



Catalyzing Low Carbon Development? The Clean Technology Fund

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This working paper summarizes key innovations and challenges associated with the Clean Technology Fund. It analyzes the first set of clean technology investment plans from Egypt, Mexico, and Turkey, and makes the case for greater emphasis on institutional capacity and governance in measuring program results.

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The Climate Investment Funds (CIFs) were established in January 2008, and are administered by the World Bank Group. They include a Clean Technology Fund (CTF) and a Strategic Climate Fund (SCF) that will support several lines of programming including a Pilot Program on Climate Resilience (PPCR), a Forest Investment Program (FIP), and a Scaling Up Renewable Energy Program (SREP). Regional Development Banks including the Inter-American Development Bank (IDB), Asian Development Bank (ADB), African Development Bank (AfDB) and the European Bank for Reconstruction and Development (EBRD) are partners in the CIFs.

The CIFs, and particularly the CTF, have had fundraising success....

The CIFs were prompted by a joint commitment from the governments of the United Kingdom, the United States and Japan to pool their efforts to "help developing countries bridge the gap between dirty and clean technology... and boost the World Bank's ability to help developing countries tackle climate change."¹ By September 2008, some 12 donor governments had pledged \$6.1 billion to the CIFs. The bulk of these funds are dedicated to the CTF, to support the deployment of clean energy technologies and make transformative reductions in greenhouse gas (GHG) emission trajectories in developing countries (donors to the CTF are listed in table 1 below). The Bush administration pledged \$2 billion to the CTF between 2008 and 2011, making it the largest contributor to the fund. As of May 2009, the US Congress and Senate have not approved this appropriation. However, the Obama administration has asked for \$500 million towards its commitments to the CTF as part of the US FY10 budget.

¹ Henry Paulson, Alistair Darling & Fukushima Nukaga, "Financial bridge from dirty to clean" *Financial Times*, 7 Feb. 2008

Contributions to the CTF	
Country	Pledge
Australia	80 million
France	300 million
Germany	739 million
Japan	1000 million
Spain	118 million
Sweden	92 million
UK	582 million
US	2000 million

Source: CTF Trustee Report May 2009
<http://siteresources.worldbank.org/INTCC/Resources/TrusteeReportofCTFFinalMay2009Rev.1.pdf>

And made governance innovations...

The governance of the various CIFs is noteworthy, because there are an equal number of representatives of donor governments and developing country governments on the governing committees for each of trust funds. Decisions are taken by consensus. All the governments contributing funds to the CTF are represented on its governing trust fund committee²; through a process of self selection amongst interested developing countries, the governments of India, China, Brazil, South Africa, Mexico, Turkey, Egypt and Morocco are also members of the committee. Representatives of the World Bank, and each of the MDBs (ADB, AfDB, EBRD, and IDB) are also represented on the committee, though they do not get to participate in funding decisions. Potential recipient countries are similarly barred from taking part in decisions when their requests for funding are being considered. In addition, a number of stakeholders are observers to the deliberations of the CTF committee, including the secretariat of the UN Framework Convention on Climate Change (UNFCCC) and the Global Environment Facility (GEF). 2 representatives of the private sector or business associations (one from a recipient

country and one from a contributor country) and 4 representatives of civil society are also included as observers. A selection process to identify permanent representatives is underway as of May 2009. All observer roles are “active”, which allows them to request the floor to make interventions, propose agenda items, and recommend experts. The World Bank and the trust fund committee will periodically host a partnership forum to share lessons from the CTF with a range of stakeholders, and to seek expert input on CTF Programs.

But there are constraints on transparency and participation...

Not all sessions of the CTF committee meetings are open to observers, however. Deliberations over investment plans are presently closed “executive sessions”. As administrator of the fund, the World Bank has sought to ensure that disclosure practice is consistent with its disclosure policy, and hesitant to exceed those standards. The clean technology investment plans have not been publicly disclosed prior to deliberations by the trust fund committee. Several contributor governments, including the UK, US and France, have expressed a desire for some advance disclosure of these plans and for observer participation in these sessions, where the most important CTF decisions will be made. Some governments have resisted the proposal, however, on the grounds that the plans include sensitive sovereign information about national priorities. Observers from the GEF and UNFCCC Secretariat are also excluded from investment plan discussions, making it difficult to ensure that programs supported by multilateral institutions are complementary. If the CTF experience is to contribute to global understanding about the opportunities and challenges that countries face as they seek to deploy clean technology, it is important for all observers to have access to investment plan discussions.

