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# IDENTIFYING, DEVELOPING AND MOVING SUSTAINABLE COMMUNITIES THROUGH RENEWABLE ENERGY

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**Abstract:** *Purpose* – Most of the resources for mitigating the impact of poverty have found their way into new technologies or programmes that aimed to provide energy access to the poor at 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 for the poor living in “last mile” communities.

*Design/methodology/approach* – This paper looks at the approaches that have been tried in an attempt to make a dent in the incidence of poverty 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 well-positioned strata of society. After identifying the critical variables that mitigate against successful programmes, the authors seek to prescribe 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 the managerial and entrepreneurial skills required to sustain relatively advanced technology applications seeking to improve livelihood opportunities.



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

*Practical implications* – The insights derived from the research will enable the design of better programmes aimed at the BOP. Positive outcomes should 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 (CSR) 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 work looks at this segment of the client system and tries to identify gaps in the programme design in order to focus on the target group.

**Keywords:** *Renewable energy, Philippine poverty, Millennium development goals, Sustainable communities, Rural electrification*

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## INTRODUCTION

The World Bank (2010) hankers for more inclusive growth. This can only mean that while economies grow, certain sectors in society are unable to break away from poverty. Prahalad and Hammond (2002) referred to the poor living below the poverty line as those in the base of the pyramid (BOP). London (2007) described 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, the last-mile poor remain in their location at the BOP, and do not benefit from the poverty-alleviation programmes designed by governments.

The upshot of income poverty is energy poverty. Surprisingly, there are no goals set by the United Nations in reducing energy poverty. Nevertheless, it has been suggested 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 revealed that the majority still feel as poor as they felt when they were fifteen 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 will 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 remote areas than to invest in bringing electricity to their present location (personal communication, January 2012). Consequently, if the goal is to reduce energy poverty, the only way of electrifying 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 the 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, and power companies as part of the target market, and the private sector as part of their corporate social responsibility endeavours, shy away from these hard-to-reach communities. Therefore, the only solution 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 become active partners in lifting themselves from poverty.

## METHODS

This paper reviews the traditional responses to income and energy poverty, 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 are interviews with community workers, energy project proponents, and BOP community leaders.

### *Rural electrification and renewable energy programmes*

A review of past strategies to electrify the rural sector, where the BOP is prevalent, saw the creation of the National Electrification Administration (NEA) in 1969, to organize, promote and develop rural electric cooperatives ([www.nea.gov.ph](http://www.nea.gov.ph)). The intention was for communities to form into cooperatives in order to install, maintain and distribute power within their franchised area. This is similar to the model used in the United States (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 in order 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 law, energy providers have also tried to reach the BOP by installing power facilities using solar energy, among other methods. 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 they are limited to moderately populated areas. While the benefits are unquestionable, the passive use of electricity does not improve the incidence of poverty in the area. Moreover, it makes it difficult for the energy provider to recoup its investments. To reap the greatest benefit of electrification, economic activity should be energized. This lesson was subsequently learned by SIBAT, a civil society organization in the Philippines that utilizes the appropriate technology for sustainable agriculture and renewable energy in poor communities ([www.sibat.org](http://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 and community-based projects*

Community participation, in the form of a people's organization (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) reported 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 members can determine outcomes and how to measure them, leads 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) present 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-pronged approach to poverty alleviation, instead of spreading its resources among sixty different programmes managed by twenty government agencies, as reported by 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 (CCT) programme provides direct financial assistance to pregnant women and families with school-age children (Fernandez and Olfindo, 2011). The target is to reach 3.0 million households by the end of 2012 and 4.6 million

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households by 2013. It reached the 2.3 million household mark by the 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” (Kalahi-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 benefited 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 is the Self-Employment Assistance – Kaunlaran (SEA-K), which 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 to fifty-three of the eighty-two 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 Kalahi-CIDSS, for community-based poverty alleviation projects, they are simply insufficient to meet the demands of the various communities. More often, the funds are given to the more organized communities located in the rural areas, but not to those at the BOP. Consequently, other sources of funding are required, which is where other sectors of society are relevant. A community-based model that utilizes renewable energy for livelihood should extend beyond civil

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### **FINDINGS ON MODEL IMPLEMENTATION**

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For renewable energy projects at the BOP to succeed, policy makers and business leaders must undergo a paradigm shift. Currently, there is too much “siloining”. The programmes geared towards poverty alleviation are disjointed from the programmes aimed at electrification. Consequently, the Philippine government spends billions in social protection programmes, only a small 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 to 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 it for entertainment (e.g. watching television and karaoke singing) rather than for productive purposes.

