

**Karnataka State Council for Science and Technology
Bengaluru-560012**

**Visvesvaraya Technological University Belagavi,
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A PROJECT REPORT

ON

**DESIGNING SUSTAINABLE MARKETING STRATEGIES FOR THE BIOGAS
EXTRACTED FROM ANIMAL MANURE FOR THE RURAL POPULATION OF
DAKSHINA KANNADA.**

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Introduction:

Biodegradable waste (Animal Manure) represents more than 30% of all domestic waste. In domestic waste collection, the scope of animal manure may be narrowed to include only those degradable wastes capable of being handled in the local waste handling facilities. Legislation in the area of waste management requires reduced quantities of biodegradable waste at waste dumps. The separate collection of waste requires reduced quantities of disposed waste at waste dumps, and reduced volumes of greenhouse gases (methane is generated during the decomposition of animal manure on landfills, which threatens the ozone layer 21-times more than CO₂), and animal manure can finally be processed into a compost or biogas of high quality.

Animal manure includes any organic matter in waste which can be broken down into carbon dioxide, water, methane or simple organic molecules by micro-organisms and other living things by composting, aerobic digestion, anaerobic digestion or similar processes. (Yeboah Patricia Ohenewa, 2016)

It is observed that in the project, the highest biogas yield of 996 ml was recorded for a kilogram of Animal manure. Biogas is a versatile gas that can be used for same purpose as natural gas including heating power generation. Total volume of bio gas production is low compared to other sources due to challenges in implementation. Major challenges in implementing biogas digester include economic challenge, institutional challenge, market challenge and socio-cultural challenge. Given the background, this study finds importance, as there are not many studies in sustainable strategies which are relevant for the region of coastal Karnataka.

Problem statement:

According to Ministry of statistics close to a million deaths a year in India are attributed to household air pollution from traditional modes of cooking. This project intends to device sustainable strategies to provide biogas-based solution to this chronic problem and provide healthier kitchens to the rural people of Dakshina Kannada.

Objectives:

- Quantification of the collectable biodegradable organic animal manure.
- Identifying and quantifying the users of traditional modes of cooking among the rural population.
- Understanding the fuel related problems faced in the kitchens of rural people.
- Designing sustainable strategies to resolve the problems innovatively.

Methodology:

In this project, we intend to quantify the kitchen who are using traditional modes of cooking in Dakshina Kannada and Udupi district of Karnataka. We will understand the typical fuel related issues by interview mode. Convenience sampling was used in this study to collect the primary data. In the first level the biodegradable gas producers (friends, relatives & neighbours) in Udupi and Dakshina Kannada were contacted. They gave few primary contacts of biogas producers; further these primary contacts gave many references for succeeding interviews. A total of 64 respondents were interviewed for the study. Collected data are tabulated, further frequency tables and triple P bottom line techniques are used in the study to draw the conclusion. Information from government officials like PDO, VA is collected. Secondary data collected from the official website like ministry of rural development, state institute of rural development, pollution control board etc.

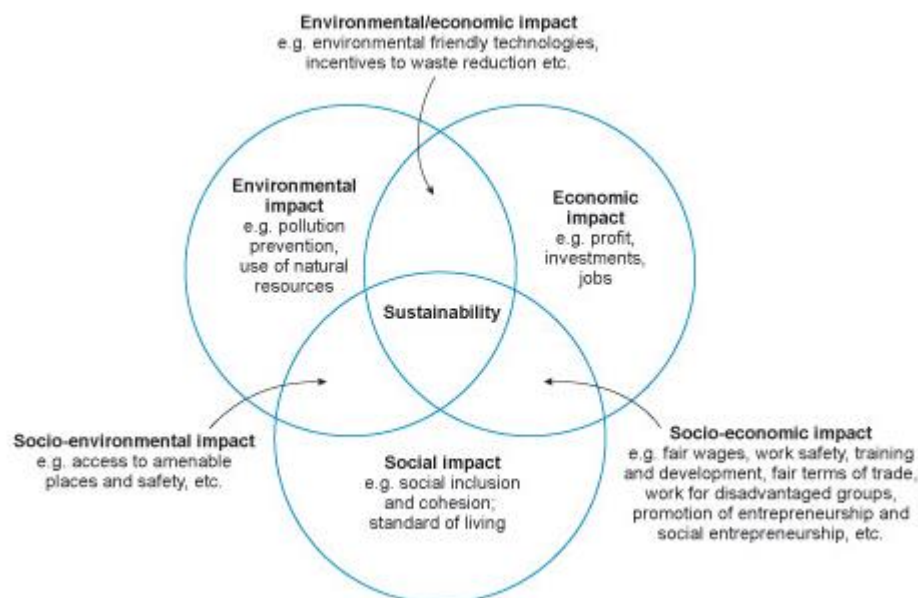
Results:

- **35% of the households do not have waste collection system:** A proper and planned waste collection system is the basis for the Biogas Generation at the community level. This needs co-ordinated efforts for geographical planning with the help of the local government authorities like PDO.
- **50% of the households have independent compost pit:** This forms a very good basis for the implantation of the Biogas digesters. Availability of the basic infrastructure is essential for the success of this project.
- **Bulk community waste is needed to generate the biogas:** Biogas to be made commercially viable and sustainable, generation at the community level is key. Mass collection of animal manure and biogas generation at community levels in the future is the key success factors.

Marketing Strategies

Triple P Bottom line Technique:

The triple bottom line (or otherwise noted as TBL or 3BL) is an accounting framework with three parts: social, environmental (or ecological) and financial. Some organizations have adopted the TBL framework to evaluate their performance in a broader perspective to create greater business value. The challenges of putting the TBL into practice relate to the measurement of social and ecological categories. Despite this, the TBL framework enables organizations to take a longer-term perspective and thus evaluate the future consequences of decisions. The phrase, "people, planet, and profit" to describe the triple bottom line and the goal of sustainability.



Source: <https://www.open.edu/openlearn/money-business/sustainable-innovations-enterprises/content-section-3.2.3>

The three bottom lines are:

1. People, the social equity bottom line

The people, social equity, or human capital bottom line pertains to fair and beneficial business practices toward labour and the community and region in which a corporation conducts its business.

In our project we are looking at the possibility of reducing the kitchen pollution and improving the health of the rural women. It has a high social impact which results in social inclusion, cohesion and standard of living.

2. Planet, the environmental bottom line

The planet, environmental bottom line, or natural capital bottom line refers to sustainable environmental practices.

Through proper utilization of the animal manure and combined with the meticulous planning in terms of collection, and utilization of the organic waste, not only clean fuel is generated, but also reduces the impact on the environment with lower carbon emissions from burning firewood. Reducing the consumption of LPG in turn reduces the subsidiary burden on the government.

3. Profit, the economic bottom line

The profit or economic bottom line deals with the economic value created by the organization after deducting the cost of all inputs, including the cost of the capital tied up. It therefore differs from traditional accounting definitions of profit. In the original concept, within a sustainability framework, the "profit" aspect needs to be seen as the real economic benefit enjoyed by the host society.

Ministry of health and other related government entities can join hands with NGO and corporate through their Corporate Social Responsibility can work towards making this model profitable by reducing the cost of implementation and thereby improving on the top line.

Conclusion:

Biogas generated out of animal manure can reduce the kitchen pollution and improving the health conditions of the rural women. Around 10% of the respondents still using firewood and whopping 65% using LPG and are burdening the central exchequer for the subsidies.

A collaborative effort by the government at the local level, like Panchayat, corporate through their Corporate Social responsibility initiatives can go a long way in improving the cooking methods in the rural kitchen. We have observed that there is no waste collection system is 35% of the households, whereas around 50% of the households have independent compost pit. A proper waste collection system plan has to chalked out with geographical inputs from the local PDO office and community waste can be used in bulk to generate the biogas as a community activity. Proper implementation at the ground level holds the key.

Scope for Future Work: This work is limited to the study of possibility of individual households adopting biogas generation from the vegetable waste. Future researchers can take up this work and expand the scope to look at the possibility of the community level biogas generation.