

FINANCING ENERGY EFFICIENCY—RECENT EXPERIENCES

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Purpose

The purpose of this paper is to provide a few selected examples of existing financial mechanisms to finance energy efficiency (EE) and foresee elements of future financial instruments.

The paper analyses three financial mechanisms: one within the Convention, an intermediary one, and one outside the Convention: The Global Environmental Facility (GEF)—as the financial arm of the UNFCCC; the Japan Bank for International Cooperation (JBIC)—an example of national development bank outside the Convention; and the recently created Clean Investment Funds (CIF)—an intermediary proposal.

I. The tools: example from Global Environmental Facility (GEF) & Japan Bank for International Cooperation (JBIC): lessons

- a. Barrier removal through OP-5 from GEF
 - i. Process

The Global Environmental Facility (GEF), the financial arm of the UNFCCC, approaches climate change mitigation through a range of specific programme areas including: barrier removal to energy efficiency; the promotion and improvement of renewable energy use; cost reduction for low GHG emitting energy; supporting sustainable transportation; and a remaining activities which include creating adequate policy and institutional environment, capacity building, loans, technology transfers and risk guarantee mechanisms.

At its first meeting, the Conference of the Parties (CoP) of the UNFCCC provided the GEF with several guidelines. Amongst the different programmes to emerge, one of the most relevant was Operational Programme no.5 (OP-5), focuses on barrier removal. The objective of OP-5 is to reduce the risk of climate change by “reducing net greenhouse gas emissions from anthropogenic sources and by protecting and enhancing removal of such gases by sink.”

Paragraph 5.6. states that “This Operational Program shares with Operational Program Number 6 its design and the programmatic objective of removing barriers to market-oriented transactions. Both of these programs are intended to lay the foundation for increased public and private sector investments that also result in mitigating potential climate change.” (GEF, 1995)

In effect, OP-5 focuses on barrier removal for energy efficiency projects.

- ii. Examples

A number of examples can be drawn from the energy efficiency programme area which has led to a notable change in energy use. From 1993 to 2000 for instance, the GEF implemented a demand-side management plan in Thailand, with an overall budget of USD 189 million. The money was co-financed through a GEF grant of USD 9.5 million, a loan from the Australian Government of USD 5.4 million, a loan of up to USD 25 million from the Overseas Economic Cooperation Fund of Japan, and finally funds from the state-owned public electricity utility, the Electricity Generating Authority of

¹ The viewpoints expressed in this paper are solely those of the author. They do not represent those of the IEA or its member countries.

Thailand. The programme resulted in the installation of approximately 1.5 million Compact Fluorescent Lamps (CFLs) in Thailand. CFLs consume on average 8 times less than the incandescent bulbs that were replaced and the programme contributed to a drop in CFL price of 30 to 35% during the same period. The Thai DSM project also demonstrated the importance of institutional changes where the market share of CFLs grew from 40 to 100% and led to the creation of a demand-side management office in Thailand within the national utility. In turn, this new institution was able to negotiate voluntary agreements with the private sector, and promote energy efficiency appliances through awareness campaigns and labelling programmes (see Buchner and de T'Serclaes, forthcoming). Overall, the post implementation report of the GEF estimates that the programme led to energy savings of 3 140 GWh per year, a peak reduction of 566 MW, and an estimated GHG emission reduction of 2.32 Mt/CO₂ eq per year.

Beyond OP-5, other GEF mitigation programmes target reduction in the *price* of low-emitting GHG energy technologies. In such programmes the GEF provides grant financing to reduce the costs of highly efficient technologies. This strategy builds on the idea that providing developing countries with early experience in new, emerging, low-GHG emitting energy generating technologies in niche applications will contribute to the expansion of the demand for these technologies, which in turn will increase production and reduce costs. The Fuel Cell Bus (FCB) project in China is one of the best examples in this part of the GEF programme. The project Demonstration of Fuel Cell Bus Commercialization in China (GEF Grant: \$5.77m) is part of the November 2005 GEF Work Program. It intends to support the commercial viability and replicability of the FCB. By 2010, it is planned that production of FCBs reaches a number of 30 per year, a number that is expected to stimulate the production of the technology by local Chinese companies. Daimler Chrysler (China) is the central corporate partner in the project and is gaining experience with FCB production early in its production cycle (GEF, 2006; UNDP/GEF, 2005).

iii. Questions/limits

The OP-5's effectiveness in contributing to build capacity in the country of implementation and remove barriers has been established. In association with other institutions, the GEF has been able to trigger a fairly high amount of money (i.e. from private sector, as well as from other public financial institutions) estimated at a 1 to 3 ratio.

