

**Time - 3 Hour****MM-70**

The question paper contains 16 printed pages.

'Efficiency' and 'effectiveness' are two major concerns of any manager. To put in the words of Jonathan Swift, some two hundred and fifty years ago, whoever makes two blades of grass grow where only one grew before deserves better of mankind than any speculative philosopher or metaphysical system builder. However, "whatever, manager does s/he does it through making decisions...where decision shall accomplish the desired end with the minimum of effort and disturbance" (Drucker, 1957/2010, pg. 345).

Please read the given case¹ carefully and, in the light of the above narrative provide answers to the following questions in detail. Any verbatim reproduction of material from the case will attract the penalty.

- Analyze the situation in the case. (30)
- Define, in detail, the real decision dilemma. (20)
- Managers make decision/s under the constrained situation/s. This has an imperative for the decision-making process in the sense that it is required to meet certain criteria. What criteria a manager should meet in the given case to find an 'optimum' solution to the decision-making dilemma. (20)

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Creating a Market: Renewable Energy in a Subsistence Marketplace in

India

Abstract

Recognizing the importance of energy in the development of individuals and the nation, the government of India promotes renewable energy (RE) in rural India, where grid-based electricity is not possible. Renewable energy is locally generated and distributed. Alternate Energy (AE) is a non-governmental organization (NGO) working in underdeveloped central India in the field of livelihoods and rural entrepreneurship. In addressing the problem of unavailability of electricity in one of the villages it was working in, AE wanted to use local resources to generate energy locally and entrusted the task of electrifying the village to one of its young managers, Mr. Suraj. He faces a paradoxical situation where there is the need for energy on one hand and no buyers for energy on the other hand. He faces the dilemma of how to create a market for RE that is generated locally. The case outlines the situation faced by Mr. Suraj and offers his social marketing research. Readers are asked to assume a managerial role and assess the social marketing process to help Mr. Suraj solve his dilemma of creating a market for RE in a rural Indian village. Students are required to present the social marketing strategies with apt suggestions for Information, Education, and Communication (IEC) with the target group.

Learning Outcomes

By the end of this case, students should be able to:



- a. Appreciate the efforts to create the models of social entrepreneurship at grassroots level to address the structural issue of energy poverty, defined in terms of expenditure on energy as a proportion of household expenditure.
- b. Understand the efficacy of social marketing techniques to address the structural issues going beyond immediate behavioral change.
- c. Comprehend the social marketing planning process and its application.
- d. Make a social marketing strategy using STP (segmentation, Targeting, and Positioning) and suitably designed marketing mix.

Introduction

Modern energy services play a crucial role in fulfilling fundamental social needs, and driving economic growth and human development. Access to energy influences productivity, health, education, availability of safe water, and the quality of communication services. However approximately, forty percent of rural Indian households do not have access to electricity. Energy poverty is often defined in terms of expenditure on energy as a proportion of household expenditure, and in the central region of India, where Mr. Suraj was working, it was a definite problem. Mr. Suraj is the coordinator for renewable energy projects at Alternate Energy, an NGO working on livelihood and entrepreneurship in the central region of India. For more than two months he had been leading the project of village electrification.

Mr. Suraj was entrusted with two specific objectives pertaining to this project titled 'Sitapura electrification using biomass'. The first objective was the technical demonstration of bio-gasifier in a Decentralized Distribution Generation (DDG) setting. DDG is generating energy locally using locally available conventional or non-conventional resources like hydel, solar, biogas, bio-mass etc. The second objective, which was disquieting Mr. Suraj most, was the creation of a market for electricity that would be produced in the DDG power plant. As he



came to understand the project, he realized that demonstrating the technical functioning of a biomass gasifier was not the primary goal of the project. Biomass gasification is a process of converting solid biomass fuel into a gaseous combustible gas, the gas is a low-heating value fuel. It runs engines to generate an energy. Setting up a well-functioning biomass gasifier would offer a renewable energy source, but it would not resolve the issues of energy poverty in this subsistence marketplace. He knew that villagers needed to make optimum use of electricity generated to demonstrate the success of the project. As a result, he needed to create a market for this renewable energy and believed social marketing would help him achieve this goal.

