



Identifying, developing, and moving sustainable communities through renewable energy

Sustainable
communities

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Abstract

Purpose – Much of the resources for mitigating the impact of poverty found their way into new technologies or programs that aimed to provide energy access to the poor in the “bottom of the pyramid” (BOP). Thus billions have been spent and will be spent on projects such as expensive line extensions or solar panels to the poor living in “last mile” communities. The purpose of this paper is to review the traditional responses to income and energy poverty, and describe a sustainable community model to address the poor at the BOP.

Design/methodology/approach – This paper looks at the approaches that have been tried in making a dent in the poverty incidence in households living in last mile, BOP areas in the Philippines and posits the critical question of why these approaches have failed despite successes in the more economically positioned strata of society. After identifying the critical variables that militate against the successful programs, the authors seek to proscribe a separate methodology for interventions in the BOP tiers of society.

Findings – The initial hypothesis garnered from examining the data suggests that BOP communities lack access to managerial and entrepreneurial skills required to sustain relatively advanced technology applications when seeking to improve livelihood opportunities.

Research limitations/implications – The sources of primary data for this research work are interviews with community workers, energy project proponents and BOP community leaders. Future research requires pilot programs where results can be measured and successes can be replicated in other communities.

Practical implications – The insights derived from the research work will enable the design of better programs aimed at the BOP. Positive outcomes can be expected to come from improved effectiveness and efficiencies of current approaches and possible new opportunities for leveraging current efforts by governments and civil society with business.

Social implications – The most significant, possible outcome of this research would be to enhance the sustainability of current interventions aimed at the BOP. Many corporate social responsibility activities are superficial, short-term initiatives, with time frames corresponding to quarterly statements meant for the public and external stakeholders. Unfortunately, the BOP environment is more structurally complex and requires systemic understanding.

Originality/value – Many of the existing interventions do not capture the needs of the BOP. This paper looks at this segment of the client system and tries to identify gaps in the program design to focus on this segment.

Keywords Philippines, Poverty, Renewable energy, Philippine poverty, Millennium development goals, Sustainable communities, Rural electrification

Paper type Research paper



poverty. Prahalad and Hammond (2002) refer to the poor living below the poverty line as those in the base of the pyramid (BOP). London (2007) describes them further as those who belong to the informal sector and are thus often left behind. Therefore, while countries work towards the achievement of their millennium development goals of reducing poverty, there will be the last-mile poor located at the BOP, who will not benefit from the poverty alleviation programmes designed by governments.

Corollary to income poverty is energy poverty. Surprisingly, there are no goals set by the United Nations in reducing energy poverty. Nonetheless, it has been presented that access to electricity is an important means to achieving economic development (Barnes, 2007; Holm, 2005). In areas without a sustained source of power, the basic social services are minimal, if not absent, and the rate of business development is dismal.

In the Philippines, a self-rating survey conducted in 2005 reveals that majority still feel as poor as they felt when they were 15 years old (Tabunda, 2007). These chronically poor members of society are generally uneducated and living in remote rural areas, where there is little or no access to power.

The archipelagic landscape of the Philippines makes connectivity to the grid a major challenge. Even as the country's head of state declares that 100 per cent of all households will be connected by 2016 (Velasco, 2012) and the budget allocation for rural electrification can double to P5 billion (Torres, 2012), it is unlikely that the sparsely populated communities living in the smallest islands or deep in the mountains will be reached by the grid. The Energy Secretary admits that it is probably cheaper to buy houses in town for the poor in the remote area than to spend for bringing electricity to their present location (personal communication, January 2012). Consequently, if the goal is to reduce energy poverty, the only means to electrify these communities is to install clean off-grid power facilities that take advantage of the indigenous natural resources. Meisen and Akin (2008) cite the cases of Tunisia and China as best examples.

Unfortunately, investments in renewable energy can be quite expensive especially when there is no critical mass. This probably explains why the government as part of basic social service delivery, power companies as part of target market, and the private sector as part of their corporate social responsibility endeavours, shies away from these hard-to-reach communities. The only solution therefore is for the communities themselves to cooperate to maintain a small power facility, not only to electrify homes, but more importantly to energize revenue-generating activities for their locality (Roxas and Santiago, 2010). In this way, they are able to be active partners in lifting themselves from poverty.