- GEF climate mitigation programmes are all subject to regular evaluations which identify, track results, and help to flag whether or not the programmes are replicable in other locations. However, despite regular evaluation (i.e. every four years), the next set of programmes do not rely on the results of these evaluation (rather than the broader programme level), and there is still no systematic evaluation and reporting to assess project-by-project performance (GEF, 2008). Typically, although ex-post evaluation of the programmes are conducted, cost-effectiveness of the policies being measured then, to this day these results are not used as factors to determine whether to replicate the scheme afterwards.
- Should such element be introduced in the next set of the GEF reforms?

b. Revolving Fund: JBIC

i. Process

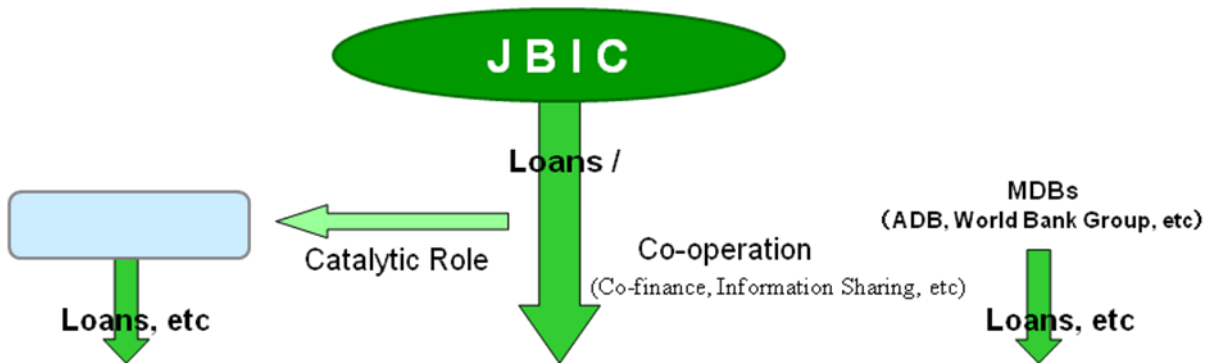
The Japan Bank for International Cooperation (JBIC) announced in March 2009 a USD 5 bn initiative to finance energy efficiency, renewable energy, water infrastructure and urban transportation projects—with a focus on Asian countries. This 2 year programme money will be allocated through Leading Investment to Future Environment (LIFE) which main purposes will be to leverage money from other institutions. More specifically, LIFE will target upgrades in existing transmissions and distributions, modernisation of heat recovery of steel furnaces and cement kilns, as well as Energy

Service Companies (ESCOs) development. The main aim of LIFE is to promote scaling up of private financing hence it focuses on loan guarantees and risk mitigation programmes.

Official Development Assistance (ODA) is currently the largest financial contribution from Japan towards helping the transition of emerging economies to a low carbon economy.

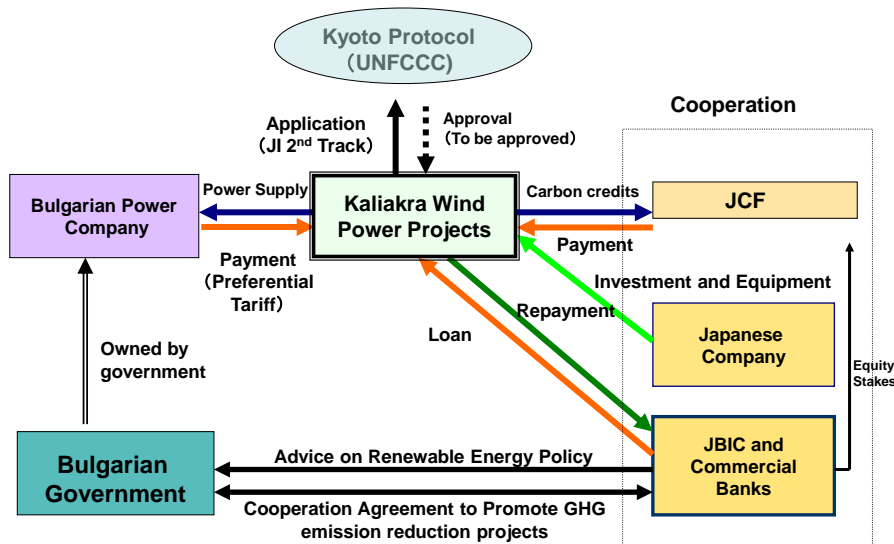
ii. Examples

Figure3: The role of JBIC



More specifically the role of JBIC as illustrated in the financing of a wind farm in Bulgaria is:

Carbon Finance and JBIC'S Finance



As illustrated by the figure, JBIC collaborates both with private commercial banks, as well as with local governments to ensure the maximum leverage to its investments. This approach seeks to promote sustainability of JBIC investments. The first life project is manufacturing of SC boilers under the cooperation by Indian-Japanese companies. This project will supply SC boilers to Indian market and if there is some pace they will export equipments.

For the time being, one of the main shortcomings of JBIC investments is that they still focus extensively on renewable projects more than energy efficiency projects.

c. Questions/limits

- In such context, i.e. when government's highest level of investments comes from their national development bank, what options exist for the international community to monitor the effectiveness of the investments?
- How do different private initiatives vary? What are the different allocation means? Seems to be mainly through PPP but how does it work exactly?

