

## Boracay Electric Tricycle Program

■ Sarah Muniz

### Background

Boracay Island in the Province of Aklan is one of the country's primary tourism destinations, drawing more than a million local and international tourists annually. But while revenues from the tourism industry reach close to PhP20 billion a year, the costs to the environment are likewise high.

The air quality in Boracay is suffering from the emissions of the more than 500 registered tricycles (motorcycles fitted with a sidecar) that ply this tiny island of 10 square kilometers. Owing to their affordability and easy maintenance, two-stroke engines comprise the majority of these. But due to its inherent design, these engines do not combust fuel efficiently and cause higher emissions of particulate matter. Lubricant oil for these types of engines contribute 95 percent of particulate matter emissions.

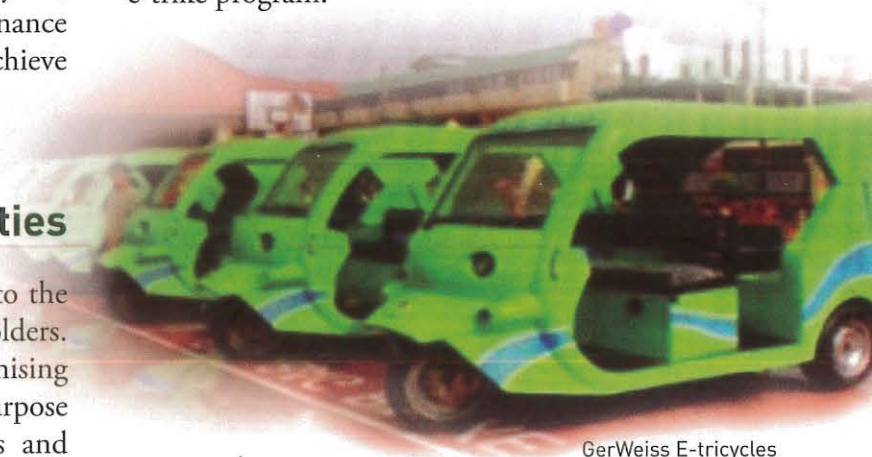
So as early as 2010, Malay's Mayor John Yap had the idea of turning Boracay into an "e-trike island". With the support of the Asian Development Bank (ADB), GerWeiss, a local manufacturer of electric tricycles, and BPI Globe BanKO, a mobile-based microfinance savings bank, they developed a program to achieve this goal.

### Stakeholders and responsibilities

The success of the program can be attributed to the close cooperation among the primary stakeholders. Namely the Municipality of Malay, as the franchising authority, the Boracay Land Transport Multi-Purpose Cooperative, representing the tricycle drivers and

operators, GerWeiss Motors, as the technology supplier, and BPI Globe BanKO as the provider of credit finance.

The local government unit (LGU) of Malay as the franchising authority for tricycles in Malay has been at the forefront of pushing for the e-trike program. It has set the legal and institutional frame conditions to promote the program. It adopted relevant resolutions, policies and guidelines to pave way for the program, e.g. policy on tricycle aging for units in Boracay Island, guidelines and policies on e-trike availment/distribution, etc. The responsibility of involving the Boracay Land Transport Multi-Purpose Cooperative (BLTMPC) in discussions on phasing out fossil fuelled tricycles to introduce e-trikes as well as negotiating and orienting tricycle operators on the benefits of the e-trike program has been upon the LGU. Despite the initial resistance of BLTMPC, it was left with the only option of embracing the program for the sake of the environment and to sustain the tourism industry of Malay. For its part, LGU Malay offered to dispose of the old tricycle units for those who avail of the e-trike program.



GerWeiss E-tricycles



GerWeiss Motors Corporation, on the other hand, bears the responsibility for manufacturing and supplying the energy efficient e-trikes, supplying the batteries, as well as establishing and operating the battery and maintenance stations. GerWeiss further ensures that every e-trike unit sold to LGU Malay is already LTO-registered. The lithium batteries used for e-trikes are leased to e-trike operators for PHP300.00/day. GerWeiss opted to maintain ownership of the batteries to ensure its proper maintenance, monitoring of the battery performance and to address any defects directly to the manufacturers, who are responsible for replacement, disposal and recycling of faulty batteries.

BPI GLOBE BanKO in cooperation with the aforementioned stakeholders is responsible for granting loans to tricycle operators who are interested to avail of the e-trike program. Different payment schemes can be availed of for the amortization of the e-trike loans. If an operator can no longer continue the payment of the loan and wants to quit the e-trike program, the LGU offers to find a new owner for the franchise and to transfer the loan.

Decisions are taken through an Ad hoc Committee on e-trike program which meets regularly or as the need arises. Recommendations are made by the committee and the Chief Executive has the final say after consultation with the Sangguniang Bayan (c/o MTRFB).

## Strategy & Process

The first step of the LGU was the creation of an Ad hoc Committee on the E-trike program, which immediately started the consultation with the transport group. The LGU was then scouting for different e-trike suppliers, and conducted test runs of units. GerWeiss won the bid on the basis of the performance of their units.



Meeting with the tricycle drivers and operators

To facilitate the conversion of tricycles to e-trikes in Boracay, one of the first steps was for LGU Malay to develop a scheme for phasing out aging tricycles, which was implemented as a policy. This paved the way for a graduated transition for phasing out old tricycles and getting the buy-in of operators to invest in an e-trike instead. BLTMPC was consulted on phasing out tricycles from the beginning. LGU Malay further created incentives for those who would avail of e-trikes. For example, the first 100 operators to buy e-trikes shall be exempted from the color coding scheme. During the implementation phase from 2011-2013, a number of resolutions were passed and adopted by the Sangguniang Bayan to institutionalize the e-trike program. Respective ordinances shall follow once the implementation has been completed.