² At present, there are only 8 countries contributing to the CTF

The implications for the UNFCCC negotiations have been controversial...

Several governments have expressed concerns that the establishment of the CIFs and the programs it supports may prejudice the outcomes of negotiations on how to finance climate change within the UNFCCC. As a result, the CIFs are now framed as an “interim measure to scale up assistance [for climate change] to developing countries and strengthen the knowledge base in the development community.” Members of the G77 and China for their part have expressly stated that they do not consider funds contributed to the CIFs to meet Annex I obligations to support developing countries to address climate change under the UNFCCC. Developing country members of the CTF committee have also, however, asked the World Bank to develop draft guidance on how to monitor and report contributions to the CTF as new and additional to development assistance.

The design of the CTF also includes a “sunset clause” stating that “the CTF will take necessary steps to conclude its operations once a new [UNFCCC] financial architecture is effective.”³ Any funds remaining in the CTF once this new architecture has been established may be transferred to “another fund that has a similar objective”. If the UNFCCC negotiations result in a renewed mandate for the CTF, operations may continue with appropriate adjustments in priorities or programs.

As have the technologies supported by the CTF...

The question of what technologies will be eligible for support from the CTF has been a source of significant controversy: at present, the funds can be used to support ultra-

supercritical coal fired power plants (if these investments can be demonstrated to have a transformational impact on GHG emissions). This has raised important questions about the terms on which these scarce public resources should be spent. Supercritical coal is not a “clean technology. It is more efficient, and therefore cheaper than conventional pulverized coal -- but a new supercritical coal plant will still emit millions of tons of carbon in each year of its 30 year life. Many have argued that developing countries need alternatives to coal that can provide massive amounts of cheap, reliable power (like coal presently does) but without the emissions. The CTF should therefore be used to drive down the costs of zero carbon technologies, such as wind and concentrating solar power. Not all developing country representatives on the CTF committee have seen the issue in this way, however. Much less attention has been paid, however, to the terms on which CTF investments will address underlying questions of policy, regulation and governance that will affect investment priorities over the longer term. A results measurement framework for the CTF is now being developed by the World Bank, and will be discussed at its upcoming Committee meeting on 11th May 2009.

Clean Technology Investment Plans can prompt countries to consider low carbon development options....

When developing countries express interest in accessing the CTF, the World Bank partners with the regional development bank concerned to conduct a joint mission that includes other pertinent development partners to discuss with government, private sector and other stakeholders “how the CTF may help finance scaled up low carbon activities”. A clean technology investment plan is then developed under the leadership of the recipient country, which identifies the major sources of GHG emissions in the country, major opportunities for mitigation, and justifies proposed priorities for which CTF support is sought. The process by

³ Governance Framework for the Clean Technology Fund, p 12.
http://siteresources.worldbank.org/INTCC/Resources/CTF_Governance_Framework_jan.pdf

which these plans are developed and implemented warrants attention. There is limited evidence to date of engagement with stakeholders outside of government in their design. Such engagement will be important to ensure that programs are tailored to national needs, including those of the private sector, consumers and citizens, and to enhance the prospects of successful program implementation. As of May 2009, Mexico, Egypt and Turkey have developed investment plans, and the governments of South Africa, Ukraine, and Morocco have also sought CTF missions. Assessments are also underway in Colombia, Khazakstan, and the Philippines. Consultations are underway with Brazil, China, Indonesia, Peru, Thailand and Vietnam. A concept note for a regional Concentrating Solar Thermal Power Program in the Middle East and North Africa has also been developed by the IFC, IBRD, and the AfDB.

Mexico seeks support for energy efficiency, renewable energy and urban transport (bus rapid transit programs). Egypt seeks finance to scale up wind energy and address urban transport needs by replacing old public buses and private taxis with a new fleet of Compressed Natural Gas vehicles; completing two new lines of its underground metro; and preparing for Bus Rapid Transit and Light Rail Transit systems. Turkey's investment plan will support renewable energy (particularly wind), smartgrid development for improved wind management, and energy efficiency programs. It will make dedicated financing for renewable energy and energy efficiency projects available to two local financial institutions in Turkey. The plan was approved in April by the CTF committee after some debate over whether the rate of return offered to energy efficiency investors was too high, whether CTF support was really needed to realize objectives, and whether the impact of the program would really be "transformational".⁴ A comparative

analysis of these plans is presented in table 2 below, and reveals that the scope of attention to policy, regulatory and governance issues varies quite significantly across countries.

