plug-in electric vehicles in 2010.[26] A problem with these tax incentives is that they often complement protectionist policies.[27] Many countries want to foster domestic growth of clean tech industries by placing tariffs on imported clean tech.[28] Protectionism and tax incentives could result in governments encouraging domestic growth in clean tech over international trade because tariffs effectively exclude foreign clean tech from developed markets.[29]

Although the Clean Development Mechanism, the Private Financing Advisory Network, and tax incentives in developed countries are key components in driving international trade in clean technology, each driver could be improved to better promote clean tech trade. These improvements would include broadening the geographic distribution of CDM projects, increasing funding for public-private partnerships, and eliminating barriers to trade in clean tech.

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[1] Agreement for the Kyoto Protocol to the United Nations Framework Convention on Climate Change, art. 12(3)(b), Dec. 10, 1997, 37 I.L.M 22, *available at* http://unfccc.int/resource/docs/convkp/kpeng.pdf [hereinafter Kyoto Protocol] ("Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.").

[2] *See* Pew Center for Global Climate Change, Clean Development Mechanism Backgrounder: October 2008 Status Report 1 (2008), *available at* http://www.pewclimate.org/docUploads/CDM-Backgrounder.pdf.

[3] Kyoto Protocol, supra note 1, art. 12(2) (providing that "[t]he purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development").

[4] Secretariat of the United Nations Framework Convention on Climate Change, Key Findings of "Analysis of Technology Transfer in CDM – Update 2008" Study 2 (2008), *available at* http://cdm.unfccc.int/Reference/Reports/TTreport/TTkey08.pdf [hereinafter Key Findings].

[5] *Id.*

[6] Stephen Seres, UNFCCC, Analysis of Technology Transfer in CDM Projects 7 (2008), *available at* http://cdm.unfccc.int/Reference/Reports/TTreport/TTrep08.pdf.

[7] *Id.*

[8] *Id.*

[9] *Id.* (average percentage of clean tech trade in CDM projects multiplied by the value registered CDM projects).

[10] *Id.* (average percentage of clean tech trade in CDM projects multiplied by the value of CDM projects in the pipeline).

[11] *See Mixed Verdict on CDM Technology Transfer*, Carbonpositive.Net, Mar. 23, 2009, http://www.carbonpositive.net/viewarticle.aspx?articleID=1461.

[12] Key Findings, *supra* note 4, at 1.

[13] Seres, *supra* note 6, at 44 tbl. 14 (reflecting that the three largest countries – China, India, and Brazil – show downward trends in technology transfer, with 16%, 21%, and 18%, respectively, of the technology in CDM projects coming from outside the host countries).

[14] *See* Peter Storey, Clean Technology Institute, Introduction & Background to CTI's PFAN 1-2 (2008), *available at* http://www.cleanenergy-financing.com/doc/PFAN_IntroUpdate_R5_151008_rev.pdf.

[15] *Id.*

[16] *Id.* at 1.

[17] *Id.*

[18] *Id.* at 3-4.

[19] *See* U.S. Agency of Int'l Dev. & Envtl. Prot. Agency, U.S.-Climate Technology Cooperation Gateway 2 (2008), *available at* http://www.usaid.gov/our_work/environment/climate/docs/usctc_gateway_factsheet.pdf.

[20] *Id.*

[21] *See generally*, Database of State Incentives for Renewables & Efficiency, Financial Incentives for Renewable Energy (2007), http://www.dsireusa.org/summarytables/financial.cfm?&CurrentPageID=7&EE=1&RE=1 (last visited Apr. 3, 2009).

[22] *See* Internal Revenue Service, Qualified Hybrid Vehicles (2009), http://www.irs.gov/businesses/corporations/article/0,,id=203122,00.html (last visited Apr. 3, 2009).

[23] *See* Internal Revenue Service, Summary of the Credit for Qualified Hybrid Vehicles (2007), http://www.irs.gov/newsroom/article/0,,id=157557,00.html (last visited Apr. 3, 2009).

[24] *See* United States Department of Energy, Consumer Energy Tax Incentives (2009), http://www.energy.gov/taxbreaks.htm (last visited Apr. 3, 2009).

[25] *Id.*

[26] *See* Micheline Maynard, *Toyota Will Offer a Plug-In Hybrid by 2010*, N.Y. Times, Jan. 14, 2008, http://www.nytimes.com/2008/01/14/business/14plug.html; Darren Murph, *Electric Mercedes-Benz Coming in 2010*, Engadget, June 23, 2008, http://www.engadget.com/2008/06/23/electric-mercedes-benz-coming-in-2010/; Peter Lyon, *The Sounds of Silence*, Edmunds.com, Feb. 20, 2008, http://www.edmunds.com/insideline/do/Drives/FirstDrives/articleId=124867.

[27] *See* Jeffrey Ball, *Climate-Control Talks to Address Barriers to Green-Technology Profit*, Wall St. J., Jan. 30, 2008, at A15, *available at* http://online.wsj.com/article/SB120165797227327335.html?mod=googlenews_wsj.

[28] *Id.*

[29] *See* CBC News, *Plans to Scrap Tariffs on Green Technology Falters in Bali*, Dec. 9, 2007, *available at* http://www.cbc.ca/world/story/2007/12/09/bali-tariffs.html (quoting the Brazilian Foreign Minister as saying that U.S. and European tariffs unfairly prevent Brazilian ethanol from entering the U.S. market).