INFRASTRUCTURE DEVELOPMENT & LOW COST HOUSING FOR RURAL DEVELOPMENT

RESEARCH SUPERVISORS

DR. Fariha Tariq

Aqsa Qalb

RESERACHERS

Raza Ur Rehman Siddiqui F2016214004

Maria Saddiq F2016214015

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UNIVERSITY OF MANAGEMENT & TECHNOLOGY
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APPROVAL SHEET

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In

City & Regional Planning

Approved on: _____

Dean:

Prof. Dr. Yousuf Awan SAP, UMT _____

Chairperson:

Dr. Fariha Tariq DCRP, UMT _____

Supervisor:

Dr. Fariha Tariq, UMT _____

DEPARTMENT OF CITY & REGIONAL PLANNING

SCHOOL OF ARCHITECTURE & PLANNING

UNIVERSITY OF MANAGEMENT & TECHNOLOGY, LAHORE

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ABSTRACT

This study report is published with a view to improving the quality of life and economic well-being of rural residents. The aim of rural development is to find ways to improve rural life with the participation of rural people themselves, in order to meet the needs of rural communities. This article explains how we have multiple services for rural people to boost their living conditions through various research and international case studies. It is assumed that if we lead rural people then if they have talent they will succeed beautifully. Then we had them partnered with us to help them develop their physical and social infrastructure. We are providing them what they need under the domain of rural development.

Executive Summary

This study report is published with a view to improving the quality of life and economic well-being of rural residents. The aim of rural development is to find ways to improve rural life with the participation of rural people themselves, in order to meet the needs of rural communities. This article explains how we have multiple services for rural people to boost their living conditions through various research and international case studies. It is assumed that if we lead rural people then if they have talent they will succeed beautifully. Then we had them partnered with us to help them develop their physical and social infrastructure. We are providing them what they need under the domain of rural development.

This report consists of surveys and analysis of **Samolana Village** and proposals to uplift the rural area. Different surveys were conducted in the area. Local community was also engaged by various techniques including transit walk, mental mapping and ground mapping to understand the needs and requirements of the public and to raise their morals for actively participating in development of their area. On the basis of data collected different analysis were generated with the help of SPSS. **Key working areas** were identified on the bases of the analysis and observations. That is majorly categorized in three types i.e. Physical Infrastructure, Social Infrastructure and Utilities. According to the working areas sector wise plans and strategies are proposed. That includes initiative of some loan programs, investor seeking strategies for improvement of housing sector. It also includes existing condition of roads and transportation system and proposed plans to improve sustainable public transportation system keeping in view its long term benefits. It also caters the education and health sectors. New buildings are anticipated as well as improved plan for existing buildings are also generated. Other sectors to be worked upon include sewerage and Sui gas etc. for that, innovative and environmentally friendly proposals are provided. Side by side scenario building is created so that we can show all that in a frame work that the outcome of these proposals if implemented strictly will result in up liftment of the area.

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Chapter **1**

Introduction

1.1. Introduction

A rural society, dependent upon geological circumstances, is a region under construction that is not civilised. The characteristics of rural community are following:

The rural area, since more residents abandon the rural areas for increased resources and live in urban cities, is sparsely inhabited. There's homogeneity to this society. Agriculture is in its profession, which is its only source of earnings, and this is passed down from generation to generation. Dress, language, and customs are homogeneous. It means all of these remain the same because they belong to the same place, because their culture is the same. Those areas have slow communications means. Rural areas are experiencing very slow rate of change due to lack of education and modern technology. Areas have been passed from generation to generation through basic society. Rural communities are densely inhabited, and more citizens abandon rural areas for more amenities and live in developing countries. Rural areas have an active social culture, which means they have lived their lives in a simplistic manner. Rural communities have strong peoples communications and connections. It means that one another is helped by suffering and rejoicing.

There is less pollution levels in these places, as there are no factories and mines, and the number of vehicles is also smaller. In these areas people give their guests great hospitality and view them as family members. This Study is on rural infrastructure development. We will be providing several facilities to rural people. We are supporting them by this study to increase their turnover. This study is delivering what they need to live comfortably and healthily.

1.1.1 Selection of Project Area

Samolana village as our study area because there are a lot of things which are need to be managed and provided. This village is famous for production of sensitive fruits like strawberries but there is no infrastructure to keep them safe and store hygienically. The main point is that they need such development by which they can increase their monthly turnover, so that’s why we selected this area.

1.2. Problem Identification

Housing is a fundamental human need, because without it, people will not be able to live that way so everyone needs a home to provide important items for their lives. Creating your own is very hard now for days, because it is very costly in Pakistan. Rural villagers face

unemployment, or whether they're not happy with what they're getting or with their living conditions, they're looking for areas where they're providing what they're feeling lacking at their modern venue.

From the different methods of analysis, we observed different issues related to the housing sector of Samolana Village. People of this village living in their kacha houses since many years. They want to improve their living standards and they want to start it from housing. They have poor layouts of houses and unplanned housing patterns. They don't have budget to construct their new dream home. They are still using mud to build their house. Some of them can afford and they build houses in which they haven't proper kitchen, bathroom and bed rooms.

One of the major issues with Samolana is road condition. Only the major roads are well constructed. The access roads are usually unpaved or in paved but needs renovation. Secondly the public transportation also needs improvement. On the name of public transport, only chinches is the major commuting transport over there that causes air as well as noise pollution and should be omitted from our urban and rural settlements.

Population migration from rural to urban areas is a common thing in developed countries (economy, 2019). People are migrating to the urban sector as emerging economies are transitioning from farming and manufacturing to commercial. The causes for migration include trade, the quest for safer areas, healthy livelihood opportunities, and community development (Baig, 2005). As social security networks and funding for rural livelihoods are lacking, migrant workers also face these issues themselves (Farrell, 2017). Migration gives rural households the ability to boost their income sources and to address the harmful social , economic and structural restrictions in ecologically sensitive areas (Tianming, 2018) (Dercon, 2018). In addition, the 21st century industrialization has placed cities burdened as people continue to migrate from their hometowns to cities because of a variety of unexpected occurrences threatening the lives of rural residents (Ezra, 2018) (Schmidt, 2010). Economic shocks such as economic uncertainty and natural climate change shocks such as inundations and droughts are included. While foreign migration has also risen over time , a large share of the global migration has been internal (around 80 per cent) (Nguyen, 2015). The world's urban population is expected to expand by 59% by 2030. (Tan, 2015).

Because of poor salaries in farm businesses, migration has become a tactic to expand their income streams for rural households in Pakistan. Yet rural residents' living conditions have not changed over time. This is in part due to the lack of experience and expertise needed to pursue a profitable career in the cities. Furthermore, inability to enforce labour legislation and adequate health care has left migrants at their point of residence more vulnerable. The rural Pakistan is faced with the many issues and problems, yet the sketch of prime ones is as under:

Labour Force

- Agricultural efficiency is crucial and not accessible, as the industry can no longer hire more young people. Active workers

- As a result of expanded migration from rural areas, food farmers today are becoming net consumers.

Lack of IT and modern Technology

- People in the area are not aware of the applications and technology used to enhance the potential and development of soil and agro-industry

Employment Opportunities

- Due to the lack of enhancement and expansion of the agriculture industry, on-farm (agribusiness) and non-farm entrepreneurial activity / self-employment opportunities are minimal and limited on a daily basis. Unemployment is on the rise.
- Social fractures and inequalities became rampant due to non-availability of the safety net. Lack of leisure facilities
- Youth do not find enough facilities to be interested in safe recreational sports. Unhealthy activities to spend their free time can draw them.
- Cases of drug abuse , rape, burglary and murder, etc., are not rare.

Women Farmers and Youth

- While women are part of the labour force in rural areas, they suffer the most from illiteracy, bad education, bad health, high birth rates and unknown labour.
- Children are forced to leave their homes for employment because of financial pressure and as such are the victims of child exploitation and child labour.

Natural Resources

- The natural resources base is deteriorating due to burgeoning population pressure, inappropriate agricultural practices, overstocking, deforestation and consequent upon the soil erosion, destruction of habitats for wild fauna.
- Environment is under severe stress, biodiversity is vanishing and land productivity is declining. Almost forty percent of land in Sindh alone has turned into salt flat.
- The rangelands on which 70% of local livestock thrives have been degraded and no rehabilitation plans are in place.

High Illiteracy Rate

- The literacy rate in rural areas is poor and illiterate farmers can not understand the benefits of new, science and technological know-how in farming. It is no wonder that the most professional and qualified teachers live in the city.
- This is partly due to the affordability and usability of the necessary services, services and high-paying workers.
- UNESCO has been supplying data for Pakistan from 1971 to 2017. Pakistan's mean value in 2000 for each teacher was 39.56, with at least 33 students for each teacher, and in 2016 it averaged a high of 47.63 for each teacher (Global Economy, 2019).

- The problem in the village of Samolana is the shortage of teachers. Teachers demonstrate just 10%-15% of attendance, according to the study and via the press. Students go to classes, but the teachers are missing, and they spend their entire day playing games and other sports.

1.3. Scope of Study

The study reveals the lack of housing, infrastructure, Labor Force, Lack of IT and modern Technology, Employment Opportunities, Women Farmers and Youth, Natural Resources and High Illiteracy Rate in rural areas and also describe how it's effecting rural economy.

Keeping in view all above mentioned facts, the scope of the study is to propose the housing and infrastructure. Coverage of many rural areas is not being possible that's why Samolana village has been chosen as a case study area. Furthermore, this study will provide proposals to overcome the issues above and to enhance rural economy.

1.4. Research Objectives

- Improvising the infrastructure of village through community participation.
- Provision of Low cost housing through construction materials.
- Enhancement of rural economy through modern technology and E - Agriculture software.
- Agriculture development with the help of village community.

1.5. Research Questions

After reconnaissance surveys and literature review we had identify the following research questions.

These research questions are precisely derived to identify our scope of research.

1. How to develop physical or a social Infrastructure with the help of local community
2. How to improve housing in rural area in a low budget?
3. How to enhance rural economy through agriculture?

1.5 Key words

Community Participation

The engagement of individuals in a group in initiatives to address their issues may be generally described as representation of the community. Public involvement in emergency sanitation services is particularly relevant when residents are unsuited to the atmosphere and to new sanitary facilities.