Once the viewpoints have shifted, there remains 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 likelihood of organized communities reduces. 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. It is important for people to participate in projects that directly affect them (Magno, 2006). In this way, they redeem their self-esteem and become positive contributors to society.

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The same model is 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 in order to withstand changes in elected local government positions. The more complex a community is, the longer the time spent in this social preparation phase. External intervention by civil society organizations, religious groups, or private corporations should be focused on drawing out the commitment rather than imposing pre-set notions of how things should be done. Some communities have become sceptical about assistance that has come their way, and they may resist any idea that might actually alleviate their poverty (Briones and Prieto, 2006). A parish priest from Nueva Ecija, a mountainous region in the northern Philippines, disclosed that the cooperation of a religious group makes community members more receptive (personal communication, March 2012).

Once the commitment of a community is secured, is it possible to graduate to project planning, selection and subsequent 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 produce for farmers is a jumping-off point. Learning from the findings of Briones and Prieto (2006), it is important that 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, which need not and should not be expensive. Renewable energy technologies for small-scale systems are emerging with constant research and development. Utilizing agricultural wastes may be viable for the type

of energy generation that integrates what a community has with what it can do (Karekezi and Kithyoma, 2006). A study by Lu *et al.* (2010) showed how an integrated approach and bio-resource engineering results in social and ecological benefits. Buchholz *et al.* (n.d.) explained 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 (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 as a going concern fades as the excitement wears off and the problems begin. Organizations must not simply come in with the technology, and then leave the project. Community members must be taught how to maintain their facility and make both the power station and the enterprise into 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**

This study relied on experiences of government agencies, civil society organizations, people's organizations, and corporate foundations, as expressed in print or during interviews. However, there is only one organization that has been identified as having adapted a similar model to that 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

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documented with 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 their citizens as possible. Unfortunately, the poor at the BOP are neglected simply because the investments cannot be recovered. The rural poor in particular are actually paying more to enjoy benefits that the urban poor have access to. Yet even a small investment, for example, 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 at 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 remote areas, who are often overlooked because it is too expensive to reach them.

### **REFERENCES**

- ADB (2011), *Searching for effective poverty interventions: Conditional cash transfers in the Philippines*. Philippine Country Office, Southeast Asia Department, Asian Development Bank, Philippines.
- Barnes, D.F. (2007), "The challenge of rural electrification", in D.F. Barnes (Ed.) *The Challenge of Rural Electrification: Strategies for*

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*Developing Countries*, Resources for the Future, Washington D.C., USA, pp. 1-17.

Bautista, V.A. (2002), *Readings in Governance of Poverty Alleviation*, University of the Philippines, Quezon City, Philippines.

Bautista, V.A. (2003), "Government-PO interface in national coordinative bodies in poverty alleviation: Survey of basic sector representatives", in V.A. Bautista (Ed.) *Participatory Governance in Poverty Alleviation*, Centre for Leadership, Citizenship, and Democracy, National College of Public Administration and Governance, University of the Philippines, pp. 1-67.

Bautista, V.A. (2006), "Introduction and rationale of the study", in V.A. Bautista and O.M. Alfonso (Eds.), *Citizen Participation in Rural Poverty Alleviation*, Centre for Leadership, Citizenship, and Democracy, National College of Public Administration and Governance, University of the Philippines pp. 1-10.

Bautista, V.A., Carino, R.M, Sajo, T.J. and Sanz, K.P. (2006), "State-of-the-art review of participatory governance in poverty", in V.A. Bautista and O.M. Alfonso (Eds.) *Citizen Participation in Rural Poverty Alleviation*, pp. 11-52. Centre for Leadership, Citizenship, and Democracy, National College of Public Administration and Governance, University of the Philippines pp. 1-10.