The Mexico plan stands out for taking quite a holistic approach to the conditions and processes that will need to be put in place to enable investment in renewable energy and efficiency. The plan places strong emphasis on building the capacity of a range of institutions that make decisions in the electricity sector. It also explicitly seeks to collaborate with local research institutions and stakeholders to support program implementation, including by supporting research centers to conduct research on clean technologies such as wind and smartgrid and tailor them to local circumstances. Egypt and Turkey's plans place less emphasis on these issues. For example, a major component of the Egypt plan is to kick start the establishment of a national renewable energy fund to incentivize transmission companies to purchase renewable energy. The proposed fund will be financed in part by revenues from the sale of natural gas. However the plan does not, as yet, mention critical governance issues such as transparency about fund priorities or disbursement. These issues will clearly impact the efficiency and effectiveness of the fund. Implementation of the plan will have to be monitored closely.

All three of the approved clean technology plans request the bulk of CTF financing in the form of loans, and are linked to ongoing programmatic loans and technical assistance programs supported by the MDBs in these countries.

⁴ CTF Committee, Proposed Decisions by Mail: Turkey Renewable Energy and Energy

Efficiency Project.
<http://go.worldbank.org/87TSJCM9Z0>

Table 2: A COMPARATIVE REVIEW OF THE CTF INVESTMENT PLANS

	Turkey	Mexico	Egypt
Baseline and objectives	Framed by 1 st National Communication of 2007 to the UNFCCC (2 nd communication to be released in 2010), which plans to reduce emissions by 11% through large hydro, renewable energy (RE) and energy efficiency (EE). The CTF plan identifies a suite of options to reduce emissions by 30%: expanding wind power to 20,000 MW by 2020 at estimated cost of \$26.4 billion (\$7.84 billion more than with conventional technologies), existing plant upgrades, transmission upgrades, and implementation of a demand side management (DSM) program. EE investments would save some \$15.5 billion and reduce emissions. Considers opportunities to reduce emissions by 44%: further efficiency, including replication of DSM programs, transport programs, restoration of degraded forests, afforestation, increasing nuclear power, waste power.	Framed by Mexico's 2009 Special Climate Change Plan (PECC). The Plan identifies GHG mitigation options linked to land-use, forestry and bio energy, end use efficiency, power generation and distribution, oil and gas, and transport. The CTF investment plan prioritizes commercially available technologies that face "institutional, regulatory or cost barriers (especially up front investment)". It anticipates reducing electricity consumption by 22,000 GWh per year (10%), and deferring 5,000 MW of conventional energy. Construction of 3 BRT corridors in Mexico City and Leon are predicted to reduce emissions by 18MC02 per year (a 20% reduction against the baseline).	1 st National Communication to UNFCCC from 1990 and National Strategy studies of 2002 frame plan. Notes growing energy intensity and emissions. Cogeneration, industrial efficiency, switching to natural gas for industry and transport, wind energy development, organic waste management and methane utilization; afforestation projects extension of railways and underground lines, mass transit systems and extension of waterways for transport are key mitigation options. Avoid 20mC02 each year through RE program. Avoid 12% annual emissions and 30mtC02 over 20 years through transport.
Priorities of Clean Technology Investment Plans	Renewable energy, smartgrid, and energy efficiency. Debt financing for preparation of RE and EE sub projects identified by IFC and EBRD sought. \$1 million grant finance sought for the smartgrid component of IBRD project with the Turkish Transmission Company (TEIAS). Complementarity with World Bank development policy loans to privatize the electricity sector and introduce competition in electricity markets including through a power pool.	Transport (bus rapid transit systems), renewable energy, and energy efficiency. IBRD will support a sustainable transport program, and a lighting and appliance efficiency program. IFC will support a private sector RE program focused on wind. available technologies that face "institutional, regulatory or cost barriers (especially up front investment)". IDB support for energy efficiency and renewable energy programs.	Renewable energy (specifically wind and solar) and urban transport. CTF funds will seed an RE fund to incentivise transmission company to purchase wind energy, upgrade transmission to tap wind resources, and support new RE public private partnerships. CTF support for urban transport will replace old public buses and private taxis with a new fleet of CNG vehicles; complete 2 new lines of its underground metro; and prepare for BRT and LRT systems. The plan is linked to ongoing programs to reform Egypt's power and transport sectors.
Financing	CTF: \$400 million (250 million in phase 1). MDB co-financing: \$1,900 million IBRD: \$300m smartgrid; \$500m RE/EE \$400m SME/Public EE; IFC/EBRD: \$400 RE/EE; Govt of Turkey: \$1,550 million	CTF: \$500m MDB Co-Financing: \$1,646 million IBRD: \$600m BRT; \$400; \$400m lighting and appliances; IDB: \$300m + \$10m (grant) for RE; \$50m+1.5m grant for EE; IFC: \$135 Govt of Mexico: \$1,425 million	CTF: \$300 million MDB Co-Financing: \$150m IBRD for transport; 150m AfDB + IBRD for transmission (respective contributions not specified); \$250m IBRD for RE fund. Gov Egypt + Donors: \$285 million for transport; \$100m for RE component.