Infrastructure development

The physical and organizational structure and facilities needed for operation of the society. It the construction of basic services in order to stimulate economic growth and quality of life improvement.

Low cost Housing
It is a term that deals with efficient budgeting and strategies that help minimise cost building by using locally available materials along with new improved expertise and technologies without losing the strength, efficiency and life of the structure.

Agricultural economics
"Agricultural economics is an integrated stage of economic social sciences in which all elements of the issues of agriculture are discussed," according to Snodgrass and Wallace.

1.6 Area Profiling

Samolana is located near Sharaqpur and Sharaqpur is a town of Sheikhupura District in the Punjab province of Pakistan. Coordinates - latitude 31.478369° longitude 74.066370°. The total area of Samolana is around 387246sq/m and approximately 1200 people are

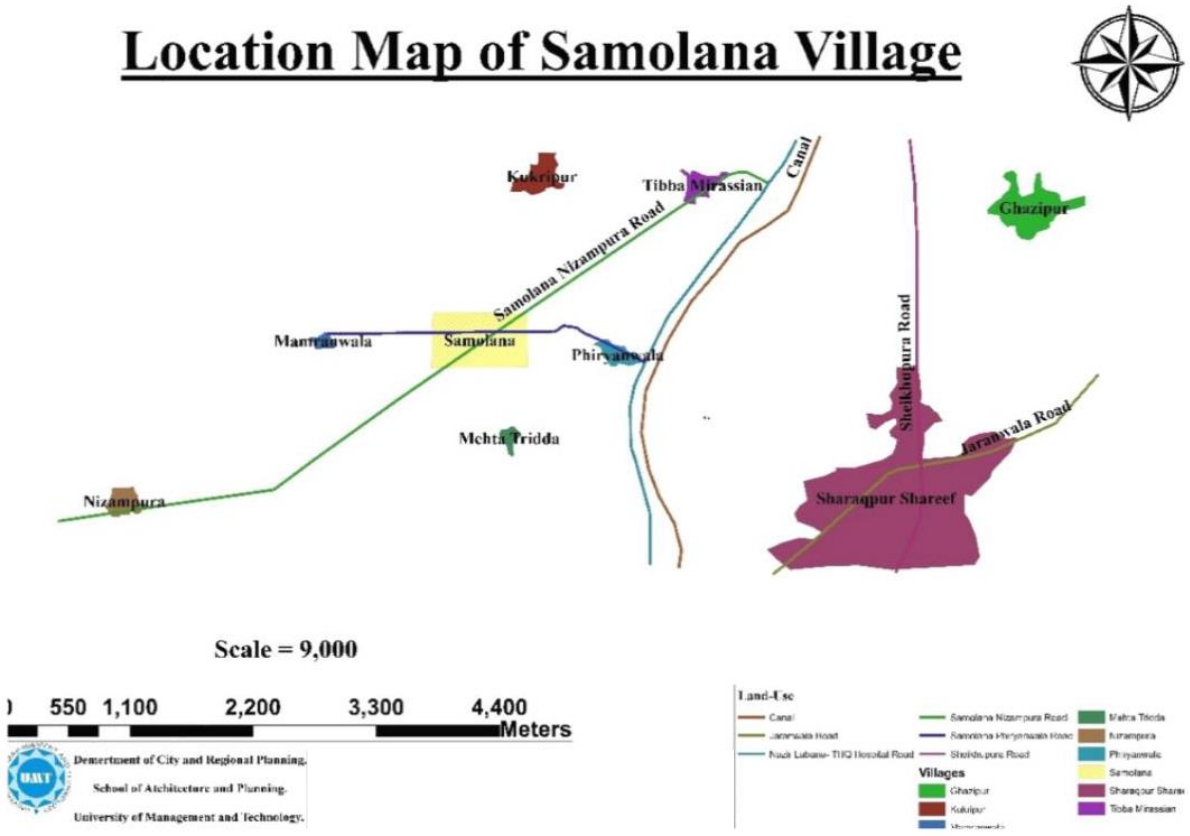


Figure 1 Location Map

currently living in this village.

1.6.1 About Area

Samolana is an agriculture-based village with fertile land. The major crop of the village is wheat. The people of this village are interested in farming of strawberries, guavas, Rosses

and lemons. This area is also known as land of strawberries. People have farms of strawberries because main market of sharaqpur is almost 15 minutes far away from this area.

The environment of this area is very friendly while survey we also noticed that these clashes are decreasing day by day because people are becoming sensible with the help of education so this is also a positive point of this area. They have imam bargah in their village.

1.7 Limitations

- Accessibility to the selected area through public transport within two hours and with private car then it takes maximum 40 minutes to reach there.
- Where whether sounds rainy people stuck inside because roads are not paved, they cannot go to their farms also.
- Load shedding is also a major issue of our project area.
- During the survey, cast system creates hurdles for us.
- To finish the work in day time because at night there were no facilities by which we can do work.

Chapter 2

2.1 Literature Review

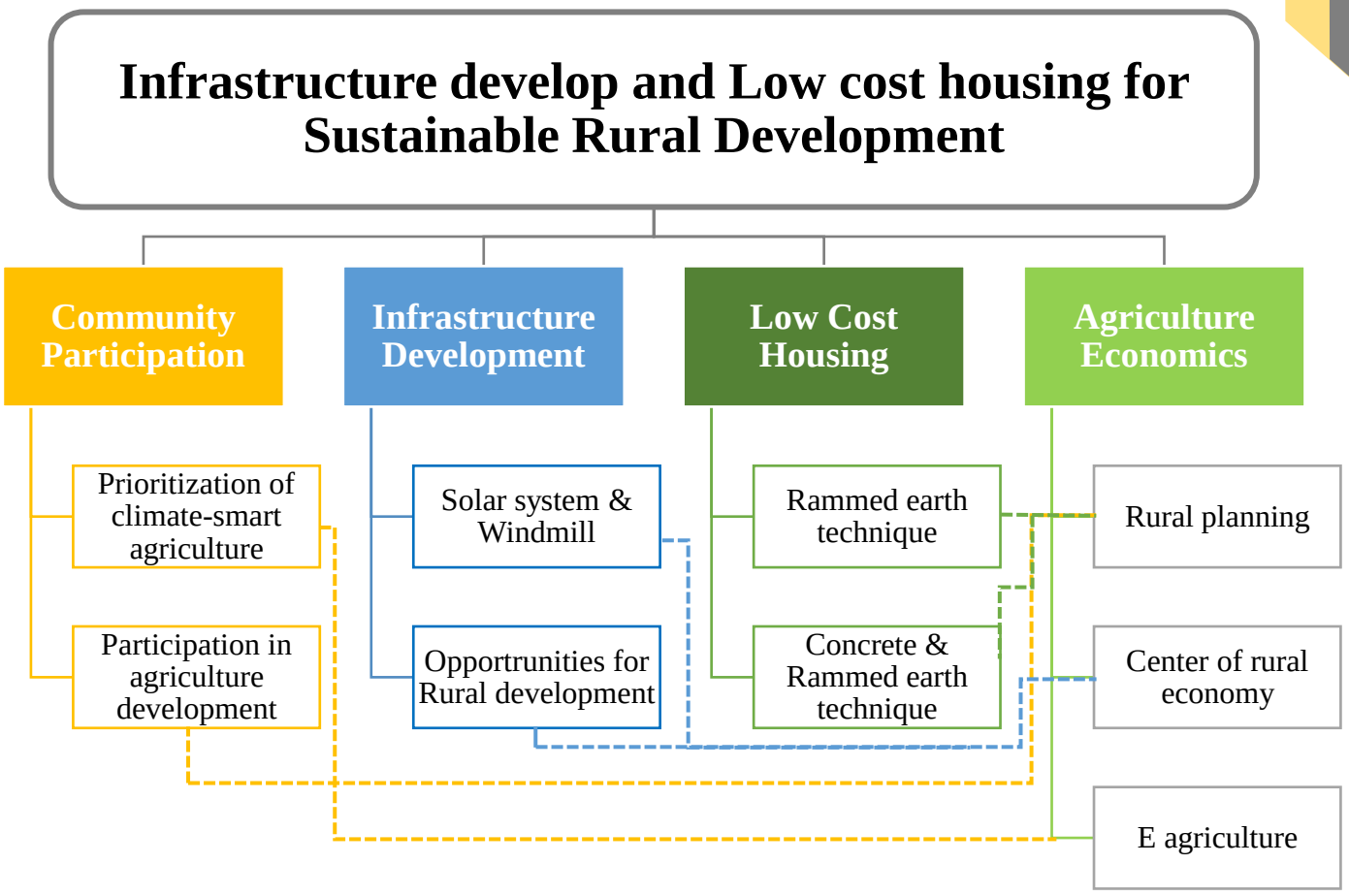


Figure 2: Literature Map

2.1.1 Community Participation

2.1.1.1 Farmers' prioritization of climate-smart agriculture

Unique challenge is combating the effects of climate change on agriculture. Many factors impact the degree to which farmers implement CSA technology at a specific site. This research employed a participatory appraisal approach to determine the expectations and ability of farmers to pay for identified CSA activities and technologies within different precipitation zones. The study showed that the interests of farmers in CSA technology are distinguished by some commonalities and variations in socio-economic characteristics and precipital areas. Cultivation Insurance, meteorological field consulting services, rainwater collection, advanced fertiliser control on site, contingent field forecasting, laser soil levelling were the most favoured technology for local growers. The findings show also that farmers' choice and ability to pay depends on technology and its deployment costs. This research illustrates the potential of using a participatory CSA prioritisation strategy to provide information on climate change response preparation at the local level. (Khatri-Chhetri, 2016)

2.1.1.2 Farmers' participation in agricultural development

Farmers' participation in agricultural planning is regarded as an important tool for successful sustainable agricultural development. This study examines the issue of farmers' participation in the context of agricultural development. Data for this article were obtained through focus group discussion (FGD) from rural farmers in 9 villages in Fars Province, Iran. The findings showed that FGD discussion was more emphasis on involving farmers in implementing programs than on providing for their participation in planning and evaluating the processes or outcomes of agricultural programs. It / is expected that the findings of this study could be utilized by the agriculture developers for reassessments of agricultural industry programs in rural communities.