Briones, G.G. and Prieto, N.A. (2006), "A case study on the implementation of the Kalahi-CIDSS program in Barangay Fimagas in Katipunan, Zamboanga del Norte", in V.A. Bautista and O.M. Alfonso (Eds.) *Citizen Participation in Rural Poverty Alleviation*, Centre for Leadership, Citizenship, and Democracy, National College of Public Administration and Governance, University of the Philippines pp. 53-88.

Buchholz, T., Volk, T., Tennigkeit, T. and Da Silva, I. (n.d.), "Designing Decentralized Small-Scale Bioenergy Systems Based on Short Rotation Coppice for Rural Poverty Alleviation", Retrieved from [www.neema.ufc.br/Etanol12.pdf](http://www.neema.ufc.br/Etanol12.pdf)

Dee, H.Q. (2007), "The need for a Christian response", in P.P. Sicam (Ed.) *Understanding Poverty: The Poor Talk about what it Means to be Poor*, Institute for People Power and Development of the Benigno S. Aquino Jr. Foundation, Philippines, pp. 98-101.

Fernandez, L. and Olfindo, R. (2011), *Overview of the Philippines' conditional cash transfer program: The Pantawid Pamilyang Pilipino Program*

---

(*Pantawid Pamilya*), Philippine Social Protection Note No. 2, World Bank Group, Washington, D.C., USA.

Foley, G. and Logarta, J.D. (2007), "Power and politics in the Philippines", in D.F. Barnes (Ed.) *The Challenge of Rural Electrification: Strategies for Developing Countries*, Resources for the Future, Washington D.C., USA, pp. 45-73.

Formoso, A. (2011, March 7), "Pantawid Pamilya following success of CCTs in other countries", Retrieved from <http://pantawid.dswd.gov.ph/index.php/news/226-pantawid-pamilya-following-success-of-ccts-in-other-countries>

Holm, D. (2005), *Renewable Energy Future for the Developing World*. White Paper of the International Solar Energy Society, Germany.

IBRD (2011), *Making everyone count – Gender sensitive monitoring and evaluation in a community-driven development project: The Case of the Philippines' KALAHI-CIDSS*. The World Bank, Washington, D.C., USA.

Karekezi, S. and Kithyoma, W. (2006), "Bioenergy and agriculture: Promises and challenges", *Focus*, Vol. 14, Brief 11 of 12.

Labonne, J. and Chase, R. (2007), *Who's at the wheel when communities drive development? The case of the Kalahi-CIDSS in the Philippines*, Social Development Papers No. 107. World Bank, Washington, D.C.

London, T. (2007), "A base-of-the-pyramid perspective on poverty alleviation", Working Paper. *The William Davidson Institute of the University of Michigan*, USA. Retrieved from [http://www.erb.umich.edu/News-and-Events/colloquium\\_papers/BoP\\_Perspective\\_on\\_Poverty\\_Alleviation\\_\\_London%20%28UNDP%29.pdf](http://www.erb.umich.edu/News-and-Events/colloquium_papers/BoP_Perspective_on_Poverty_Alleviation__London%20%28UNDP%29.pdf)

Lu, J., Zhu, L., Hu, G., and Wu, J. (2010), "Integrating animal manure-based bionenergy production with invasive species control: A case study at Tongren pig farm in China", *Biomass and Bioenergy*, Vol. 34, pp. 821-827.

Magno, F. (2006), "Civil society participation in poverty alleviation and sustainable development at the local level", in *Ensuring Economic Security in the Countryside: Issues and Challenges for Local Governments*, Yuchengco Centre, De La Salle University, Manila, Philippines, pp. 38-54.

Meisen, P. and Akin, I. (2008), "The Case for Meeting the Millennium Development Goals through Access to Clean Electricity", Retrieved from

---

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[http://www.geni.org/globalenergy/research/meeting-mdgs-through-access-to-electricity/MDG\\_Final\\_1208.pdf](http://www.geni.org/globalenergy/research/meeting-mdgs-through-access-to-electricity/MDG_Final_1208.pdf)

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---

Morales, H.R. (2000), "Local-level partnerships for rural poverty alleviation", in A.S. Bavieara and C.V. Militante (Eds.) *Partners Against Poverty: Negotiating State- Civil Society Cooperation in Rural Asia*, Philippine-China Development Resource Centre, Quezon City, Philippines, pp. 37-55.

