

BUILDING THE PHILIPPINES' CAPACITY FOR GRID-CONNECTED SOLAR POWER

The Cagayan Electric Power and Light Company, or CEPALCO as it is generally called, had considered increasing its generation of fossil fuels to meet the Philippines' growing demand for energy. Instead, CEPALCO, the third largest electric distribution utility in the Philippines, is supplying energy through a GEF solar photovoltaic (PV) project. This groundbreaking project combines hydro- and photovoltaic-based power for homes, schools, hospitals, offices, and other users.

The key to this demonstration project is its strong emphasis on education and capacity building. The project is improving CEPALCO's technical competence in electricity generation from renewable sources and providing valuable know-how in the development and operation of clean energy distributed electricity generation. On the national level, it is strengthening the Philippines' capacity for solar power. On the international level, it is supporting the development of a global market for solar PV technology.

THE PROJECT

The CEPALCO project is a first of its kind: the largest grid-connected PV installation in the developing world.

The one-megawatt grid-connected solar PV power plant operates on the island of Mindanao. The PV plant works in conjunction with the recently built seven-megawatt hydroelectric power plant. The hydro plant operates as a load follower, varying its output inversely with that of the PV plant. The saved water is stored in the hydro plant's reservoir, to be used when PV

output is not available. The PV installation is designed to meet peak power needs during the daytime and allow the dam—which has insufficient water flow to run 24 hours a day—to store capacity for nighttime use. Because this hybrid project combines hydro and PV power, it is fully dispatchable. To avoid transmission and distribution losses, the PV plant was constructed just five kilometers southeast of the business district of Cagayan de Oro, which is located within CEPALCO's distribution system.

BENEFITS

The PV plant is expected to generate more than a million kilowatt-hours of clean electricity annually. This amount of electricity will displace about 1,500 barrels of fuel oil per year, reducing carbon dioxide emissions by about 800 metric tons per year. The project will not only have global environmental benefits, it will also benefit the local environment by reducing the emission of diesel generation, which would otherwise be used. Using clean technology helps to provide a clean environment for the local population.

INNOVATIVE FINANCING

The project is innovative not only in its design but in its financial structure. The GEF is financing a loan that can convert to a grant after five years of operation if specific conditions are met. This financing structure should promote timely execution and operation of the project.

POTENTIAL FOR REPLICATION

The GEF hopes the CEPALCO project—a first of its kind in design, technology, and financial structure—will spur similar projects throughout the

world. The project has enormous potential for replication. If the large-scale introduction of this technology helps to substantially reduce the costs of PV systems, as expected, worldwide applica-

tions are likely to result. There exist some 360,000 megawatts of potentially suitable hydro plants in developing countries that could benefit from combined hydro-PV projects.

**FOR MORE
INFORMATION**

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