This thesis is based on a qualitative method of study to analyse the role of farmers in agricultural production. Information for this analysis was obtained from farmers via the FGD. The analysis work uses focus group conversation (FGD) and secondary details, FGD is a very valuable data collection technique. FGD is still perhaps the most commonly used method for capturing qualitative data. To accomplish the goals, 9 FGDs were conducted in a suitable position in 9 villages. According to the baseline data obtained, farming is the most common occupation in 9 villages. Participants of the FGD were chosen from rural farmers to engage in agricultural activities. All of the respondents were male. They were selected because of their interest in agricultural activities. They aged from 29 to 79 years of age. This research was largely focused on the understanding of farmers.

This study explores the problem of the involvement of farmers in the context of farm growth. Participation is structured as power sharing in decision-making over programme growth. The most important results are:

1. Agriculture preparation and appraisal decision-making engagement by farmers is not taken into account. Agricultural policy decisions are primarily taken by government agencies.

2. Participation of farmers in project execution has been given particular consideration. However, there is no opportunity to join.
3. There are numerous hurdles to involvement. Research has shown that an essential aspect of minimal growth in farmers' agriculture is the absence of competent organisations.

Based on the results, empowerment can be a tool in agricultural planning and policy for farmers' growth. There are limited studies on the position of farmers , particularly in their involvement in training in agriculture planning. Therefore, this analysis could help establish factors for rural farmers' poor involvement in agricultural planning and government policy. The results of research will help the extension service and government officials decide on capital distribution as well as on farmers' education and technology needs. The findings of this study will lead extension staff to establish better education programmes for the farmers in Fars, Iran province. The results of this study are useful to scholars, academics and all interested parties engaged in the creation, appraisal or promotion of farm growth projects in any case linked to general production objectives. (Farshid, 2011)

2.1.2 Agriculture Economics

2.1.2.1 Rural Planning in Pakistan

Pakistan is primarily a farming region. The key foundations of the economy remain its rural zones and the population. Farming is the largest sector in the economy which accounts for 25 % of GDP and 70 % of total export value. The industry currently employs 17 million employees , making up 44 percent of the workforce of the country. Currently 67% of the population lives in rural regions. Agriculture and other small, rural enterprises, which rely on agricultural production directly or indirectly, are their key sources of income. Many rural poor occupy areas with limited agricultural land, low agricultural ability, and a common characteristic are drought and environmental degradation. Moreover, there is much less recourse, in rural areas, to fundamental human rights, such as drinking water and sanitation, preparation and healthcare.

In rural regions, malnutrition, poor life expectancy and high mortality in babies are more prevalent. It is claimed that the key vehicle for rural growth is sustainable agriculture and rural development will not happen until we consider rural rather than producers.

We must value them as contributors to employment, rural landscape managers and environmental management for the safety and development of the ecosystem, for the establishment of the social and cultural order and particularly as a provider of healthy high-quality goods to customers. A holistic and coordinated strategy is needed if rural development is to succeed. Logical attempts need to be taken to recognise commercial, environmental and social benefits. A balanced and holistic approach is required for sustainable rural development in designing an actionable plan for the rural sector.. (Baig, 2005)

Summary Implications for Rural Development in Pakistan

- Shortage of
- Educational facilities
- Living space
- Health services
- Arable land
- Housing units
- Clean water
- Food

Increase in

- Unemployment
- Overcrowding
- Land fragmentation
- Katchi Abadies
- Import of food
- Poverty

- Environmental problems
- Congestion in households
- Crime

2.1.2.2 Centre of Rural Economy

The 'Centre for Rural Economy' would fill the essential gap between knowledge and its application and catalyze organized policy related research to present a set of prioritized options for policy-makers for the rural sector. The CRE will look into the factors responsible for worsening terms of trade and what types of policies are required to reverse the trend; identify the commodities with specific characteristics and markets with specific demands where Pakistan should focus to increase its agricultural export; study the value chain of different commodities and suggest ways to improve the value chain to meet the needs of high-end national and international consumers as well small farmers and poor landless people by connecting them with high-end markets.

The overall goal of CRE is to improve sustainable and inclusive growth in rural areas. The specific objectives are:

- Reduce rural poverty.
- Improve food security, resilience, and social protection.
- Generate gainful employment in rural areas and reduce rural-urban gaps and migration.
- Enhance competitiveness and boost export from rural economy.
- Improve sustainability of natural resources and environment in rural areas. (Baig,

Figure 3 CRE Conference

2005)

2.1.2.3 Mobile Applications for Agriculture and Rural Development

M-apps are mobile tech devices that are ideal for other uses, but cell phones have numerous essential advantages: affordability, universal possession, voice communications that quick and easy service delivery. The number of m-apps has exposed globally, encouraged by rapid mobile network growth and rising functions and declining prices for mobile phones. M-apps in developing nations are drastically different, as they are generally on second-generation (2G) phones instead of Smartphones, which in developed countries are much more popular.

Although a variety of reports have been undertaken on the mobile transition, comprehensive pattern observations, detailed case studies and reviews of m-ARD technology interactions in developed countries are missing. In this article, the influence of growth, ecosystems and business models are analysed in order to provide policy makers and policy makers with an empirical context. The Platform is designed to make us recognize how these applications can also be used to enhance rural citizen programmes in certain countries and promote creative m-ARD apps in environments.

2.1.2.4 E-Agricultural Concepts

In the modern sense, information and digital technology can simply be described as the collection of technologies that contribute to data or information storage , processing, diffusion and communication or both. It also encompasses devices such as peripherals in hardware and applications that are connected to the Internet to serve the networking and information processing role. In the economies of developed countries like Sri Lanka, on the other hand, agriculture plays an important role. Therefore, it is very important to improve the growth of agriculture. E-agriculture is one of the principles that plays an significant role in developing agricultural processes. In agriculture, ICT 's main function is to promote a broad-based access to information that facilitates the exchange of expertise and decision-making. The use of ICTs in farmers is becoming increasingly widespread day by day.

In the last decade, maybe in a decade, farmers' approach to accessing agriculture knowledge has shifted as networking and ICT developments have evolved rapidly. The use of ICT is also growing day by day in agriculture with this emergency. New information systems have the effect of moving expertise and information from rural populations to farmers to theoretically improve agricultural productivity. In agriculture, ICT development is focused on the needs of each of the participants engaged directly or indirectly in agriculture. Centered on these ideas, recent patterns in ICT can be implemented both in virtually all agricultural and related processes. In order to minimize the expense and time of agricultural functionalities, the quality and process reliability would still be beneficial. (Narmilan, 2017)

2.1.3 Infrastructure Development

2.1.3.1 Solar power system and Windmill

Figure 4: Village Life

Dharnai, once hard-pressed in having basic electricity like most of India's villages, has changed his fate and become India's first solar village. Dharnais people have been using diesel generators and unsafe fuel such as cow dung to fulfil the expensive and unhealthy energy requirements for decades. After the introduction of the 100-kilowatt solar grid of Greenpeace in 2014, over 2.400 people living in this village of Jehanabad have been provided with quality electricity. (Maria Velikova, 2015)

Figure 5: Wind Mill

For more than a decade, Odanthurai, a Panchayat in the district of Coimbatore in Mettupalayam taluk, has become a model village for the other villages. The panchayat produces electricity not only for its own uses, but also sells power to the Tamil Nadu Power Board.

Odanthurai near Mettupalayam has already received international acclaim for an innovative Rs 5 crore system for building wind and solar energy farms, with its innovative healthcare with energy autonomy programmes. This project would enable more than 8,000 people to freely access electricity. (Maria Velikova, 2015)

2.1.3.2 Opportunities for sustainable rural development

Organic farming has the following advantages: farming of nutritious foods, of modern technologies; growing demand; new markets; better prices; reduced use of land; less electricity use, environmental protection; agricultural growth, etc. are a particular production system for saving the atmosphere and producing organic, good quality food. Organic farming is a holistic ultimate approach focused on a variety of organic production methods. Growing jobs and decreased unemployment, decreasing hunger risks, increasing geographic or destination appeal as a result of improving ecological living standards, increasing direct foreign investment, and work in rural areas.

First, modern bio farming takes a comprehensive approach which controls not only the end product, but the manufacturing process as well, and has opportunities for improved management at various levels as a contribution to the sustainable development of rural areas as a whole. The option is focused on the following considerations. Second, rural areas require successful national and regional management through their complexities and composition. The emphasis is on process management and controlling in general rather than on supervision of farming and other operations, systems for production and finished goods.

Research into sustainable rural growth and organic farming, and strategic actions by regional institutions in adapting and stabilizing rural regions according to the key elements of European and national policies and their effect on industry, are subject to theoretical , methodological and practical challenges. The work hypothesis is that it will not be feasible to grow organic agriculture with its inherent approaches, practices and management tools without rural growth in the Republic of Bulgaria and requirements to create sustainable organic farming inside a modern economic framework ("green") that is more humane and environmentally friendly ("known based").

Organic agriculture has the capacity to be adopted in Bulgaria as a holistic production system in sustainable farming, maintaining systematic management over its period and compliance with the strict standards and can contribute to the sustainable growth of rural areas and fully respond to the principles of intelligent specialization. The study provides a broad model for rural sustainable development by encouraging development and developing organic resource management at various levels. The model covers eight impact areas: produce, finance, consumer, technology and creativity, preparation, encouragement and sustainability, as part of the three organic resource management levels: global , regional and organizational (farming, manufacturing, company or other organizations) instruments for applying coordinated approaches to programmes, processes, and the process. State and local governments, producers, processors and traders as well as teaching, testing and advisory organizations, may be future consumers of the proposed instruments around the various sections. (Maria Velikova, 2015)

2.1.4 Low cost housing (Construction Techniques)

2.1.4.1 Rammed earth technique

Proper shelter is one of the fundamental requirements for the millions of people who live below poverty line around the world today. Thus, sustainable accommodation and the atmosphere should be consistent with one another such that the residents of a house in a hot climate can have cool living conditions while the residents of houses in cold places have a warm setting in which to live.