Detailed Review of Plan Interventions Targeting the Electricity Sector			
Energy Planning	Analyzes cost increment for replacing fossil fuels with renewables, but does not address underlying assumptions of demand projections.	PROSENER's (planning unit) current plan considers energy portfolio diversification and increase RE share; specific targets to enhance efficiency and production especially for consumers. While not a completely holistic least cost plan, it does include multiple impacts and approaches.	Power sector development strategy to increase IGCC and supercritical coal technology, increase RE to 20% of production, and increase consumption efficiency.
Energy Efficiency (EE) Policy Regs.	2007 Energy efficiency law and implementing regulations include improve efficiency of generation, transmission and distribution. No discussion of implementation processes or role of electricity regulator (EMRA).	Focus on demand side measures. Role of the National Commission for Energy Efficiency to promote EE at various levels of govt. Focuses on new mandate of CRE to regulate externalities to promote efficiency.	Notes that govt is considering establishing an energy efficiency agency and conservation plan.
Renewable Energy Policy + Regulations	The plan notes that the 2005 Renewable Energy law has attracted interest in wind energy development. Govts' accelerated target seeks to increase RE (mostly wind) from 3,000 MW to 20,000 MW by 2020. EMRA developing guidelines for wind energy contracting. Attention to EMRA's capacity focuses on wind technology procurement, but flags upcoming reviews of prices for RE esp. solar and biomass.	IDB component focuses on policy and regulatory incentives for scaling up renewable energy investments and commercialization of these technologies. Will support LAEFERTE (renewable energy law) implementation process, including by helping CRE (electricity regulator) design and implement regulations. Establish renewable energy financing within local infrastructure finance bank (NAFIN) to support investments in RE.	Govt pursuing wind commercialization: first by introducing competitive bidding for RE supply; will explore feed in tariffs as a second phase (in 5 years). Govt efforts to prepare sector for competition + privatization + independent regulator highlighted as complementary measures. Proposed new electricity law will give RE providers market access + dispatch rights. A public RE fund will incentivise transmission company to buy RE (financed by revenues from gas exports)
Pricing	Efforts are underway to revise pricing structures to reflect costs.	Integration of RE predicted to result in net reductions in prices by lowering price instabilities / supply risks.	Low tariffs seen as barrier to attracting investment. Social implications of pricing reform are being studied.
Subsidies	Effort to ensure that full costs of oil and gas are reflected in electricity pricing noted, but little discussion of subsidies for conventional energy.	Subsidies for fossil fuels discussed. Complexity + expensiveness of electricity subsidy system noted, and that these are eroding CFE's (utility) capital base. Emphasis on residential and agricultural prices – rather than commercial / industry users.	Subsidies for fossil fueled electricity as well as gasoline and LPG noted. Need to reform pricing system for electricity consumption discussed. Social protection study underway.
Executive capacity	Institutional capacity weaknesses are noted, but limited attention to how this will be addressed. Emphasis is on capacity of market and financial actors.	Works with wide range of govt institutions including Energy Savings Commission (CONAE), SENER, and the need to coordinate with SCHP (Min of Finance) on tariff / subsidies issues and with NAFIN on strengthening capacity for financing renewable energy.	Govt has strong capacity in RE and wind development. Seen to have conflicts of interest as market commercializes. Past experience with conventional energy IPPs seen to support RE scale up program.
Regulatory Capacity	Notes insufficient regulatory capacity, particularly to enforce energy efficiency. Little discussion of capacity of EMRA.	Plan focuses on role of CRE in implementing LAEFERTE and in regulating externalities.	Limited discussion of the role of the electricity regulator although it will have a major role in implementing the new energy law.
Transparency	Improving information about energy efficiency of appliances noted, but otherwise little attention	Supports establishment of a National Information System to promote energy efficiency. Recognizes	No discussion of information sharing or transparency requirements of program design and implementation,