Design/methodology/approach

This paper reviews the traditional responses to income and energy poverty, and then proceeds to describe a sustainable community model to address the poor at the BOP (see Figure 1). Potential problems in implementation are subsequently discussed. The sources of primary data for this research work are interviews with community workers, energy project proponents, and BOP community leaders.

Rural electrification and renewable energy programmes

A review of the past strategies to electrify the rural sector, where the BOP is prevalent, saw the creation of the National Electrification Administration in 1969, to organize, promote, and develop rural electric cooperatives (www.nea.gov.ph). The intention was

to have communities form into cooperatives so that they can install, maintain, and distribute power within their franchised area. This is similar to the model used in the USA (Foley and Logarta, 2007). There are currently 119 such cooperatives, many of which are connected to the grid. There is a drive to intensify rural electrification using this model, to hit the 100 per cent goal, despite continued financial losses experienced by more than 80 per cent of the cooperatives.

In compliance with Philippine laws, energy providers have also tried to reach the BOP by installing power facilities using solar energy, among others. A former officer of Mirant Corporation (personal communication, March 2012) explained that the operations could not be maintained since the cost of installation is quite high and cannot be recovered through tariffs without unduly burdening the households. Thus, he has seen many investments go to waste.

The problem with both models is that there is an explicit focus on electrifying homes and it is limited to moderately populated areas. While the benefits are unquestionable, the passive use of electricity does not improve poverty incidence in the area. Moreover, it makes it difficult for the energy provider to recoup its investments. To reap the greatest benefit of electrification, it should energize economic activity. This lesson was subsequently learned by SIBAT, a civil society organization in the Philippines that utilize appropriate technology for sustainable agriculture and renewable energy in poor communities (www.sibat.org). A community-based model that utilizes renewable energy for livelihood is not limited to civil society organizations. Private companies can also adapt the model as part of their corporate social responsibility endeavours.

People's organizations (POs) and community-based projects

Community participation, in the form of a PO, is a model used in many poverty alleviation programmes in the Philippines (Morales, 2000). In 2000, there were already 10,000 registered POs. Bautista (2002, 2003, 2006) reports that the more involved the community members are in the decision-making and implementation processes, the more sustainable are the projects. Dole-outs will not work. Neither will consultations. Genuine participation, whereby the members can determine outcomes and how to measure them, lead to greater commitment and increases the chances of success. This means that at a certain point, the community is left on its own to manage their project. Bautista *et al.* (2006) presents several studies showing the effectiveness of community-based endeavours.

Social protection programmes

The Department of Social Welfare and Development (DSWD) has decided to take a three-prong approach to poverty alleviation, instead of spreading its resources

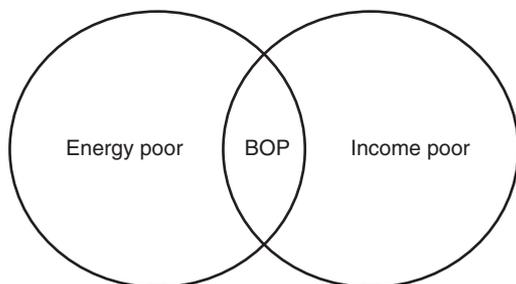


Figure 1.
Identifying the poor at the base of the pyramid (BOP)

among 60 different programmes managed by 20 government agencies as reported by Asian Development Bank (ADB) (2011). The first follows the “Bolsa Familia” model that resulted in a marked reduction in poverty levels in Brazil (Rosenberg, 2011). In the Philippines, the conditional cash transfer programme provides direct financial assistance to pregnant women and families with school-age children (Fernandez and Olfindo, 2011). The target is to reach three million households by end of 2012 and 4.6 million households by 2013. It has reached the 2.3 million household mark by end of December 2011 (Formoso, 2011).

The second leg of the DSWD poverty alleviation programme is the “Kapit Bisig Laban sa Kahirapan Comprehensive and Integrated Delivery of Social Services” (KALAHÍ-CIDSS). Under this programme, the government finances, on a competitive basis, infrastructure programmes identified by communities as a priority (Bautista, 2006). During the construction stage, the community themselves become the labourers and are thus paid for their services. It has benefitted over one million households in 184 municipalities with an investment cost of almost \$200 million (IBRD, 2011; United Nations, 2010). While the programme improves the areas where projects are approved, it discriminates against communities who do not know how to package projects for funding (Labonne and Chase, 2007).

