

A Liter of Light Project (Philippines)

City of Manila,
Provincial Government of Cebu
Meralco Electric Co. (MNL)
Ramon Aboitiz Foundation Inc. RAFI (Cebu)



www.aliteroflight.org

Project Background

Location: Asia. Philippines, Manila & Cebu

Date project established: January 2011

Ilsang Litrong Liwanag is a zero carbon emitting solar lighting project that is being implemented around different cities in the Philippines by MyShelter Foundation. An offshoot of a low carbon building program which was initially aimed at building plastic bottle schools (<http://miniurl.org/0Ys>) throughout the rural areas of Laguna, the solar bottle bulbs started as energy saving supplemental light in classrooms but was then applied to surrounding communities. Today, this has expanded to about 15,000 solar bottle bulbs in 20 cities and provinces around the Philippines. In the National Capital Region (NCR), through the Office of Mayor Lim, 2,000 installations have recently been put into place. The rest have been scattered across the island in the recently concluded Northern Luzon tour where a team lit up 18 communities in Pampanga, Pangasinan, Baguio, La Union, Ilocos,

Tuguegarao, and Isabela. The tour is a clear testimony of how this simple technology is breaking geographical barriers, reaching even the smallest communities in the country. The next program is to build 100,000 solar bulbs for the province of Cebu in one week beginning December 10, 2011.

The solar bottle bulb is a program that uses appropriate technologies to a grassroots green lighting program. The concept is that if the materials are found easily in even the poorest neighbourhoods, can be built with simple carpentry skills, and can be sustained by teaching grassroots entrepreneurs how to continue the program through building and installing the solar bulb, then this facilitates expansion at a geometric rate throughout the country. By putting all this information on the internet, facebook, and teaching caravans throughout the country, we have been able to do this.

This 2011, we expect to reach 200,000 beneficiaries, but with three million in the Philippines without even basic light, the foundation is reaching out to new partnerships with volunteers, local governments and foundations successfully. The foundation's plan is to expand our reach nationally and have begun talks to establish partner offices in Columbia and South Africa.

Mitigation and/or Adaptation

There are several areas that the Solar bottle Bulb makes sense in creating a low carbon emissions through the program. The plastic bottles used are upcycled and avoids the larger energy use of gathering, shredding, manufacturing and shipping of new bottles, but instead uses them as-is to a higher purpose of a lighting appliance. The process is simple with the cutting of a steel sheet that serves as a metal lock to prevent the slippage of the bottle, then this is sealed with epoxy on to the plastic bottle, which will be simply filled with water and 10 ml of bleach then can be immediately applied through the roof.

It is free energy, no carbon emissions, and immediately scalable by social enterprise and lastly is easily replicated by the local government using its more considerable resources.

That's it. The household will be bathed in refractive light of 60 watts on a clear day, and the water in the bottle refracts the light 360 degrees to all corners of a 40 square meter room for less than a US dollar in total plus labor. Savings in electricity expenditure every month is at an average of USD \$6.00 / month .

The carbon footprint of manufacturing one incandescent bulb = 0.45 kg CO₂, Usage of a 50 watt light bulb running for 14 hours in daytime is still 0.77 kg per kwh so 30 days is 16.17 kg a month or 200 kg a year.

So far, 15,000 solar bulbs have been manufactured by grassroots entrepreneurs through funds of local governments and private foundations. Expanded programs through events and volunteers will reach 200,000 by years end.

The WWF Philippines recently assisted us with this email on measuring the CO₂ :

“ Carbon footprint for the manufacture of one incandescent bulb = 0.45 kg CO₂
electricity consumption is approximately 0.77 kg CO₂ per kW·h, so a 50 W bulb that runs for, let's say, 14 hours a day for 30 days releases 16.17 kg CO₂ a month, or nearly 200 kg a year. Moreover, approximately 90% of the power consumed by an incandescent bulb is emitted as heat rather than visible light.”

This deserves more research, but its implications cannot be denied that it has enormous impacts in the local living conditions, economy, and effect on the environment.

If this is correct, then at present at 15,000 built bulbs at 200 kgs will reduce pollution at 3 million kgs in a year of use. 200,000 is 40 million kgs.

The best part of this strategy is it beginning with a developing country solution where everyone can have access through either building as a donation, building for themselves, or building as a business this energy saving, carbon reduction lighting through a bottom of the pyramid strategy complimenting this with importing the more expensive solar and wind technologies.

Social Benefits

The benefit to the local community above all is access. The second is livelihood creation.

Once a seeding program of a few hundred bulbs are put in a village, the effect is immediate, as neighbours get to see how the bulbs are made by the organization and volunteers and the improvement of internal living conditions in the household. Once the monthly bills come in, the average savings of USD \$ 6.00 / month or more is significant is a greater incentive to install for others in the neighbourhood.

This creates a market for solar bottle entrepreneurs such as Mang Demi who began as unemployed, having basic carpentry skills, and difficulty paying electricity bills. Starting with just 500 solar bottles, he has now used his business to service 8,000 clients in lighting up their neighbourhood earning almost USD \$ 0.40 cents per installation.

Mang Demi Bukas Story : <http://miniurl.org/IA0>

Measurement (all numbers are rough based on experiences on the ground):

The application of electricity savings of an average of USD \$ 6.00 / month to the current 15,000 installation is about USD \$ 90,000.00 / month in electricity savings.

This savings in disposable income could result in more funds for nutrition, school expenses, inventories for sale besides the improvement in the quality of living.

The current income for grassroots entrepreneurs per bulb is about USD \$ 0.50 (building plus installing). If at 15,000, the income would be USD \$ 7,500.00

No information on improvement in schools, markets, clinics fitted with solar bulbs.

On the donor side, small donors can start green lighting programs for poor communities without too much financial start ups and make it sustainable with affordable tools donated.

Any teenager can build and install it.

Potential for Scaling-up of project

There are three programs implemented by MyShelter Foundation in the Liter of Light Program.

1) Grassroots Enterprise Model

Seeding initial 100-500 houses by commissioning and paying a designated grassroots

entrepreneur to build and install the solar bulbs. The Foundation will train, provide all tools and materials needed to assemble the bulbs as well as provide assistance of quality control during the first installations. This distribution of installation will be strategically placed in several surrounding villages to create awareness and pilot houses and create a demand for the product and service.

2) Community Volunteer Model

Large scale implementation of the solar bulbs can be done with large sponsors and/or local government. Using a Habitat model, most of the funds will be on materials for the bulb and tools and labour will be through volunteers.

This was tested out for corporate volunteer days with at most 100 people or as many as 300 to build hundreds of solar bottles as well as simultaneous installation.

Story : <http://miniurl.so/u>

3) Volunteer Caravan

Capacity building in 18 cities in the North of the Philippines have been done through volunteer networks. Partner organizations take care of looking for donations for tools to be turned over for use by grassroots entrepreneurs

Story : <http://miniurl.so/s>

4) Viral Replicability

Using website (www.ALiterOfLight) and facebook (A Liter of Light) almost 20 countries have been given access to how to build the solar light bulbs and proper assembly.

Several people have sent in pictures of their installing the solar bulb from around the world.

Potential for Replication of project

Currently two offices with local partners are being started in Columbia and one in South Africa.

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