In the event of seismic events, this is risky. Steel reinforcing is an optimal solution, but costs are a major issue. Scientists and engineers are increasingly searching for structural structures materials; in due course of time , the concept of using bamboo as a potential reinforcement has become quite common. In both tropical and sub-tropical areas of the world, bamboo has historically been used as a construction material since time immemorial. (Department of Civil Engineering Harcourt Butler Technological Institute (HBTI), 2016)

Figure 7: House made with rammed earth

Figure 6 Rammed earth wall construction

2.1.4.2 Rammed Earth and Concrete Technique

Proper shelter is one of the fundamental needs of human beings. There are already millions of people above their heads without adequate roofing. In order to provide accommodation for the millions of vulnerable, in both developed and emerging countries, the world needs environmentally friendly affordable housing at low prices. In the light of greenhouse gas pollution and the rising cost of the oil, it is important that all buildings take these considerations into account and make housing affordable for low-income residents. Housing building should resolve the irrationality of the existing inefficient, low thermal functioning traditional construction system and the major environmental impacts of the building systems' high embodied energy. As a result, advanced low cost sustainable building techniques need to be developed. This paper introduces a revolutionary concrete jacket with a wall mounted earth core framework that provides major changes in the environmental effects, comfort and expense of both construction and operational capacity. Building uses mostly local raw materials with no heavy energy manufacturing, which decreases the energy of the building. Apart from using local materials, only

basic construction skills are needed and hence the device is best tailored to rural areas and has potential application to developed countries. This method of building has increased efficiency in the event of earth quakes that save many lives. (Patnakuni, 2016)

2.2 Lessons

In the scenario of Samolana village the infrastructure, housing and agriculture techniques and methods has to be modernized. By using these techniques and technology we will be able enhance the economy and life style of the village. The use of modern technology the village will be able to produce healthy goods and by better transportation they will be able to increase their incomes and by that the economy of rural area will enhance. Infra-structure also play an important role in the enhancement and development of rural area which is why the infrastructure should be strengthen by the government and the by the community participation. Low cost housing can be provided in rural areas through locally available materials clay, cement and bamboo. These materials area cheap and possess enough strength to hold the load of house. The labor cost won't be as much compare to pakka house.

Chapter 3

3.1. Research methodology

The research methodology is the basic methods or strategies used to classify, pick, process and interpret information on the subject. In a research paper, the data analysis helps the reader to objectively determine the general feasibility and reliability of the report.

The approach explains the general theory that underpins your preferred analysis techniques, and whether you are using qualitative or quantitative approaches, or a combination of both, and why. (Writing)

To conduct this study reconisense survey was conducted in the study area to observe the problem and needs of the community. Afterwards data was collected internationally according to the key words. Survey was held to collect primary data through questionnaires. On words data was analyzed results generated and then the proposal of better life style, enhancement of economy and sustainable rural development proposal will be made.

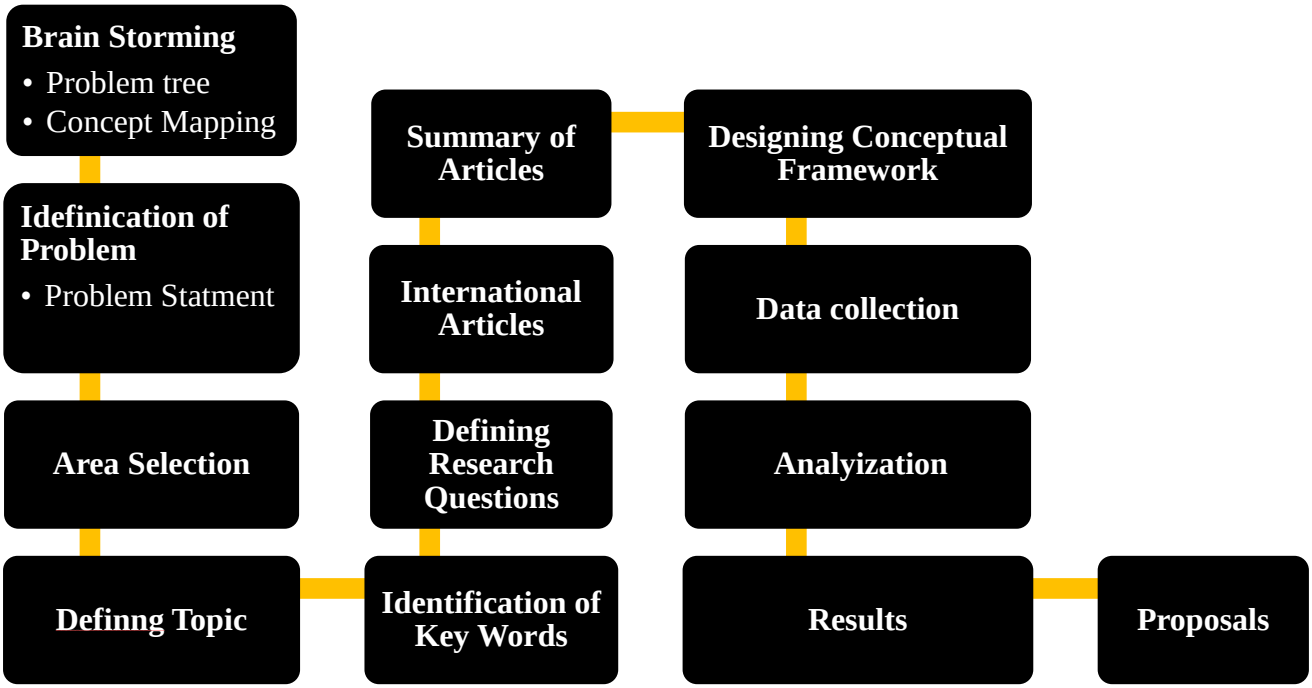


Figure 8: Research Methodology

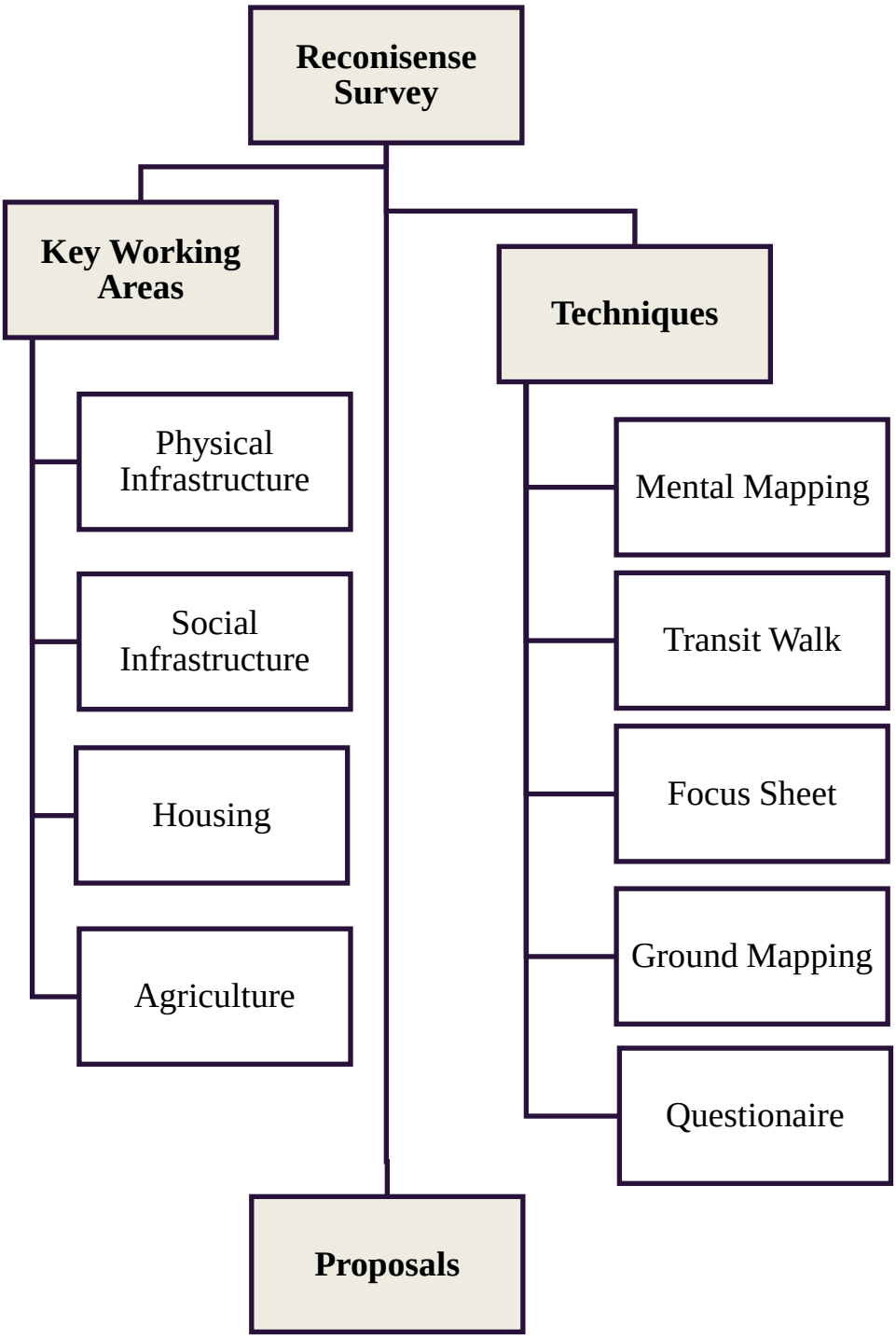


Figure 9: Methodology

The following procedure was carried out to find out the best possible proposals for rural development

Total population of this village is 1200 and the sample size is 143. A methodology is used to complete this project like on the very first step we did reconnaissance survey of the area in which we observed the condition of the area the behavior of the public their living styles etc. After completing our first survey we designed questionnaire according to the area and applied second survey on the village. The task is to observe their thoughts while asking them different questions of the questionnaire. Perform analysis of the data which we gathered from the survey. On the next step we perform another survey of the village, and we focused on the internal layout of different kacha houses and collect information about how they are surviving in these types of houses. After that and on the last we compiled a report in which we covered each and every content related to existing condition of the village.