Although LGU Malay was prepared to finance the initial investment of PHP20million for the first 100 e-trikes through their development funds, the ad-hoc committee also scouted for other funding options. It was very fortunate that BPI GLOBE BanKO stepped in to become a stakeholder in the e-trike program by coming up with financing schemes for the interested e-trike operators. After learning about the e-trike program from GerWeiss, the incentive for BanKO to invest was twofold—to tap a part of the “unbanked” population, or those who not have bank accounts, such as tricycle drivers; and to include it as among their corporate social responsibility programs.



It is therefore safe to say that it has made the implementation of this program a lot easier as there are no government funds involved, but financial transactions are managed privately. The sole responsibility of the LGU has been to establish the institutional and legal frame conditions by adopting specific policies and issuing the franchise to operate the e-trikes. The Ad hoc Committee and GerWeiss made a final assessment of the total package (i.e. quality of e-trike, funding, capacity to pay premium, operation policy for sustainability), which it then offered to the transport group for acceptance.

As a pioneer in manufacturing e-tricycles in the Philippines for GerWeiss Boracay has been the perfect location to pilot its e-trikes due to its international market. As the company was founded only three years ago, it provided the company with an opportunity to eventually expand to other major tourist hubs beyond the Philippines.

## Learning & Innovation

The process that was applied has been quite effective, as the affected sectors have gained acceptance of the program. The first 100 e-trikes that were ordered are already reserved by interested tricycle drivers. Constant improvement to the e-trike performance has helped to overcome the general perception that e-trikes would be slower than ordinary tricycles. Proper systems have been designed to sustain the program.

### Improving the e-tricycle.

The first e-tricycles manufactured by GerWeiss in December 2008 are the ones still in use in Fort Bonifacio, Global City in Metro Manila. The Asian Development Bank became interested in the e-tricycles and invited big foreign companies from Japan, Korea and Taiwan to invest. However, the e-tricycles now

used in Boracay have come a long way since the first models used in Fort Bonifacio.

GerWeiss has moved its e-tricycle manufacturing site to Caticlan to focus fully on the constant improvement of its units according to the conditions in Boracay. To avoid oxidation on metal coating, the material used for the body of the e-trikes is fiberglass. The e-tricycles are assembled in the Philippines with most of the materials available, yet the motor and batteries have to be imported.

The lifetime of batteries was among the first problems to be addressed by GerWeiss. The charging time of batteries has been improved from initially running for 2-3hrs only and charging for 3-4hrs, the Lithium batteries used now are operational for 4-5hrs, and charging would be reduced to one hour.



Furthermore, GerWeiss will operate the battery swapping and maintenance stations for e-trikes. For the first 100 units, up to three stations will be established around the island. Until 2016 the number of stations shall be increased to 5. The concept of swapping reduces the downtime of e-trike operators significantly, as they no longer have to charge the batteries themselves but swap these against fully charged batteries at the stations, which only takes about 5 minutes. Since GerWeiss manages the batteries on behalf of the manufacturer, it bears the full responsibility for the proper use. The battery lease costs PHP200.00/day and swapping is only PHP100.00/day for operators no matter how often they swap. To monitor the e-trike and battery performance, GerWeiss has integrated GPS in all



e-trike units, which allows technicians to track the routes a unit has been driving, to notify operators if they are running out of charge or their unit is overheating. Every operator is further supplied with a free mobile phone on which these automatic alerts are prompted. Monitoring the battery performance shall help in improving its performance and to address any errors to the manufacturer. GerWeiss therefore not only offers a proper e-tricycle system but is also hands-on regarding the aftersales support and service of its units. As the monitoring system is web-based, the GerWeiss operations center is remotely monitoring the use of e-trikes from Manila, where one operations officer is assigned per tricycle operator and driver association (TODA).

### The total package

Tricycle operators in Boracay island earn as much as PHP1,500.00/day, compared to only about PHP400.00/day on mainland Malay. For this reason, LGU Malay was confident that the total package the committee had worked out for e-trike operators would be sustainable. An e-trike unit costs about PHP193,000.00. Since the batteries are owned by the manufacturer and managed by GerWeiss, the additional cost of PHP200,000.00+ per batteries does not have to be borne upon the operators. The cost of swapping and lease of batteries at PHP300.00/day is

close to the cost of refuelling an ordinary tricycle. BPI GLOBE BankO further offers flexible amortization schemes that allow for operators to pay off the unit in 3-4 years without having to sacrifice a lot of their daily income.

## Lessons Learned

LGU Malay's experience shows that an in-depth study of the complete program is a must. From bringing the first 10 e-trikes onto Boracay island in December 2011, there was sufficient time to set the frame conditions for the successful implementation of the e-trike. The Ad hoc Committee recognized the importance of involving all sectors and relevant stakeholders in the planning and implementing stages, since there had to be a clear understanding of the purpose of the program by all affected parties. Only by doing so has LGU Malay been able to develop and present a workable packaging proposal to e-trike operators. Last but not least, the political will to push for such a green initiative has been there with the dedication of the local chief executive and the assigned staff in the committee. This was particularly important in countering scepticism and resistance by critical stakeholders.

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#### About ProGED

The Promotion of Green Economic Development (ProGED) Project, a development cooperation project between the Republic of the Philippines and the Federal Republic of Germany, aims to improve the competitiveness of enterprises through the adoption of climate smart and environment friendly strategies. The project will focus initially on the tourism sector in the Provinces of Bohol and Cebu with its high potential for investment, employment and poverty reduction due to its linkage with upstream and downstream industries in other economic sectors. It is implemented in partnership with the Department of Trade and Industry (DTI) and GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). The project duration extends from January 2013 to December 2015.