



Online course

Climate finance – further reading Examples of financial mechanisms

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Climate Finance – further reading

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1 Financial mechanisms - examples

1.1 GEF project example Philippines: on-grid PV – CEPALCO demonstration project

Learning objectives: after this session you should be able to ...

- Describe the technical details of CEPALCO photovoltaic demonstration project
- Describe the finance sources for the project

GEF Project sizes range from:

- full-sized projects (>USD 1 million),
- medium-sized projects (<USD 1 million), to
- small grants programme (<USD 50,000)

An example of a full-sized GEF project is the CEPALCO photovoltaic demonstration project in the Philippines. In December 2002, CEPALCO received USD 4 million in GEF funding from the International Finance Corp. (IFC) to build a 1 MW distributed generation power plant. Funding was provided as a loan convertible to a grant after five years of successful operation. The objectives of the project were to (1) act as a demonstration plant for grid-connected applications of PV power plants; and (2) demonstrate the principle of conjunctive PV-hydro peak power generation.¹

The project was built to operate in conjunction with an existing 7 MW hydropower plant on the Philippine island of Mindanao.

Significantly, the plant provided the first full-scale demonstration of the environmental and economic benefits of the joint development of PV-hydro resources and represented the first example of grid-connected PV in developing countries. This project demonstrated a solution towards solving storage issues faced by fluctuating renewables by using local water resources as a cost-effective way to store

¹ GEF (n.d.)

solar energy. The hydro plant operates as a load follower, varying its output inversely with that of the PV plant. The water in the reservoir is only used when PV output is not available.

Fully operational since 2004, the CEPALCO plant has operated successfully. The plant demonstrates the positive synergy between solar and hydro resources that can increase the value of both resources. However, due to the unbundling of the generation and transmission business, the concept of conjunctive PV-hydro makes *less* economic sense for the CEPALCO today.²



Cagayan de Oro Power and Electric Light Company's solar powered plant (Cepalco, 2014)

1.2 GCF project example: energy efficiency green bonds in Latin America and the Caribbean

Learning objectives: after this session you should be able to ...

- Give an example of a GCF project
- Identify barriers to energy efficiency financing

This project addresses demand-side energy efficiency (EE) in Latin America and the Caribbean through green bonds, by using the concept of aggregation to mobilise institutional funds.

The project follows the following stages:

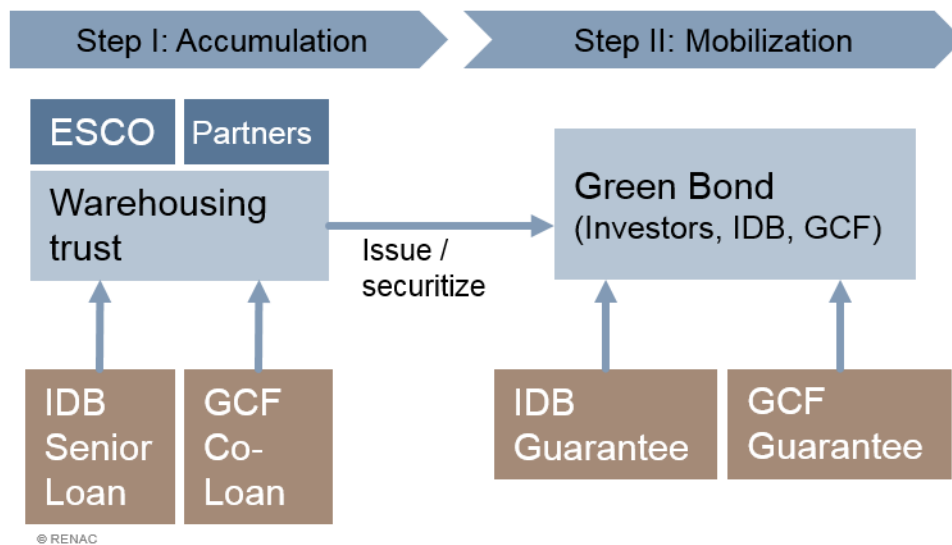
- (1) Energy Service Companies in Mexico develop EE projects.
- (2) The programme provides senior loans to special purpose vehicles that serve to finance, standardise and accumulate EE projects.
- (3) The programme provides credit guarantees to support the securitized bonds to be issued in the local or international capital markets.
- (4) The financing structure applied in Mexico is replicated in several capital markets of the LAC region.

Lack of adequate financing is a major barrier to private sector initiatives in energy efficiency. Local Financial Institutions (LFIs) are very conservative when lending to private sector companies and also have limited expertise and capacity to market, assess and structure EE financing. This results in LFIs' preference for short-term, collateral-based lending schemes against a company's balance sheet. This lack of knowledge and risk appetite leads to inadequate financing terms for these private sector initiatives in EE.