Alternate Energy: Background

Alternate Energy (AE), a non-profit organization, in existence for more than three decades, built sustainable models of renewable energy and rural entrepreneurship. It worked for underprivileged rural population, and its interventions included enhancing livelihoods. A livelihood is a means of making a living. It encompasses people's capabilities, assets, income, and activities required to secure the necessities of life. AE had adopted the holistic approach to address issues related to the aspects of health, education, environmental degradation, and livelihoods besides renewable energy.

The central concept of AE was to enable collective ownership of the process of change, and the social and physical infrastructure it had created for people. AE aimed to build 'dignity for the community members' who were otherwise on the margins of the development. Though it started as a modest organization, it had more than 200 employees spread across two provinces in the central India. It had handled renewable energy projects based on solar energy and biomass earlier. However, the model they were envisaging to design was of 'community ownership'.



During its inception itself, AE had recognized that poverty needs to be conceptualized on multiple dimensions. Their developmental philosophy was that the energy was vital input for the sustainable agriculture which was the backbone of the livelihood system in rural India and to improve the quality of life it was essential to have an assured supply of energy. Thus, it had christened a strategic business unit (SBU), devoted particularly, for the development and commissioning of innovative models for producing renewable energy.

Mr. Suraj graduated from a reputable school of rural management in the northern part of India a year and a half ago. He always wanted to work in the renewable energy sector and with social entrepreneurship. During his Management Traineeship Segment (MTS) he was offered a position by the Chief Executive Officer (CEO) of Alternate Energy (AE) in the SBU devoted to the development and commissioning of innovative models for renewable energy. Mr. Suraj was very excited to take on the new responsibilities. MTS is like a summer internship segment in the conventional B-schools. He tried to maximize his learnings about the organization and the challenges involved in managing different projects involving renewable energy by fully immersing himself in the work. A year after joining AE, Mr. Suraj was appointed as Project Coordinator- Renewable Energy – and specifically to the Sitapura electrification project.

Sitapura was located 65 kilometers from the nearest town. It had no access to all weather roads, was surrounded by the dense forest from three sides, and villagers relied on wood selling and menial labor for their livelihoods. After seeing the conditions there Mr. Suraj's spirits were low. He realized the gravity of the situation and without wasting time he absorbed himself in work.

Issues of Electrification in Rural India

To begin, Mr. Suraj reviewed the project notes and was reminded that one-third of India's population of 1.3 billion do not have access to the quality electricity. The issue is more



serious in rural India where 45% population remain without electricity. The national census reports of 2011 suggest that 93% of urban households and 55 % of rural households receive electricity. A change in electricity access patterns occurred between 2001 to 2011 due to grid extension efforts. The electricity grid is a complex and incredibly important system transmitting power generated at a variety of facilities and distributes it to end users, often over long distances. However, reaching all rural households through such grid extension efforts was not a commercially and technically viable solution. As per some latest reports about 19,909 villages are yet to be electrified. Despite multiple efforts rural electrification in India face certain inhibitions

- Grid extension is expensive and tariffs are highly subsidized. It makes the recovery of cost difficult and results in negative returns.
- Due to limited availability of electricity the supply is rationed (only made available for certain periods in a day), which results in an interrupted power supply.
- High operation and maintenance costs

Renewable Energy and Decentralized Distribution Generation (DDG)

Mr. Suraj knew that access to energy services is the key component of alleviating poverty. Moreover, it is an essential element of the sustainable human development. However, world energy demands are increasing while energy reserves like oil, gas, and uranium fuel are depleting. The anticipated catastrophe due to the global warming has prompted efforts to develop alternative energy sources.

In 2006, it was estimated that 2 billion people worldwide depend on biomass for their energy needs. Eleven percent of global primary energy supply comes from biomass (Ghosh, Sagar & Kishore, 2006). However, most of the biomass use is still inefficient and is in the primitive stage. It leads to a host of problems for human health and environment. Hence, the



utilization of biomass in an efficient manner to deliver energy services to the world's poor remains a challenge for the policy makers and organizations alike. It is believed that this challenge can be met by developing new strategies and technologies.

Decentralized Distributed Generation (DDG) emerged as a solution to meet local energy needs. DDG entails locating an energy generation source closer to the consumer and makes use of locally available renewable energy (RE) resources. DDG helps decrease the Transmission and Distribution (T&D) losses that are otherwise involved in grid based energy system. It encompasses small, modular, decentralized off-grid energy systems combined with energy management and storage units near the place where energy is to be used. DDG can be based on either conventional or non-conventional energy sources. Depending on the availability DDG uses resources such as biomass, biofuels, biogas, mini hydro, and solar. These innovative models aim to establish cost-effective and clean energy generation and distribution in unelectrified villages and Mr. Suraj knew they held promise for the electrification of Sitapura.

