

THE EMPOWERING SOLUTION

There are over two billion people without access to basic utility services, such as electricity, clean water and adequate lighting. In South-Eastern Asia alone, the net effect of new electrification efforts has been an increase of 250 million un-electrified inhabitants over the last three decades. Some consider this a crisis that demands attention while most are content to ignore it. Innovative businessmen view it as a market opportunity. Whatever the perception of this latter view, it may in fact prove to be the perspective that succeeds in creating sustainable solutions to this daunting problem.

'Micro-enterprise' is at the root of this market-based approach to the bottom of the world's economic pyramid. It is a notion dating back to ancient times. Instead of providing needed goods and services on a charitable basis, empower aspiring micro-entrepreneurs with the tools needed to serve their local markets. With the market size in the billions of people, one major challenge is to accomplish this in a way that it does not rapidly deplete the Earth's limited resources or further damage its fragile eco-system. Another challenge is to find ways to minimise the initial burden of 'capital' required for any business start-up.

The concept of micro-enterprise and its associated challenges provides the mission for SolarOne Solutions. The company is dedicated to developing adaptive clean energy systems that create wealth and improve living conditions across the globe. This mission is embodied in the company's Harvester product line, a versatile solar power platform designed to accommodate application packages such as lighting, water purification and remote telecommunications.

A byproduct of this endeavour has been a body of evidence supporting the company's objectives including invaluable information on a bounty of profitable opportunities. Two are detailed here:



Basic Harvester system



Basic Harvester 3X



Harvester with water purification package



Harvester water purifier operating in Bara, Tanzania. Photo by Tom Thompson of 1st Rochdale Cooperative

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WATER PURIFICATION

Lack of access to clean drinking water is at the root of many health problems in the developing world. Estimates indicate that 1.5 million children die each year from water-borne illnesses. As the population increases, the supply of clean water sources diminishes. In many remote areas of the developing world, bottled water is trucked in and sold at exorbitant rates, without any assurances of its quality. SolarOne has been working with David Robinson, (son of American baseball legend, Jackie Robinson), to set up a water purification micro-enterprise in his village of Bara, Tanzania. The water purification unit is a new package designed for the Harvester. The unit purifies water with a combination of energy efficient ultra-violet technology and conventional filters. In equatorial climates, it can purify up to 3000 litres per day. All indications are that this unit will be able to purify water locally at substantially lower prices to the community than the delivered water, produce very reasonable profit margins to the micro-enterprise and pay back the investment on the 10 year device within six months to a year. It works because it does not rely on infrastructure or fuel and it avoids substantial transportation costs.

BASIC LIGHTING

People without access to the electric grid typically illuminate with fuel-based devices such as candles and kerosene lamps. This type of lighting provides levels of illumination far below that of modern electric lighting and consumes dramatically more energy per lumen of light. Fuel-based lighting depends on costly oil-imports, draining valuable currency from these impoverished countries. Reading under it is extremely difficult, while seriously compromising indoor air quality. Studies indicate that areas relying on fuel-based lighting receive 1/80th the level of light of electric sources and that actual light delivered in developing world households is 1/1000th the lumen-hour of that delivered in the industrialised world. Conversely, fuel-based lighting produces an estimated 98 million metric tonnes of greenhouse gas emissions or approximately 50 percent of the total greenhouse gases produced by residential lighting globally¹. In other words, every lumen-hour of fuel-based lighting produces 1000 times the greenhouse gases as the same lumen-hour by electric lighting.



Harvester with lighting package

The extraordinarily high cost of electric transmission and distribution, coupled with high capital cost, presents a substantial barrier to conventional conversion to electric lighting. Solar electric lighting brings the efficiency and reliability of electric lighting without the enormous costs and time requirements of electrification. It can offset copious amounts of greenhouse gases while greatly reducing the cost of lighting on a per lumen basis. Recent developments in solid state (LED) lighting show great promise for a developing world setting. Based upon US\$10/month spent on lighting by developing world households², SolarOne estimates households can achieve monthly cost reductions of 20 to 50 times per lumen-hour over a 10 year period by converting to a small solar electric LED system.

OTHER MICRO-ENTERPRISE OPPORTUNITIES

Solar products like the Harvester have extremely low capital costs when compared to alternatives for electric power and miniscule operating costs when compared to fuel-based alternatives. SolarOne is currently exploring applications for its use in creating earthen bricks and providing wireless telecommunication and entertainment services. Lastly, products such as these lend themselves to local economic content, including licensing of assembly, service, marketing, sales and even manufacture of components. In short, solar technology creatively combined with new energy efficient technologies offer the ability to convert some of the world's crises into viable business opportunities and enduring solutions. ■

1. International Association for Energy Efficient Lighting
 2. Joint Study of UNDP/World Bank Energy Sector Management Assistance Programme

THE HARVESTER™
PATENT PENDING
MICRO-UTILITY FOR MICRO-ENTERPRISE

The **Harvester** exemplifies SolarOne's™ mission to empower businesses, communities and institutions with adaptive clean energy systems. These fuel/ grid independent systems are capable of delivering AC/DC power, pure water, electric lighting and more. We also offer custom design and consulting services for specific needs. Dealer and assembly license inquiries are welcome. Please visit our website, call us at the number below, or email us at info@solarone.net.

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