² USAid (2009)

In this programme, GCF financing complements funds from the Inter-American Development Bank that serve to provide guarantees and loans for the issuance or securitization of Green Bonds. The programme will build on pilot activities in Mexico: in 2015, the IDB and the CTF had supported the issuance of USD 125 million of green asset-backed securities backed by energy efficiency loans in the Mexican debt capital markets.³ In its initial phase, the new Programme targets Colombia, the Dominican Republic, Jamaica and Mexico.

The Programme targets USD 780 million of private investments. The GCF contributes USD 215 million in loans or guarantees. Co-financing of USD 306 million is provided by the Inter-American Development Bank (IDB).⁴



Description of the structure of the programme (GCF, 2015b)

1.3 Carbon fund example: the Pilot Auction Facility (PAF)

Learning objectives: after this session you should be able to ...

- Draw a diagram with the different work steps of the PAF for every auction
- Describe the auction mechanism as applied by the PAF
- Explain the functioning of alternative auction mechanisms

The Pilot Auction Facility for Methane and Climate Change Mitigation (PAF) is a climate finance model developed by the World Bank.

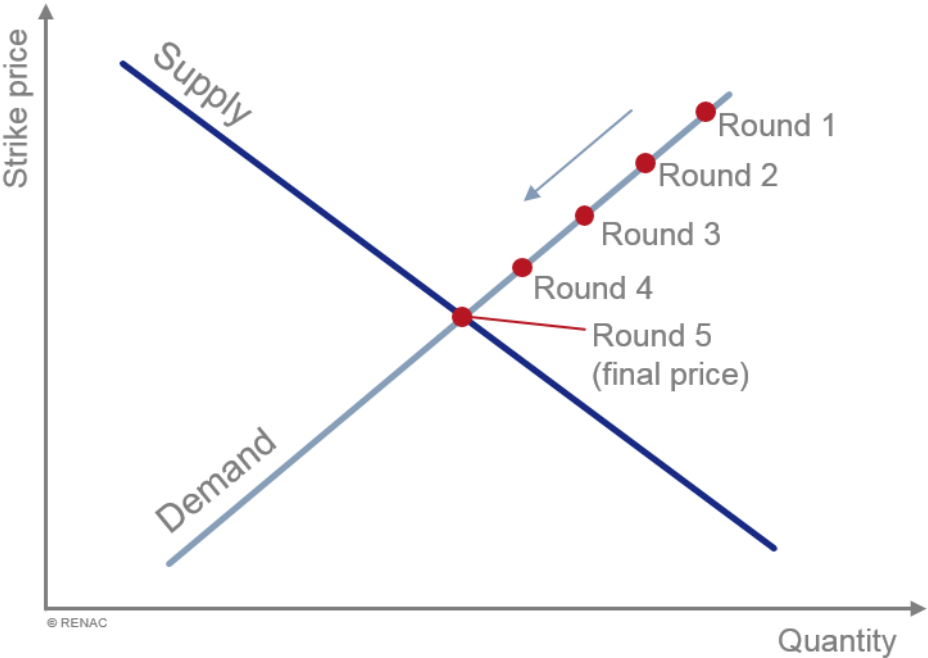
The PAF holds an auction, offering a bond with a put option (a guaranteed price) for projects that cut methane emissions. Winners of the auction purchase Pilot Auction Facility Emission Reduction Notes (PAFERNs) at the cost of a put option premium, which the PAF fixed and announced in advance of the first auction. Upon delivering emission reductions, independently verified according to the CDM

³ [Kidney S. \(2015\)](#)

⁴ GCF (2015c)

verification standard, the bondholders can sell the CERs to the PAF at the pre-agreed price, the “strike” price, or at the international carbon market. If sold to the donor funded PAF, the CERs will be retired.⁵

The first auction was held in 2015 using a *multiple round, reverse, uniform price auction design*. In a multiple round auction, bidders participate in a series of rounds during which they submit bids relaying the quantity demanded for a given price level.⁶ At the end of each round, the auction manager reveals the aggregate demand at that price. The auction manager then announces a new price for the next round, and this process continues until demand no longer exceeds supply. The PAF currently runs a single product auction. Since the lowest-cost opportunities win (which are bids mostly found in middle-income economies), the PAF may decide in the future to “carve out” a portion of the supply and offer it as a separate product for low-income countries.⁷



Step-by-step process of the Pilot Auction Facility for Methane and Climate Change Mitigation (World Bank, 2015)

⁵ World Bank (2014b)

⁶ World Bank (2015)

⁷ Ausubel L.M. et al. (2014)