II. Current proposal and moving forward

a. Clean Technology Fund

i. Origins

Understanding the importance of providing additional resources to developing countries while waiting for the agreement on a future financial architecture, Multilateral Development Banks (MDBs) together with developed and developing countries have developed the Climate Investment Funds (CIFs): the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). The CTF seeks to fill a gap in the international architecture for development finance available at more concessional rates than standard terms used by the MDBs. It aims at scaling up financing in a significant way to provide incentives for developing countries in the integration of nationally appropriate mitigation actions into sustainable development plans and investment decisions. The main areas of focus of the CTF are: deployment and transfer of low-carbon technologies in power sector, transportation, and energy efficiency in buildings, industry and agriculture. The SCF on the other hand provides financing to pilot new development approaches or to scale-up activities aimed at a specific climate change challenge through targeted programs. The first program to be included in the SCF would pilot national level actions for enhancing climate resilience in a few highly vulnerable countries. Other programs under consideration include: support for energy efficient and renewable energy technologies to increase access to "green" energy in low income countries; and investments to reduce emissions from deforestation and forest degradation through sustainable forest management (World Bank, 2009). The Funds are meant to serve as an interim measure before agreements can be found.

ii. Process

On July 1st, 2008, the World Bank Executive Directors approved the creation of the Climate Investment Funds; and on September 26th, 2008 donors gathered to pledge USD 6.1 bn. The CIFs are managed by the World Bank and implemented jointly. The financing products of the clean technology fund are defined as followed in paragraph 3 (c) of the Clean Technology Fund, 2009:

"Outgoing financing from the CTF can be no more concessional than incoming financing.

- i- Grant contributions may be used to finance grants, concessional loans and other financial products, such as guarantees;
- ii- Capital contributions may be used to finance concessional loans and other financial products, such as guarantees;

- iii- Loan contributions may be used to finance loans and other financial products, such as guarantees, on terms no more concessional than the terms of the contributions.”²

iii. Questions/limits

It is too early in the process to evaluate the impact of the CIF, which in any case is only meant to be an intermediary vehicle while no agreements on the nature of the financial architecture has been decided. The Funds can already be commended for moving away from concessional loans to more refined instruments such as loan guarantee programmes in collaboration with local MDBs in an effort to promote energy efficiency programme.

This being said, should the CIFs survive longer than expected due to an international failure to strike an agreement on a future financial architecture, this study encourages policy-makers to consider including the possibility to contribute to the capacity building or institutional reinforcement of emerging economies.

Conclusion

Overall, the observations and lessons drawn from current financial mechanisms raise the following questions:

- What are strength and weaknesses of concessional vs. loan guarantee programmes?
- There is presently no mention of money being spent for capacity building which still stand as one of the most pervasive remaining barriers to higher energy efficiency implementation in emerging/transitioning economies.
- GEF OP-5 is effective in overcoming those barriers, however
- What other stakeholders should be involved when designing a fund? Should increased cooperation with private sector be encouraged?
- Is the mobilisation of greater volumes of financing the key challenge? Is sufficient attention being paid on how the disbursement of financing could be made more effective and efficient? For example, large volumes of money are already being committed through the CTFs. Governments are encouraged to design clear paths on disbursement procedures.

References

Bali Action Plan (2007) <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>

Buchner and de T'Serclaes *forthcoming* “Financing energy efficiency in emerging economies: the case of carbon finance?” IEA/OECD

GEF 1995 http://www.gefweb.org/Operational_Policies/Operational_Programs/OP_5_English.pdf

GEF 2002. *GEF Lessons Notes 14: Best Practices in Project Monitoring and Evaluation: Lessons Learned in Manufacturing and Marketing of Energy Efficient Products* www.gefweb.org

GEF 2006. *UNDP-GEF Fuel-Cell Bus Program: Update*. GEF Council.

² Clean Technology Fund: Financing products, terms, and review procedures for public sector operations” May, 2009
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0,,contentMDK:21713769~menuPK:4860081~pagePK:210058~piPK:210062~theSitePK:407864,00.html>



GEF 2008a. *Elaboration of a Strategic Program to Scale up the Level of Investment in the Transfer of Environmentally Sound Technologies*, GEF Council; Washington, DC.

GEF 2008b. *Investing in our Planet: Gef Annual Report 2006-2007*. GEF: Washington, DC.

Tirpak, Dennis & Helen Adams (2008) 'Bilateral and multilateral financial assistance for the energy sector of developing countries' *Climate Policy* (8) pp.135-151 (for the Annex)

UNDP/ GEF, 2005. *Project Write-Ups: Demonstration of Fuel Cell Bus Commercialisation in China*. Available at: http://www.undp.org/gef/05/portfolio/writeups/cc/fuelcellbus_china.html

UNFCCC (2007) *Investment and financial flows to address climate change*
http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/background_paper.pdf

UNFCCC(2009), *Recommendations on future financing options for enhancing the development, deployment, diffusion and transfer of technologies under the Convention*.
<http://unfccc.int/resource/docs/2009/sb/eng/02sum.pdf>

On the Climate Investment Funds:

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0,,contentMDK:21713769~menuPK:4860081~pagePK:210058~piPK:210062~theSitePK:407864,00.html>