	to how information about policy / regulatory scope and implementation will be collected or used.	importance of information and awareness raising about programs with a range of national stakeholders.	Transparency about RE fund expenditures, and terms of competitive bidding for RE PPAs not addressed.
Public + consumers	Importance of engaging SMEs in EE programs noted. No other discussion of stakeholder engagement.	Engagement of consumers in design and implementation of regulations on EE and RE and on implementation of PECC more broadly.	Little discussion of how to engage stakeholders and consumers, beyond compliance with safeguards.
Utility capacity	External expertise will be contracted to help the transmission companies develop smartgrid. Need to build distribution utility's capacity on efficiency noted but CTF support for TEDAS not sought at this point.	Will work with CFE on interconnection charges and investment in transmission sector.	Will support govt to engage in RE PPPs. Emphasis on developing local manufacturing capacity.
Local Technology Centers		Will support local research centers to demonstrate technologies and tailor to local conditions – particularly wind and smartgrids. Will provide financial and capacity support to promote RE investment.	
GHG Management	Not addressed, though results reporting for the program will require robust GHG information and could complement EE programs.	Not addressed, although extensive GHG management programs are underway in Mexico.	Not addressed, though results reporting for the program will require robust GHG information. GHG accounting may also help actors identify EE opportunities.

This review is based on the Clean Technology Fund Investment Plans that have been publicly disclosed on the Climate Investment Fund website as of 1 May 2009. If plan documentation gives significant consideration to a key element of an enabling environment for sustainable energy in the electricity sector, that cell has been shaded in grey.

There has been significant attention to climate change issues in existing loans to Mexico, largely as a result of the country's proactive domestic policies on climate change.

Its clean technology plan ties these elements together in a more holistic way, and builds on past and ongoing programs with a renewed emphasis on policy and regulatory issues. It remains to see if the important links between the IDB, IBRD, and IFC components of the program will be maintained in practice once implementation begins. The Egypt and Turkey plans address a set of climate mitigation issues that not been emphasized in past and ongoing loans to the sector. It is not yet clear whether this complementarity will result in increased attention to climate change issues in the "core" support that the MDBs are extending to these countries, or whether the CTF components will "stand alone".

But will the CTF support transformative change?

It is important for the CIFs to spark transformative changes in how climate change is integrated into economic development choices supported by the MDBs overall. By supporting countries to develop clean technology investment plans, the CTF can create a real opportunity for developing countries to seriously consider low-carbon development options, identify priorities that align well with national needs, and a basis from which to seek the necessary financial and technical support from developed countries to transition to a low carbon development path.

Improvements in sectoral governance, institutional capacity, and policy and regulatory environments are likely to have a truly transformative impact on economies and on prospects for sustainable development. These elements are not,

however, emphasized in the current draft CTF results measurement framework.

The CIFs represent more public finance than has ever before been dedicated to climate change. But they are dwarfed by the size of the MDBs annual financing portfolios. Indeed, the ongoing financial crisis is prompting many developing countries including emerging economies to turn back to the MDBs for core financing for infrastructure services that will have a significant impact on their future GHG emissions.

If the MDBs are to be entrusted with scarce public resources to address climate change, then the success of the CIFs should be judged, at least in part, by whether they prompt systematic attention to climate change in mainstream MDB portfolios and investments.

Key Recommendations:

- Investment Plans should be publicly disclosed prior to CTF Committee deliberations
- Investment Plan discussions should be open to observers
- Zero carbon technologies and investments in institutional capacity, policy and regulatory frameworks should be CTF priorities
- Improvements in sectoral governance, institutional capacity, and policy and regulatory environments should be explicitly captured in the results framework
- Metrics that can help track whether funds contributed to the CTF (and CIFs in general) are new and additional should be developed
- The CIFs should prompt systematic attention to climate change in all aspects of mainstream MDB portfolios

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