Finally, the third leg of is the Self-Employment Assistance – Kaunlaran. It is an enterprise development financing facility available to individuals who normally engage in small businesses (Formoso, 2011). The National Economic and Development Authority (2011) expect this to be rolled out 53 out of the 82 provinces in the country.

Sustainable community model

Past experience has shown how different government agencies, non-governmental organizations, and civil society are separately addressing bits and pieces of energy and income poverty. Combining the benefits of community-based projects with the benefits of rural electrification for enterprise purposes is powerful for communities at the BOP. Figure 2 shows how the sustainable community model must integrate the activities of the various entities to make a difference to the poor at the BOP.

A cooperative model should also be used in sourcing funds to address the needs of the target group. While there are government funds, such as the KALAHÍ-CIDSS, for community-based poverty alleviation projects, it is simply insufficient to meet the

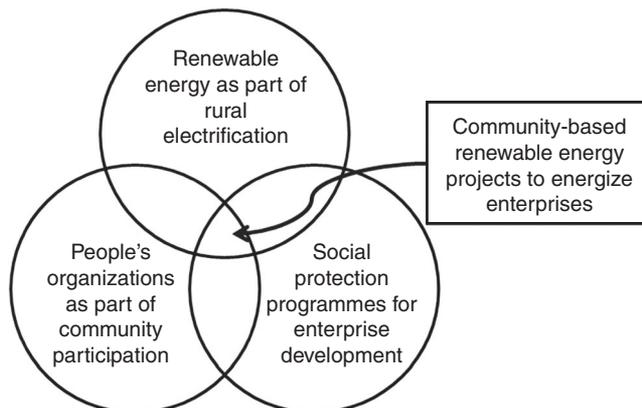


Figure 2. Sustainable community strategy for poor at the base of the pyramid (BOP)

demands of the various communities. More often, the funds are given to the more organized communities located in the rural areas but not for those at the BOP. Consequently, there must be other sources of funding. This is where other sectors of society come in. A community-based model that utilizes renewable energy for livelihood should extend beyond civil society organizations. Private companies can also adapt the model as part of their corporate social responsibility endeavours.

Findings on model implementation

For renewable energy projects in the BOP to succeed, policy makers and business leaders must undergo a paradigm shift. Currently, there is too much “siloing”. The programmes geared towards poverty alleviation are disjointed from the programmes aimed at electrification. Consequently, the Philippine governments spends billions in social protection programmes, only a portion of which is spent on livelihood, while spending separately for rural electrification as well as renewable energy. Even the private sector is looking towards the generation and distribution of energy as an end product. Since the appropriate technology may be quite expensive, this means passing on extremely high tariffs on a community that does not have the financial wherewithal to pay for the electricity. Moreover, without the proper information campaign on the best use of electricity, there are those who use the electricity for entertainment (e.g. watching television and karaoke singing) rather than for productive purposes.

Once the viewpoints have shifted, there is still the difficult task of identifying communities who are willing to work together towards the management of the power facility as well as livelihood projects that improve economic activity in their locality. The interviewees revealed that it is easier to jump start projects with organized communities, possibly with the help of church organizations. This makes the community more receptive to exploring renewable energy projects that can introduce mechanized processes for income-generating purposes.

However, as one moves further down the BOP, the less is the likelihood for organized communities. Dee (2007) posits that the very poor have become immune to their condition and have thus learned to live with it. If this were true, then the desire to cooperate and engage in productive activity may be absent. Therefore at this level, there is considerable hand holding from the organizing stage all through the management of a project. This is where civil society organizations or non-governmental organizations can play a role. What is important is that there is people participation in projects that directly affect them (Magno, 2006). In this way, they redeem their self-esteem and become positive contributors to society. It is the same model used for successful community-level renewable energy projects in Indonesia (Tumiwa and Rambitan, n.d.).

In a patriarchal society like the Philippines, a potential problem in community projects is the power of the ruling political party. The term in office of a local official is three years and long gestation projects would naturally experience several changes in local government administration. An executive from Petron Corporation, a locally based petroleum company, lamented that a considerable amount of time is spent persuading a new set of local officials of the benefits of an ongoing project (personal communication, March 2012).