3.2. Techniques

There are different techniques which is used to gather data from villagers. Some of them area:

- Mental Mapping
- Transit Walk
- Focus Sheet
- Ground mapping
- Questionnaire

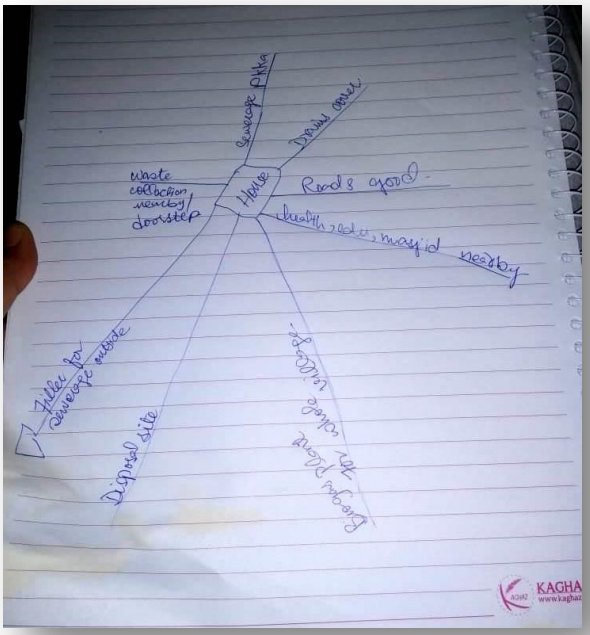
By performing these techniques data was collected successfully it also helps to analysis data and give proposals on this study.

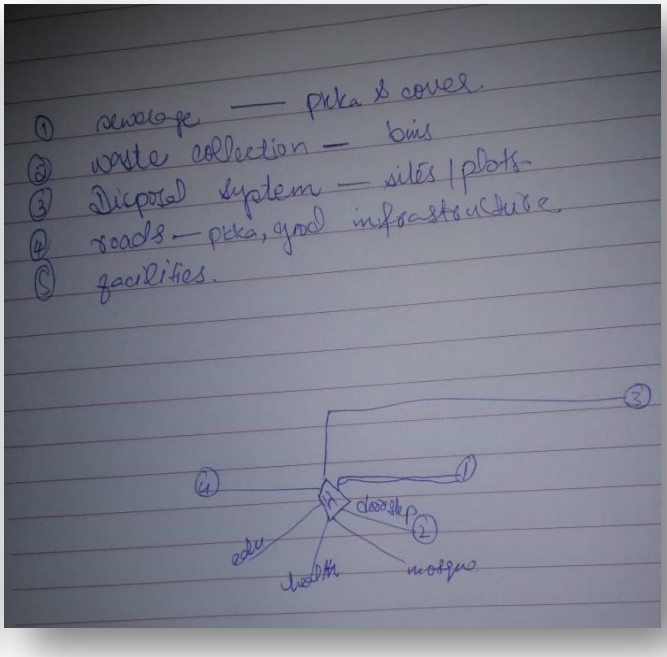
3.2.1. Mental Mapping

A mental map is the understanding of a person's point of view of their area of contact. Metal maps provide data with vital means to make sense of the environment and to store and retrieve knowledge about the cycles of earth and human characteristics. (Stea, 2015)

3.2.1.1. Objectives of Mental Mapping

- It is a communication tool to help organise knowledge, to help enhance interpretation.
- Encourages to brainstorm and test new theories, topics or challenges.
- It offers a deeper view of the relations between thoughts and concepts.
- It makes it possible to express thought processes;
- Gives more exposure to the viewer (Stea, 2015)



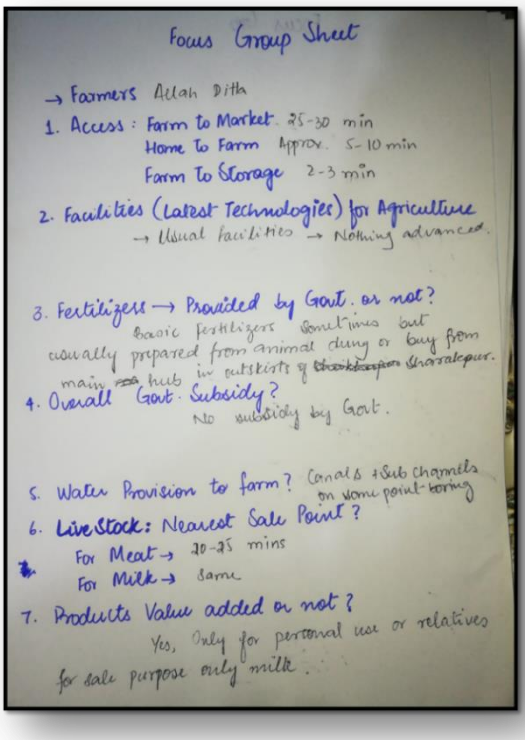


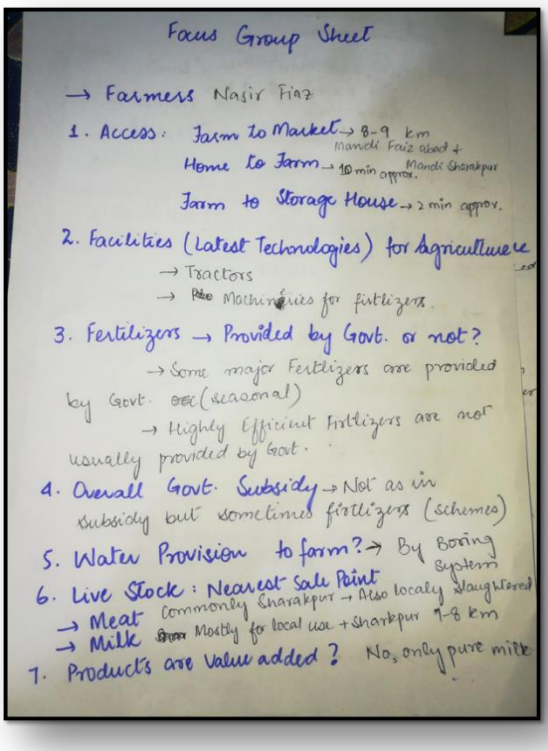
3.2.2. Transit Walk

This technique is often used to gather information on the targeted location. A transect walk is a regular walk with locals to discuss the circumstances by studying, talking, listening and watching. (WILBERS, 2004)

3.2.3. Focus sheet

Focus sheet are designed to gather data by using paper sheets which is very convenient for the villagers to write about their problems on papers. We used this technique to gather data from farmers. Asking them about the supply of water, water provision, live stock sale point,





facilities provided for agriculture, Access and product value.

3.2.4. Ground Mapping

Ground Mapping is also a very use-full technique to find out the ideas of local people, their mind sets, what they w ant or what they have in the area.

3.2.4.1. Objectives of Ground Mapping

- We Perform Ground Mapping to Understand What They Want.
- Ground Mapping Helps to Communicate with Uneducated Society.
- Ground Mapping Helps us to understand the Layout of the Area.
- Ground Mapping helps them to draw their Ideas in an Easier Way.
- We Perform this Technique to Understand the Mind-Sets of the People.
- We can perform this Technique without any Tool.

3.2.5. Questionnaire

This technique is used to collect data in the chosen area. The questionnaire is a research instrument composed of a set of questions to be answered of collecting responses from the participants.

Chapter 4

4.1.Data Analysis

4.1.1. Housing

According to the survey results 95.5% housed are owned and 4.5% are rented in the population of 1200. 98.2% houses are made of brick & cement (Pakka) and 1.8% houses are made of mud and bushes (Kacha). Half of the population is satisfied with the condition of their houses. Household size is explained in figure 10 maximum numbers of households are 6 to 10 which ensure the income of 40,000 – 60,000 and 20,000 to 30,000 through their crops and their childrens earns from cities (figure 11). Major source of their income is agriculture activities (corps, milk, animals) as displayed in figure 12 some people are doing job in government.