National Economic and Development Authority (2011), *Philippine Development Plan 2011-2016*. National Economic and Development Authority, Pasig, Philippines. Retrieved from <http://www.neda.gov.ph/PDF/2011-2016/default.asp>

Prahalad, C. and Hammond, A. (2002), "Serving the world's poor profitably", *Harvard Business Review*, Vol. 80, Issue 9, pp. 48-57.

Rosenberg, T. (2011, January 3), "To beat back poverty, pay the poor", *New York Times*. Retrieved from <http://opinionator.blogs.nytimes.com/2011/01/03/to-beat-back-poverty-pay-the-poor/>

Roxas, F. and Santiago, A. (2010, September), *A New Systems Paradigm for the Rural Electrification Program, Philippines*. Paper presented at the XXI World Energy Congress, Montreal, Canada. Retrieved from <http://www.worldenergy.org/documents/congresspapers/159.pdf>

SIBAT (n.d.), *Lessons from the Field: An Assessment of SIBAT Experiences on Community-Based Microhydro Power Systems*. Sibol ng Agham at Teknolohiya, Quezon City, Philippines.

Tabunda, A.M. (2007), "The poverty scorecard", in P.P. Sicam (Ed.) *Understanding Poverty: The Poor Talk about what it Means to be Poor*, Institute for People Power and Development of the Benigno S. Aquino Jr. Foundation, Philippines, pp. 16-39.

Torres, T.P. (2012, January 18), DOE allots P5B for rural electrification. *The Philippine Star*, p. B-4. Retrieved from <http://www.philstar.com/Article.aspx?publicationSubCategoryId=66&articleId=768676>

Tumiwa, F. and Rambitan, I. (n.d.), *Scaling Up Renewable Energy Investments: Lessons from the Best Practice Models in Indonesia*. Retrieved from [www.bicusa.org/en/Document.102199.asp](http://www.bicusa.org/en/Document.102199.asp)

United Nations (2010), *Philippines: Progress Report on the Millennium Goals 2010*. Retrieved from <http://ph.one.un.org/pdf-files/MDG-Report-2010/MDG-National-Report-2010-1-29.pdf>

---

Velasco, M.M. (2012), NEAs 'Step-In Rights' Prevail Over Electric Coops In Charter Amendments. Manila Bulletin, March 18. Retrieved from <http://www.mb.com.ph/articles/354592/neas-stepin-rights-prevail-over-electric-coops-in-charter-amendments>

World Bank (2010), *Fostering More Inclusive Growth*. Human Development Sector Unit, Poverty Reduction and Economic Management Unit, East Asia and Pacific Region.

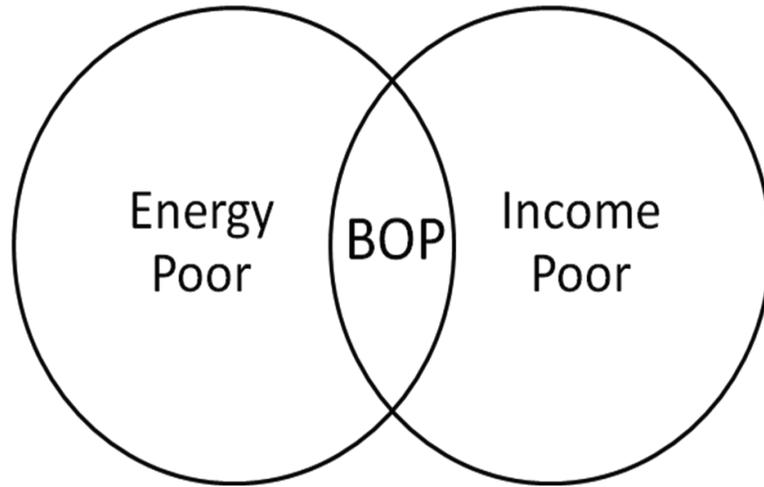
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**Figure 1.**  
Identifying the  
poor at the Base  
of the Pyramid

**Figure 4.**  
Sustainable  
community strategy  
for the poor at the  
Base of the Pyramid