The Sitapura Electrification Project: The Background

Since starting as the Project Coordinator on the Sitapura project, Mr. Suraj had become very familiar with the village and its complex issues. Village Sitapura is located in an underdeveloped region of central India. Public transportation was not available to travel between Sitapura and the nearest towns. The village had 87 households, and a population of just over 500. Many villagers owned no land and education levels were generally low with some youths completing their schooling up to 10th standard.

Wood selling, agriculture, and labor were the major income generating activities of the villagers, with people selling wood in the nearby town, working in agricultural fields owned by others, or doing various menial jobs. Villagers had no access to electricity for



household consumption and agricultural purpose as well. Farmers used diesel pumps, which added to noise and air pollution, to fetch water from wells to irrigate their farms. Diesel prices were rising and water levels in wells were depleting, requiring more energy to fetch water from wells. Villagers were aware of the simple economics of rising input costs for agriculture.

Alternate Energy had the capacity to implement renewable energy projects and had taken up the task of resolving Sitapura's energy issues with a focus on improving the welfare of the villagers as well. Prior to Mr. Suraj becoming the Project Coordinator on the Sitapura electrification project, AE did preliminary research and decided that installing a 12 kWe biomass-based electricity generation unit in the DDG mode would be the best way to electrify Sitapura. One kWe is one thousand watts of electric capacity where, watt is the unit of electrical power equal to one ampere under a pressure of one volt. A Watt is equal to 1/746 horse power. AE knew that the project, if successful, would save villagers around 4500 liters of diesel and offer many benefits related to reduced diesel consumption and lesser carbon emissions. For the Sitapura electrification project, AE determined that the biomass resource used for electricity generation would be the plant residues of ipomoea and lantana. When burned, these biomass sources would generate a producer gas (also called as a fuel gas) which could run engines to generate electricity. The NGO received funds for the project from a government agency.

When he was appointed Project Coordinator on the Sitapura electrification project, Mr. Suraj formed a committee of village representatives to spearhead the project. The committee's functions included ensuring:

- continuous and efficient running of the plant,
- electricity distribution,
- the collection of user fees from households, and



-the appropriate utilization of the electricity generated.

After forming the committee, Mr. Suraj carried out a demand survey to assess the market and its consumers. All households expressed their desire to buy electricity. Twenty-two households stated their interest in buying electricity for the water pumps for irrigation, while the rest of the villages stated they would buy electricity for household consumption. Interestingly, a few households were also interested in buying electricity for an entrepreneurial idea – a potential flour mill that they would open in the village. Sitapura did not have a flour mill and villagers had to travel to village 6 kilometers away to grind grains.

The Sitapura Electrification Project: Assessing the Predicament

Mr. Suraj was excited by the results of demand survey and villagers were interested in the power generation unit. After the careful selection of a site, AE started erecting a distribution network. Mr. Suraj was keen to demonstrate the technological possibility of electricity generation from biomass of the project to Sitapura's villagers, especially after the successful pilot run of the project. His excitement faltered, however, when people were not forthcoming to seek electricity connections. The committee he had formed could not explain why the villagers were not buying the electricity they had said they wanted. Although some elderly people and educated youths were optimistic about the success of the project, Mr. Suraj knew he needed to deal with the villager's lack of interest in seeking electricity connections. He was now convinced that he would have to create a market for the green energy. The only question was how to go about it.

Social Marketing

As he went through some recent research reports, Mr. Suraj realized that one of the major challenges in electrifying poor and rural areas was generating demand for renewable energy.



He found that to generate demand for innovative products in health and sanitation sectors, organizations had resorted to social marketing strategies. They had used marketing principles and techniques to understand consumer needs and then carried out long-term campaigns to influence behaviors to improve the people's social, economic, and physical welfare.