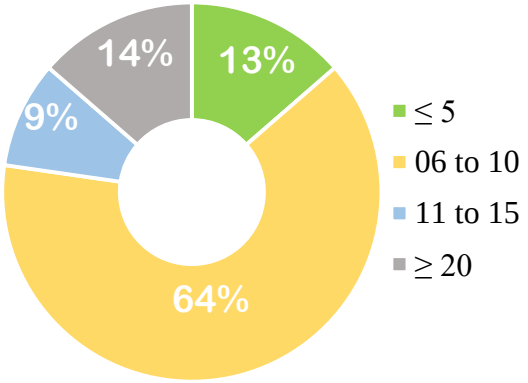


Figure 10: Household Size

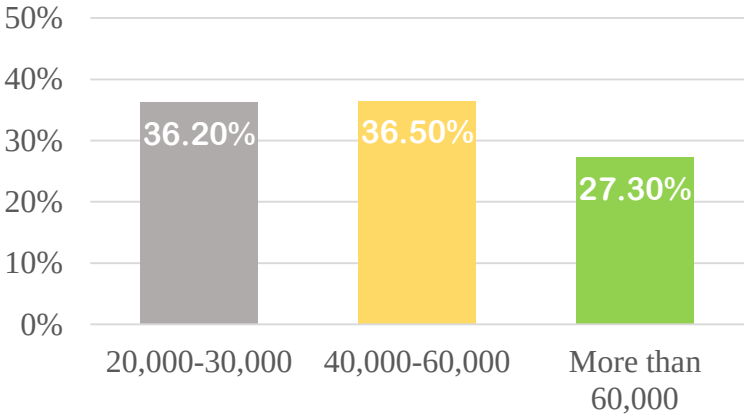


Figure 12: Monthly Household Income

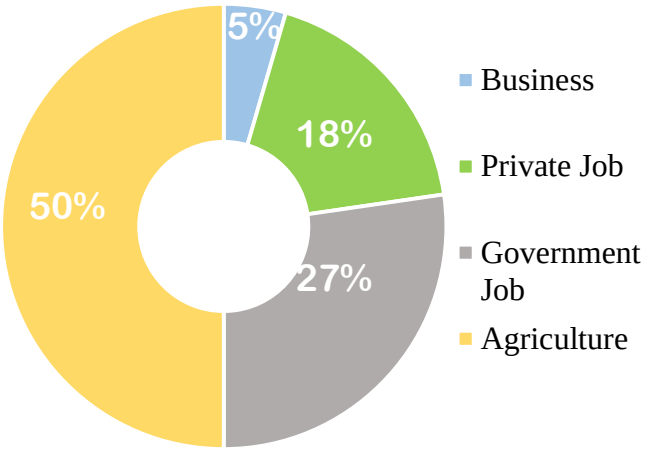
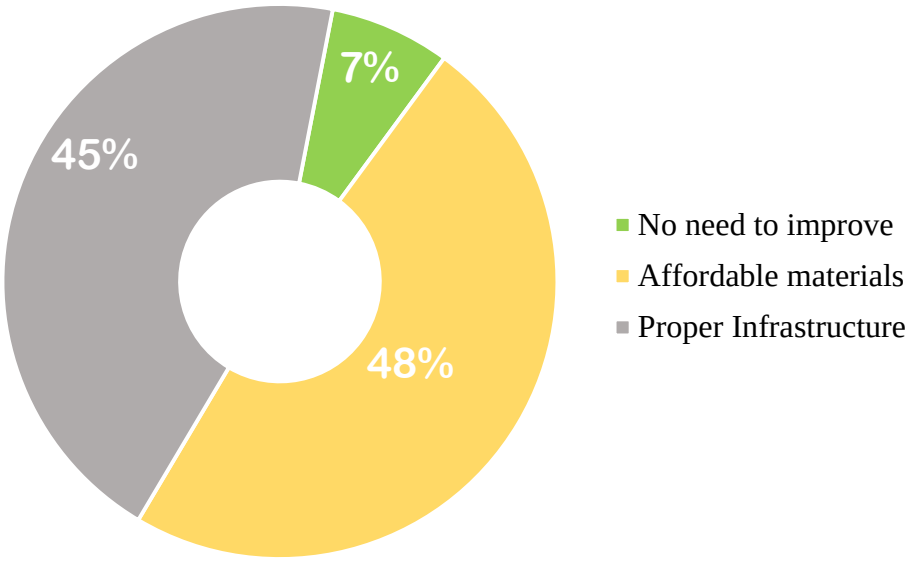


Figure 11: Occupation

4.1.2. How to improve housing

This analysis is performed to get the villagers point to improve housing in the village. According to the analysis (figure 13) they want affordable materials for their houses which



will improve the housing in the area.

Figure 13: To Improve Housing

4.1.3. Preference of Rammed earth technique for Housing

Villager s are preferring rammed earth technique because clay is major material in it and its affordable in area and also available in the clos vicinity which will save the transportation cost because of rammed earth sustainability they are preferring to build their houses right way.

4.1.4. Infrastructure

This data is gathered to see the infrastructure facilities provided by government. Figure 14 presents that the solid waste collection is not fulfilled by government. In order to develop the

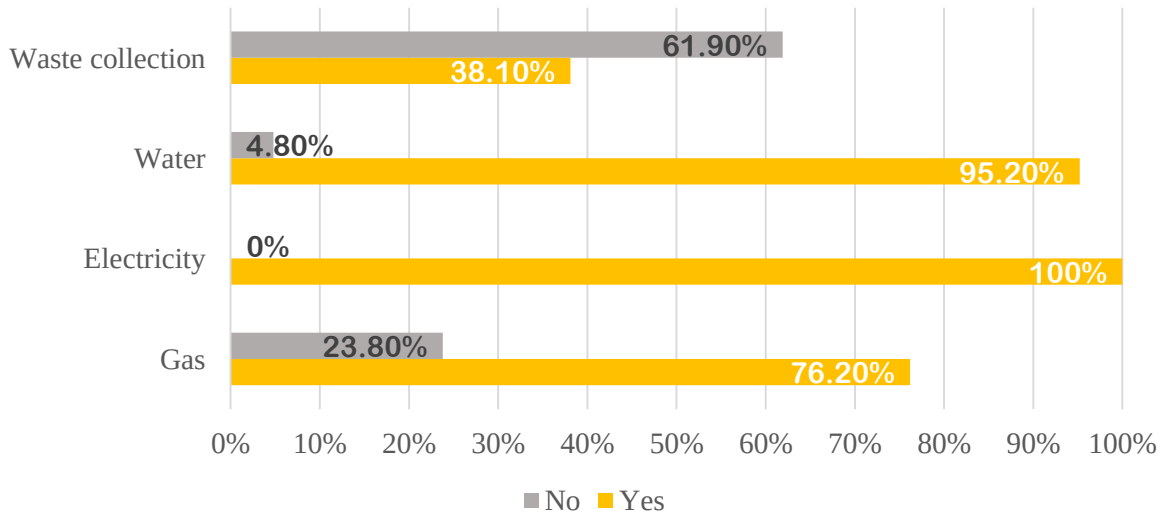


Figure 14: Basic facilities

infrastructure this study will provide better solution to perform this duty in proper way.

People of the village are not satisfied properly with the basic facilities. Sewerage system of the area is open and it's not working properly which is the reason of the various disease in the village. Gas pipeline is available in the area but in most of the area gas is not provided properly by the government which is the reason people are not satisfied. Figure 15 presents the satisfaction of people according to the basic facilities provided by government.

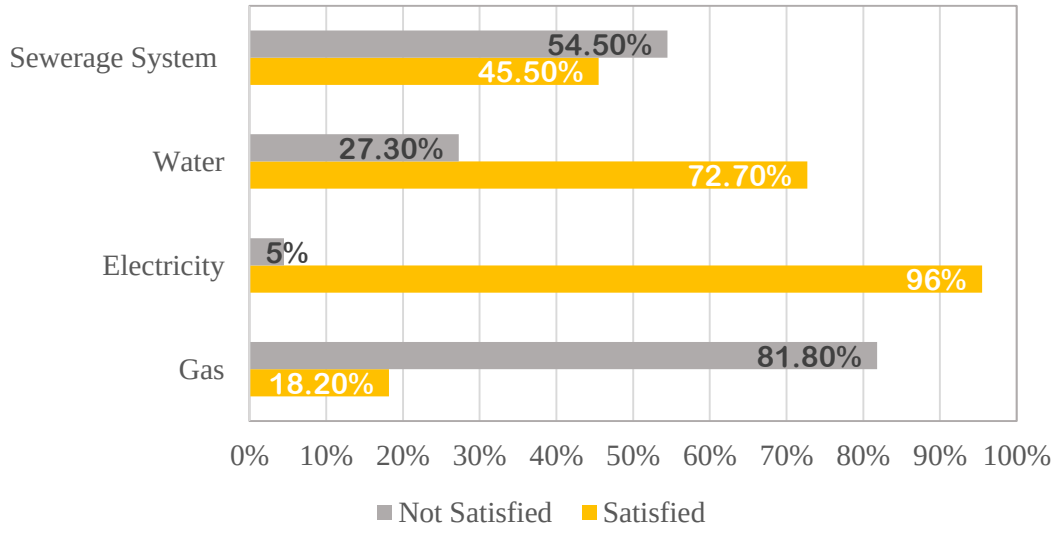


Figure 15: Satisfaction of villagers

4.1.4.1. Organization responsible for solid waste collection

According to the analysis the LWMC is responsible for collecting waste from the area but it is not working well. Figure 16 shows that no one in the village works to clean the village from solid waste. The LWMC collects waste from the boundary of the village not form inside the village which is why people dump there solid waste near their vicinity.

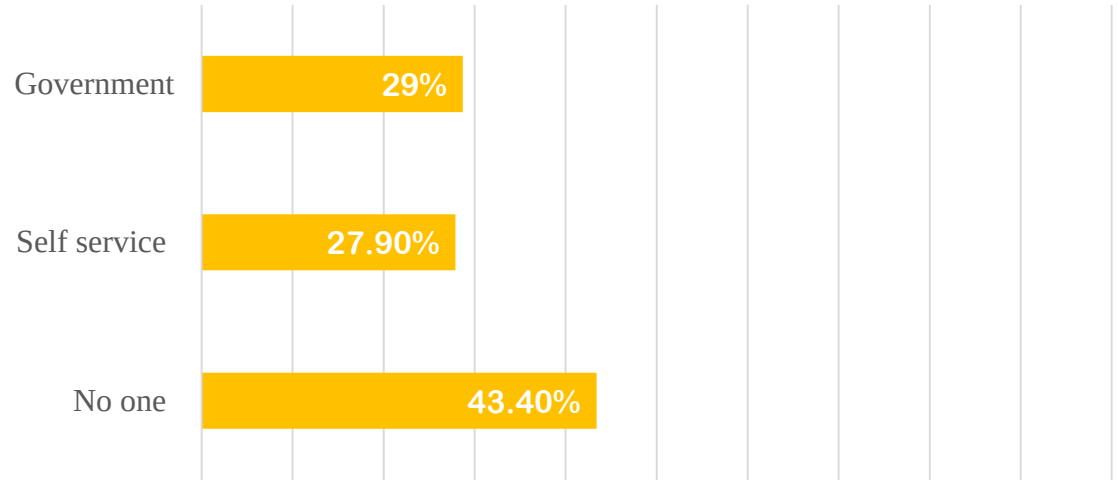


Figure 16: Collection of Solid waste

4.1.4.2. Number of hospital visits in month

Proper health facilities are not provided in the village. BHU kot mehmood hospital is allocated 450 m away from the village which have normal facilities in it. People visit this facility 1 to 3 time in a month Presented in figure

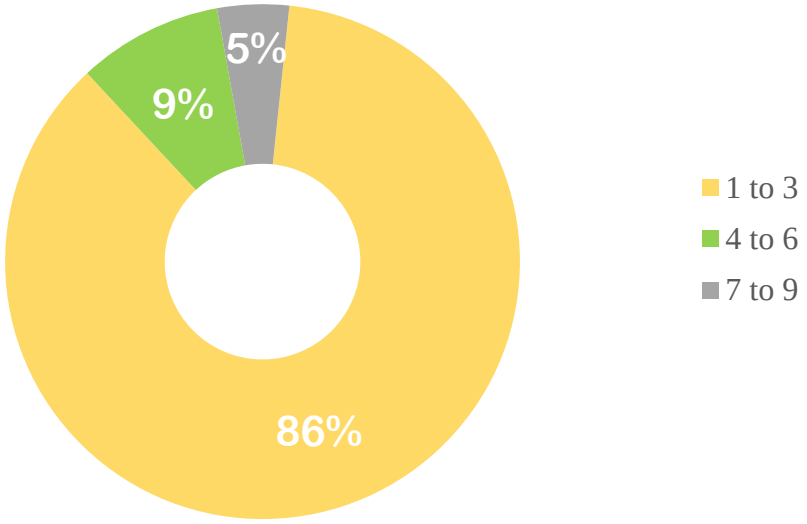


Figure 17: Number of hospital visit

4.1.5. Agriculture

Different types of crops are available in the area the major ones are wheat, Rice, Vegetables, fruits and flowers. These crops are used for commercial activities and their own use as well. According to the gathered data water supply for the crops are given through the tube well. Villagers are satisfied with this facility but due to load shedding they face some issues.

