

CLEAN TECHNOLOGY FUND

MARKET TRANSFORMATION THROUGH INTRODUCTION OF ENERGY EFFICIENT ELECTRIC TRICYCLES PROJECT

Independent Review Letter: June 22, 2012

1. Endorsement

I have reviewed the Asian Development Bank (ADB) draft Report and Recommendation of the President (RRP) dated June 2012 for Republic of the Philippines: Market Transformation through Introduction of Energy Efficient Electric Vehicles Project, which is proposed for Clean Technology Fund (CTF) co-financing. In order to assess the decision-making context for this project, I have also reviewed the original CTF Country Investment Plan (CIP) and the proposed revision to the Philippines CIP (also dated June 2012). The findings from this review – summarized below – are that the proposed changes are consistent with both the criteria for the CTF and the long-term objectives of the original CIP. I conclude that the proposed electric vehicles project is consistent with the CIP Update and meets the CTF eligibility criteria.

2. Review Summary

The proposed revision to the CIP would reallocate the \$125 million of CTF funds originally identified for a net metering program using distributed solar power to cover two new projects – one for energy efficient electric vehicles (EEEVs) and the other a reformulated solar energy development project. The major circumstances leading to the change are cited as: promotional rules for renewables (RPS, feed-in tariffs, and net metering) have yet to be finalized and are being focused on large ground-mounted systems; and a successful pilot test of 3-wheel EEEVs was recently conducted with ADB support is ready for scale up. The Government of the Philippines (GoP) supports the funding shift to re-direct \$105 million to EEEV project and \$20 million to the reformulated solar energy development project centered on rooftop PV applications. This review focusses on the EEEV project and finds that the prospective investment is consistent with the long-term objectives of the original CIP – as noted below – and appropriate for CTF support given their transformational nature and replication and scale-up potential.

Potential for GHG Emissions Savings: The EEEV project has significantly greater GHG emission reduction potential. 100,000 3-wheel EEEVs will deliver 270,000 tCO₂e per year compared to a GHG reduction potential of about 100,000 tCO₂e per year for the original project. In addition, the reformulated solar energy project is expected to achieve approximately 30,000 tCO₂e per year GHG reductions.

Demonstration Potential at Scale: The potential of the EEEV project at scale is considered quite significant given its high likelihood of being replicated and its broader market size both in the Philippines as well as the region. The replicability of the EEEV project is considered high because of the fundamental cost-effectiveness of the EEEVs on a life-cycle basis. The primary market entry barriers (and first-mover risks) are the lack of a mechanism to monetize the life-cycle savings to assist end-users in the initial purchase, which is what this project is designed to do. The scale-up potential is estimated to be more than 20 to 1 for the EEEVs, given the similarities to auto-rickshaws used in other Asian countries including Bangladesh India, Indonesia, and Thailand. However, the analysis assumes a more conservative 10 to 1 scale-up.

Cost-effectiveness: The EEEV project is also more cost-effective with CTF funds than the original. The EEEV project is projected to achieve 0.27 MtCO₂e per year of GHG reductions at a CTF cost of \$105 million, which is \$39/ton-year, declining to \$3.89/ton-year with replication and scale-up. The original solar net metering projects was projected to achieve 0.1 MtCO₂e per year of GHG reductions at a CTF cost of \$125 million, which is \$125/ton-year, declining to \$12.50/ton-year with replication and scale-up.

Development Impact: The EEEV project will accelerate the growth of new industries in the Philippines by demonstrating new, cost-effective technologies, systems and business models and by reducing first-mover risks for both vehicle purchases and charging stations. Impacts with respect to local environmental benefits, energy security and employment are considered to be much more significant than in the original project. In particular, the solar charging station component, for which CTF grant support is requested, would demonstrate technological viability and help set the stage for more EEEV charging by renewable energy, which will maximize their GHG emission reductions in the longer term.

Implementation Potential: The EEEV project addresses significant market entry barriers and is evaluated as having moderate implementation risk as discussed below.

The project is based on a successful pilot project in the Metro Manila region but will face technical, marketing and systems development challenges. The pilot project involved 20 locally made electric 3-wheelers (e-Trikes) powered by lithium-ion batteries. The proposed project intends to scale-up the program to 100,000 e-Trikes and transform the electric tricycle industry of the Philippines by establishing new electric vehicle supply and support industries and developing new marketing, sales, financing mechanisms. The project outputs appear inclusive and consist of (i) e-Trike procurement including a standard (not less than 3-years) warranty on mechanical and technical performance, (ii) development of battery supply chain and e-Trike service businesses, (iii) establishing 4 pilot projects for solar charging stations, (iv) development of recycling and disposal programs for both batteries and retired gasoline-engine tricycles, and (v) public communication, social mobilization and technology transfer. Interestingly, no new or changed government policy is required to develop this market.

The project investment plan is understandably dominated by the e-Trike purchases. Funds for supporting infrastructure and consulting support appear adequate. Implementation arrangements appear well designed with a Steering Committee consisting of the major government stakeholders, a financial executing agency and technical implementing agencies at the national and local levels. The establishment of an effective project management unit will be critical to the project's success – as noted in the RRP, and the project will benefit from staff and consultants experiences with ADB procurement guidelines.

Rationale for CTF Financing: The new EEEV project proposes to use CTF for covering additional costs associated with first-mover risks. These are related to the introduction of electric vehicles, solar charging stations and new business models for vehicle ownership and operations.

3. Conclusions

In this reviewer's assessment, the proposed EEEV project is clearly eligible for CTF co-financing, and in the broader development context the updated CTF Investment Plan for the Philippines is an appropriate and rational adjustment in response to changing circumstances and new opportunities. Commercial development and deployment of electric vehicles will decrease gasoline consumption and increase energy security in the Philippines thereby saving foreign exchange and protecting consumers against global price fluctuations.

Carbon finance – an increasingly uncertain area - can provide some financial support, but is unlikely to be sufficient to overcome the cost and risk barriers noted above. The CTF is better suited to provide a catalytic role in reducing or eliminating first mover risks and cost barriers for wide scale adoption of efficient electric vehicles at the fleet-scale.

Respectfully submitted,

A handwritten signature in cursive script that reads "Pascal De Laquil III".

Dr. Pascal (Pat) DeLaquil
CEO, DecisionWare Group LLC
Annapolis, MD, USA
202 494-8836, pdelaquil@comcast.net