Mr. Suraj believed one of the major reasons the Sitapura electrification project was faltering was the lack of social acceptance of locally generated green energy. He also knew policy makers in many developed countries had recommended social marketing tools to address issues of environmental degradation. Furthermore, most practitioners in the field of renewable energy at grassroots level maintain that DDG using renewable energy is all about adopting an innovation. Mr. Suraj concluded that for the Sitapura electrification project to be successful, he needed to convince villagers that they would have to change their energy consumption behavior patterns. Based on his social marketing classes, Mr. Suraj decided to follow a strategy that would focus on information dissemination, community action, and supporting household attitudinal change towards grassroots innovations.

Formative Research

To guide his social marketing efforts, Mr. Suraj did formative research with the objective of understanding the current household energy use and requirements. Out of 87 households, 16 belonged to the scheduled tribe. They were staying on a land claimed to be owned by a government agency but did not own any agricultural land themselves. This group survived on wood selling: they would cut wood from the adjoining forest to sell in the closest village 35 kilometers away. Given that the villages were not joined by all-weather roads, these people would carry the wood on bicycles to the town. Mr. Suraj learned that this group was led by an elderly woman whose opinion was not violated by anybody.



The remaining 71 families, mostly belonged to the other backward class community – meaning they were classified as a social group that was socially and educationally disadvantaged. These families owned a little over 300 bighas of agricultural land in the village, with the maximum land holding by a family of 12 bighas. These farmers would irrigate farms using well-water with the irrigation pumps running on diesel fuel. The farmers understood that the diesel-run pumps were less cost effective vis-à-vis electricity run pumps. Some educated youths in the village also understood the environmental and noise hazards caused by the diesel-run pumps. Villagers were also aware that the non-availability of electricity affected the education because children could study only during daylight, but most of the village remained undereducated.

In his research, Mr. Suraj made an interesting discovery: villagers would refer to the nearby villages saying that people there could get grid electricity for free. Further research revealed that the nearby villages had defaulted on the tariff, but Sitapura villagers still believed that there was free electricity. Although research based on secondary data sources indicated that rural households have relatively low effective demand for electricity because of their income levels, Mr. Suraj's social acumen suggested that it may not be true. He believed that the villagers actual demand for electricity was not tied to their income levels alone, rather, if segments of the population could be informed and educated about the costs and importance of electricity and renewable energy, then the biomass gasifier innovation would gain acceptance throughout the village and electricity connections would be ordered by the community.

Insert Case Table 1 and 2 about Here

The Sitapura Electrification Project: Resolving the Predicament



Mr. Suraj thought of using information, education, and communication (IEC) materials to launch a renewable energy campaign in the village. He thought of starting with the 'select' group to convince them to adopt the bio-mass gasifier innovation, but wondered how he should go about this social marketing process. Different questions were raking his mind. "Does my formative research help me to identify the actionable plan?" He was not very convinced about the actions to be taken for energy market creation. "Maybe if I scrutinize it closely I will find the answer", he thought. Secondly, he was also not certain about the direct and indirect benefits that the target group was likely to perceive in the project. "How do I make them realize the benefits?" and "What communication strategy should I use for this campaign?", he thought.

Communication Strategy

Although Mr. Suraj was able to classify energy users into two groups—domestic users and agricultural users – based on his formative research, he was unsure of which communication strategy he should use in his social marketing campaign. How could he best segment and target the village electricity market, and position the renewable energy innovation for acceptance and adoption? Mr. Suraj wanted to have opinion leaders targeted first with personalized communication. However, he was not averse to the idea of mass communication to increase awareness about RE amongst villagers. He had the financial budget to devise a communication strategy- mass or personalized. Mr. Suraj thought diffusion theory may come handy in devising a communication strategy. In reviewing diffusion theory, Mr. Suraj realized he could use it to segment the population and target it using a customized communication strategy.

Diffusion Theory



Diffusion is defined as the process by which an innovation is adopted and gains acceptance by members of a certain community. Four major factors that influence the diffusion process are the innovation, communication, time, and the nature of the social system into which the innovation is being introduced (Rogers, 2003). Diffusion is a process that occurs over time and has five distinct stages. The stages in the process are Knowledge, Persuasion, Decision, Implementation, and Confirmation. The potential adopters of an innovation must learn about the innovation, be persuaded as to the merits of the innovation, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation. Five attributes influence the rate of adoption of an innovation. These attributes are a relative advantage, compatibility, complexity, trialability, and observability. Mass media channels are the most effective way of creating awareness for a new idea, product, or practice, whereas interpersonal channels are the most effective way of getting the target audience to accept and adopt the new idea (Rogers, 2003). However, efforts expended on identifying the innovators and early adopters can result in a more efficiently planned diffusion (Donovan & Henley, 2010). The social structure also influences the rate of adoption, the factors include the presence or absence of strong opinion leaders; the prevailing social norms and their variation between parts of the system; whether the adoption decision is an individual one or must involve collective decision-making, or a single authority's decision; and whether adoption of the innovation has desirable and undesirable consequences, not just for the individual but for the social system as a whole (Donovan & Henley, 2010).