Villagers are not aware of the use of modern technology for agriculture and IT application for the prediction of crops to enhance productivity.

4.1.5.1. Use of any equipment or application for prediction of crops/ soil/ climate change.

This analysis was performed to see villager are aware of modern technology and new applications that predict about the crop, soil and climate change, it also guide the farmer if he face any issues. People are not aware of the Equipment and application which predict about corps, soil and climate. These application and equipment are useful to enhance the productivity. It will guide them which crop should be beneficial according to the type of soil or in according to the climate change. Figure 18 is presenting the awareness of modern technology and applications.

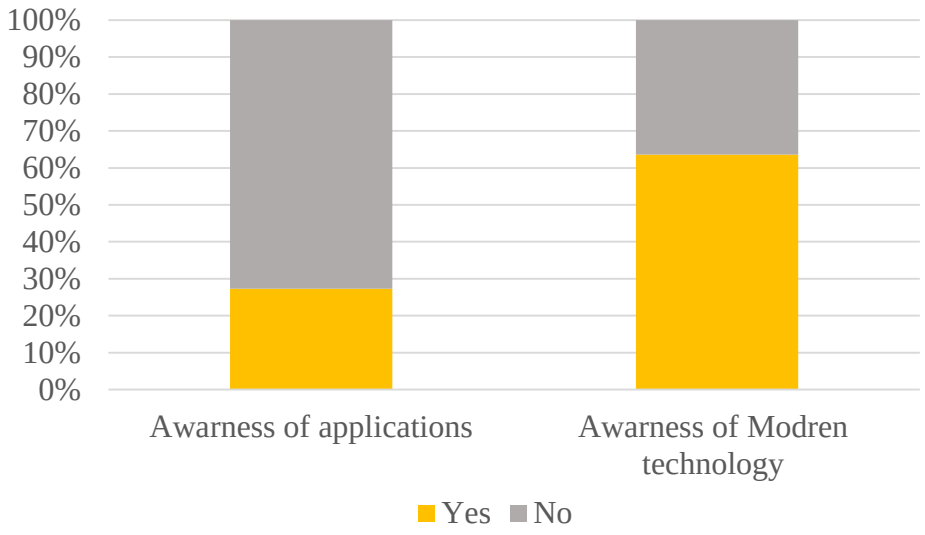


Figure 18: Awareness

4.2. Result

People of the village can afford house construction in the range of Rs. 2 lac. That's the reason they are preferring rammed earth technique because it's available near the village and affordable material. Villagers use their crops for commercial use which is beneficial for them. To enhance the productivity farmer should be aware of modern technology and IT softwares which they are not aware of. Infrastructure of the village is performing well but have some flaws gas availability, sewerage system and solid waste collection inside the village. Sewerage system of the village have open drain uncovered manholes. Villagers dump their solid waste in the village near their vicinity but no one dump it outside the village some people clean their village but that happen in the period of 9 to 12 months. Gas pipelines are in the village but it is not available in the village. Hospital is near but it does not have complete facilities, in case of emergency people go to other cities for better treatment.

Chapter 5

5.1. Housing

5.1.1. Rammed Earth Technique

Mechanical compressed soil goods, such as bricks and tiles, can perform favorably with traditional clay bricks and concrete blocks in terms of consistency and longevity. Strengthened concrete buildings are quite common and commonly used in the world today, but their economic importance is greater than any other building material. As a result, there is a need for more affordable and easily available alternate solutions for concrete or terracotta structures. In certain parts of the world, many houses are built of either concrete or mud bricks.

Bamboo is a safe and flexible plant, distinguished by its high strength and low weight, and is easy to use with basic tools. As such, bamboo constructions are simple to create, resilient to wind and even earthquake forces, and simple to restore in the event of injury. Locally accessible bamboo and soil will also dramatically reduce the housing crisis in rural areas by building productive, low-cost and durable structures.

Some of the major advantages of rammed earth constructions are:

- Low cost of materials and locally available
- Low energy and transportation costs
- Low fire risk and non-combustible
- Virtually sound proof
- Durable
- Maintains a balanced indoor climate without extremes of temperature
- Flawless surface and flexibility in wall thickness and plan; and
- Non-requirement of high skilled workers etc.

(Department of Civil Engineering Harcourt Butler Technological Institute (HBTI), 2016)

4. ESTIMATE BASED ON TRIPURA SCHEDULED RATES (TSR) - 2011

Item No.	Description of Work	Quantity	Unit	Rate	Total Cost
01.	Earthwork in excavation in all kinds of soil over areas (exceeding average depth of 400 cm, 600 mm in width as well as 24 sqm. on plan) including disposal of excavated earth lead up to 50 m outside the periphery of the area and lift up to 1.5 m, disposed earth to be levelled and neatly dressed.	23.5	Cum	1100	25850.00
02.	Providing, hoisting and fixing up to floor five level precast reinforced cement concrete work in string courses, bands, copings, bed plates, anchor blocks, plain window sills and the like including the cost of required centring, shuttering, finishing smooth with 6mm thick cement plaster 1:3 (1cement: 3 fine sand) on exposed surfaces complete, but excluding cost of reinforcement with cement concrete 1:2:4 (1cement: 2 fine sand: 4 graded stone aggregate 20mm nominal size).	0.66	Cum	9531.50	6290.79
03.	Cost of bamboo, 70 mm dia., 7 m long, for both horizontal and vertical reinforcement	10	Nos.	100	1000.00
04.	Wood work Roof truss (Jam) Doors and windows (Jam)	 0.6063 0.4633	 Cum cum	 19883.70 19883.70	 12055.49 9212.12
05.	Calculation for GCI sheets 0.63 mm thick with zinc coating not less than 275gm/m^2	49.61	Sqm.	607.30	30128.153
06.	Twin pit – pour flush latrine as per Prama Neerja Ayaala	1	each	7257.00	7257.00
07.	Providing and lying flat brick flooring in cement mortar including cement slurry etc. complete. In cement mortar 1 : 5 (1 cement : 5 fine sand)	23.42	Sqm.	387.60	9077.60
08.	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to floor five level. Mild steel and Medium\Tensile steel bars.	5.207	kg	60.90	317.106
					Total = Rs. 101188.26 /-

Figure 19: Estimate of rammed earth house

5.2. Infrastructure Development

5.2.1. Sui gas

- According to proposal it is decided to provide gas in two ways.
- Bio-Gas system will be introduced to the villagers so that they can stop burning wood immediately.
- Around the time we lay down sui-gas pipeline.
- The nearest point for sui-gas is Sharaqpur. The pipeline will be dragged from Sharaqpur to Samolana.
- Other small villages such as Phirianwala will also be facilitated because it is in between these two settlements.

5.2.1.1. Bio Gas infrastructure

The main components of this system are:

- Inlet pipe
- Digester tank
- Gas holder tank
- Slurry outlet pipe
- Gas outlet pipe

Several steps to make bio-gas at home:

Step 1

You will have to choose a correct size container which will act as a digester tank.

Step 2

Make holes in the tank for Inlet and outlet.

Step 3

Glue the inlet pipe and outlet pipe with some sort of waterproof adhesive.

Step 4

Take a paint bucket to make a gas tank holder. This tank contains the gas that was made. The tank is overturned and sealed with a valve used for plumbing purposes.

Step 5

Mix the cow dung (5 kg for 50 litters) and apply the water to make the slurry good. Now position the slurry in the digester tank.

Step 6

Place the overturned gas holder in the digester tank after pouring the slurry.

Important Note
Open the valve while the gas holder is in the tank. The mini plant will take 10-15 days to get the first production. For the first time, the gas in the tank needs to burn because it contains carbon dioxide gas, if luckily it burns than wait for the second time otherwise. You will see how much gas there is in this device, the gas holder's tank will grow as the gas is generated.