Thus, if a community-based renewable energy project for enterprise development is conceived, it must have the commitment of the greater community so as to withstand changes in elected local government positions. The more complex is a community,

the longer is the time spent in this social preparation phase. External intervention by civil society organizations, religious groups, or private corporations should be in drawing out the commitment rather than in imposing pre-set notions of how things should be done. There are communities that have become sceptical about assistance that come their way and may resist any idea that may actually alleviate their poverty (Briones and Prieto, 2006). A parish priest from Nueva Ecija, a mountainous region in the northern part of the Philippines disclosed that the cooperation of a religious group does make community members more receptive (personal communication, March 2012).

Once the commitment of a community is secured, one can then graduate to project planning, selection, and subsequently implementation. Unlike other community-based projects, this paper focuses on projects with a renewable energy component that will be substantially used for enterprise development. For instance, a cold storage facility for fishermen or a processing plant to extend the life of farm produces for farmers is a jump-off point. Learning from the findings of Briones and Prieto (2006), it is important the selected enterprise or group of enterprises is related to the primary source of income of the community so that members become more involved in the project.

There is also the aspect of the appropriate energy technology. It need not be, and should not be, expensive. The renewable energy technologies for small-scale systems are emerging with constant research and development. Utilizing agricultural wastes may be viable for energy generation that integrates what a community has with what it can do (Karekezi and Kithyoma, 2006). The study of Lu *et al.* (2010) shows how an integrated approach and bio-resource engineering results in social and ecological benefits. Buchholz *et al.* (n.d.) explains how a decision model can be used for a decentralized small-scale bio-energy system. In the Philippines, organizations such as SIBAT, have had successful experiences with micro hydro power facilities using run-of-the-river systems to energize rice mills and solar for water pumping (Sibol ng Agham at Teknolohiya (SIBAT), n.d.).

Previous experience with communities revealed that the poor at the BOP have little or no education and therefore lack managerial and technical skills. Consequently, any move to introduce community-based projects needs a large component for training and development (Bautista *et al.*, 2006; Tumiwa and Rambitan, n.d.), not only to operate the power facility but to manage the livelihood component. Sometimes the momentum to keep an operation a going concern fades as the excitement wears off and the problems kick in. Organizations cannot come in with the technology and leave. Community members must be taught how to maintain their facility and make both the power station as well as the enterprise, a profit centre.

One of the managerial decisions a community will have to make at the onset is how to allocate the power generated by their plant. In this model, there is a bias towards energizing the enterprise. This would mean that households will have electricity access normally at night when the enterprise does not need the power. Consequently, modern household conveniences may have to be foregone until the community is able to sustain its livelihood project.

Research limitations/implications

This study relied on experiences of government agencies, civil society organizations, POs, and corporate foundations, as expressed in print or during interviews. There is only one organization however that has been identified to have adapted a similar model as presented in this paper. But even an organization such as SIBAT looks at the community's capacity to pay as a pre-requisite to entry. They look for communities

with regular sources of income so that there is always cash available to pay for the electricity. Consequently, there may need to be a pilot project aimed at the BOP that would be properly documented, parameters identified, and results measured so that it may be replicated in other communities.

Practical implications

Governments allocate a large amount of money to provide basic services to as many of its citizens as possible. Unfortunately, the poor at the BOP are neglected simply because the investments cannot be recovered. What happens is that the rural poor, in particular, are actually paying more to enjoy the benefits that the urban poor avail of. Yet, even a small investment say in energy has great impact on the marginalized poor. Since government funds are limited, it makes more sense to combine resources by removing overlaps in service delivery by the various agencies. Rural electrification by itself will not alleviate poverty. Community-based projects do work but the poor at the outskirts are often neglected. It thus makes sense to develop self-contained energy and livelihood projects where community participation is high.

Social implications

This research presents a sustainable community model targeted to the BOP. The most significant outcome of this research would be to enhance the sustainability of current interventions aimed at the BOP. Many corporate social responsibility activities of private companies are superficial, short-term initiatives with time frames corresponding to quarterly statements meant for the public and external stakeholders. Unfortunately, the BOP environment is more structurally complex and requires systemic understanding. If the intentions of reducing poverty are taken to heart, there must be a programme that targets the poor in the remote areas who are often glossed over because it is too expensive to reach them.

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