Conclusion

After reviewing diffusion theory, Mr. Suraj contemplated the idea of conducting focused group discussions with early adopters and others. He hoped to gain some meaningful insights about the renewable energy adoption pattern from this discussion. He believed it was possible



to resolve the issues of renewable energy acceptance and encourage innovation adoption in Sitapura, but he still wondered how he could create a suitable social marketing strategy to create a RE market. How could he segment and target the market, and then position renewable energy and DDG to ensure the adoption of this beneficial innovation?

Discussion Questions

1. Why are renewable energy and decentralized distributed generation (DDG) projects needed to tackle the issue of non-access to energy in India?
2. Suggest a social marketing strategy for the Sitapura electrification project using STP (Segmentation, Targeting, and Positioning) and suitably design the marketing mix.
3. Assess Mr. Suraj's social marketing planning process. What has he done well? What else needs to be done? Describe each step in-detail.
4. What communication strategy should Mr. Suraj use in Sitapura? Explain the merits of your suggested strategy.
5. How can Suraj make use of diffusion theory as part of a social marketing strategy in Sitapura?

Further Readings

Andreasen, A. R. (2005). *Social Marketing in the 21st Century*. SAGE Publications Inc.

Deshpande, S., & Lee, N. R. (2013). *Social Marketing in India*. New Delhi: Sage Publications Inc.

Response.Lee, N. R., & Kotler, P. (2011). *Social Marketing- Influencing Behaviours for Good*. SAGE Publications Inc.



References

- Donovan, R., & Henley, N. (2010). *Principles and Practice of Social Marketing- an International Perspective*. Cambridge: Cambridge University Press.
- Ghosh, D., Sagar, A. D., & Kishore, V. N. (2006). Scaling up biomass gasifier use: an application-specific approach. *Energy Policy*, 1566-1582.
- Rogers, E. M. (2003). *Diffusion of Innovations*. New York: The Free Press.



Case Table 1- Overall Energy Demand

Description- the energy demand by different future user segments.

Purpose of Energy Consumption	Household Lighting	Television and other Appliances	Agriculture	Flour Mill
Number of Households	87	18	22	2
Energy Requirement	30 Watts/hour/household	100 Watts/hour/household	2.1 Kw/hour/pump during agricultural season (8 months a year); for average three hrs. a day	3.5 Kw/h for three hours a day (only one is required in the village)

Source- Based on the demand survey conducted by Alternate Energy.

Case Table 2- Influential People in the Village

Description- the list of influential people in the village

Profession/	Elected Members of the Village Governing Body	Members- Village Temple and Annual festival	Electrification Committee	Tribal Leader	Teachers in a School (not village resident)	Paramedic
Number of People	5	4	7	1	2	1

Source- Based on the formative research conducted by a project manager Mr. Suraj.



**Time - 3 Hour****MM-70**

The question paper contains ONE printed page.
All Questions carry equal marks. Answer Any FIVE Questions

- Q. 1. Differentiate gender and sex using examples for each and every point.
- Q. 2. In your own community how gender is constructed as boys (*Munna*) and girls (*Mummi*).
- Q. 3. Write short notes on any **Two**:
- A. WID, GAD and Empowerment
 - B. Gender Continuum
 - C. Story to discuss Sustainable Development Goals
- Q. 4. Discuss "strategic" and "practical" gender needs with appropriate examples. Differentiate "rights-based" and "need-based" approach.
- Q. 5. Identify any "gender" organization and discuss its key roles and responsibilities.
- Q. 6. Explain what is gender-responsive budget and what steps will you take to make your budget gender-responsive?
- Q. 7. How men and women gender roles are different? Taking an example of Farmers discuss with 24-hour activities usually done by them.
- Q. 8. Write short notes on any **Two**:
- A. Gender Equality and Equity
 - B. Gender Analysis
 - C. Access to and control over