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Figure 20: Experiment

FOR WHOLE VILLAGE PLANT

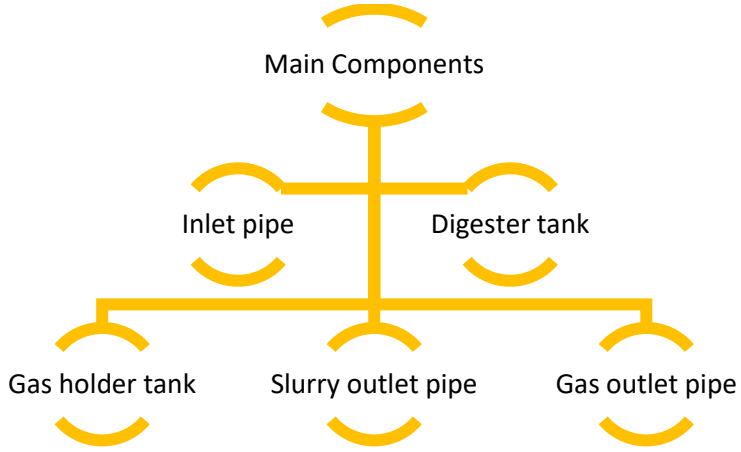

Figure 21: Material

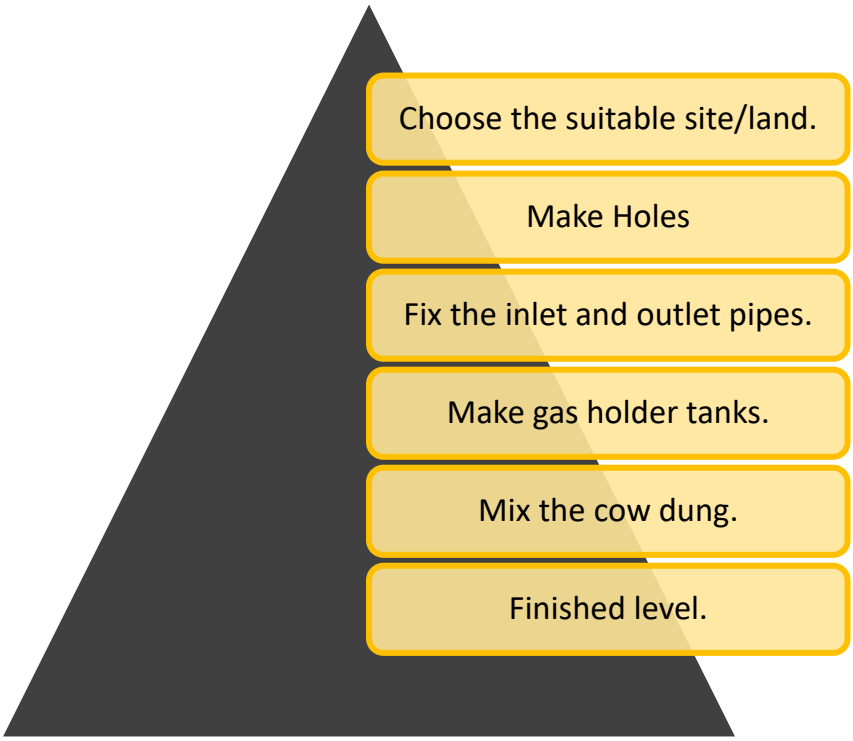

Figure 22: Steps of Bio-Gas Plant

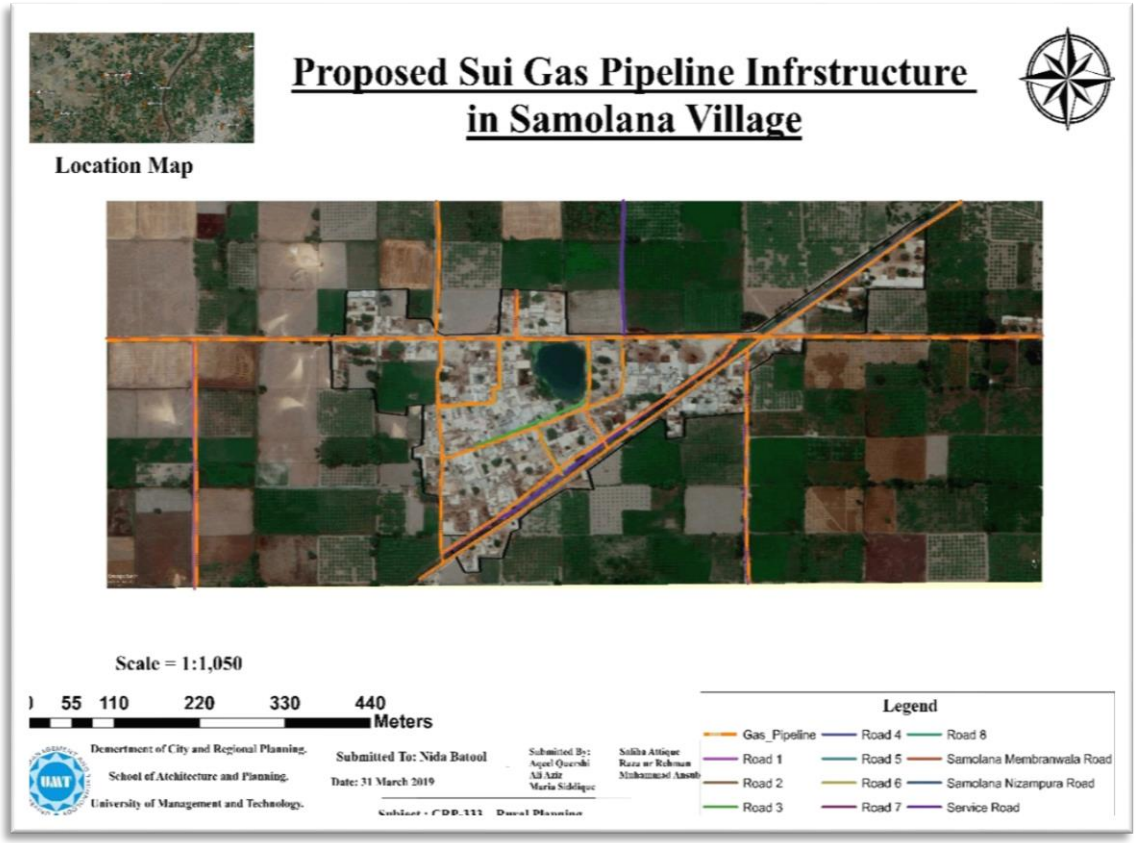

Figure 23: Gas Pipe Line

5.2.1.2. Gender benefits:

Biogas offers direct household advantages, in particular for rural women. This is a result of the decrease in the workload of firewood selection as organic biomass cooking is supplemented by biogas. Biogas cooking times are much simpler for consumers than cooking with solid biomass fuel.

In addition, biogas is non-smoking and does not need intense focus when cooking, meaning that people can still participate in other tasks at the same time.

The region's experience shows that on average biogas saves over 2 hours a day.

Women will use this saved time more productively in child care, income-generating operations, schooling, leisure and other social events.

5.2.1.3. Environmental benefits:

Indoor air quality in consumers ' homes is greatly increased with the use of biogas. The demand for firewood and therefore lower burden on the forests are also lowered by biogas plants. Biogas plants also can be used for the waste disposal of large farms of milk and poultry. When a biogas plant is designed to handle wastes from industrial holdings, making them more appropriate to the community, the atmosphere gets safe, balanced and odourless.

5.2.1.4. Health benefits:

The indoor air pollution due to exposure to smoke inside the kitchen while cooking with solid biomass fuel is a major problem for rural communities especially for homemakers and small kids. Bad indoor air quality, the leading killer for children under five in developed countries, constitutes one of the main risk factors for acute respiratory infections.

The use of biogas greatly increases air quality and decreases the incidences of respiratory disorders, coughing, dizziness , headaches and eye disorders inside the kitchen.

5.2.1.5. Economic benefits:

Biogas decreases cooking and long-term gasoline costs. Saving of fuel costs by building biogas plants usually allows for a recovery within four to five years of the overall construction costs of the facility. It also eliminates the high costs and harmful impacts of artificial fertilizers.

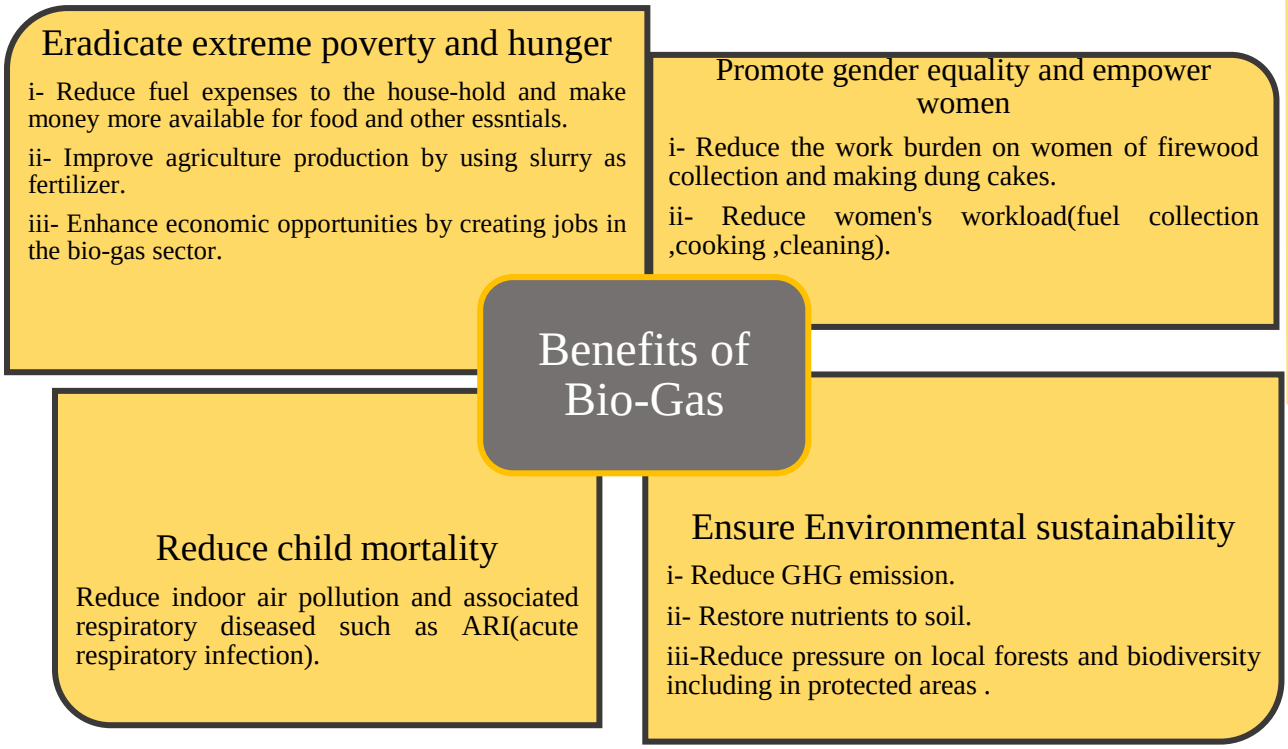

Figure 24: Benefits of Bio-Gas

Invalid source specified.

5.2.2. Sewerage system

There is no proper sewage system in the village in this town. The sewage system is pathetic. In Samolana Village there is no waste water treatment plant. Without any care, the entire waste water from the field is distributed in an open ditch / pond. It pollutes the atmosphere and causes problems such as soil pollution, water-borne disease, etc. This activity often causes problems.

Leading to environmental destruction, the depletion of groundwater is increasingly growing, exacerbated by the dumping of waste water as alluded to in Figure 25. The quality of water is detériorated. In this village, the installation of a wastewater system is desperately needed. Proposed biological treatment scheme for waste water in the open ditch of the city.

In order to solve the issues mentioned there are few proposals that are as following:

a) System must be easy to operate and maintain, with the minimum of sophistication.

b) Use of local materials preferred.

c) It must be the least cost alternative for required pollution reduction.

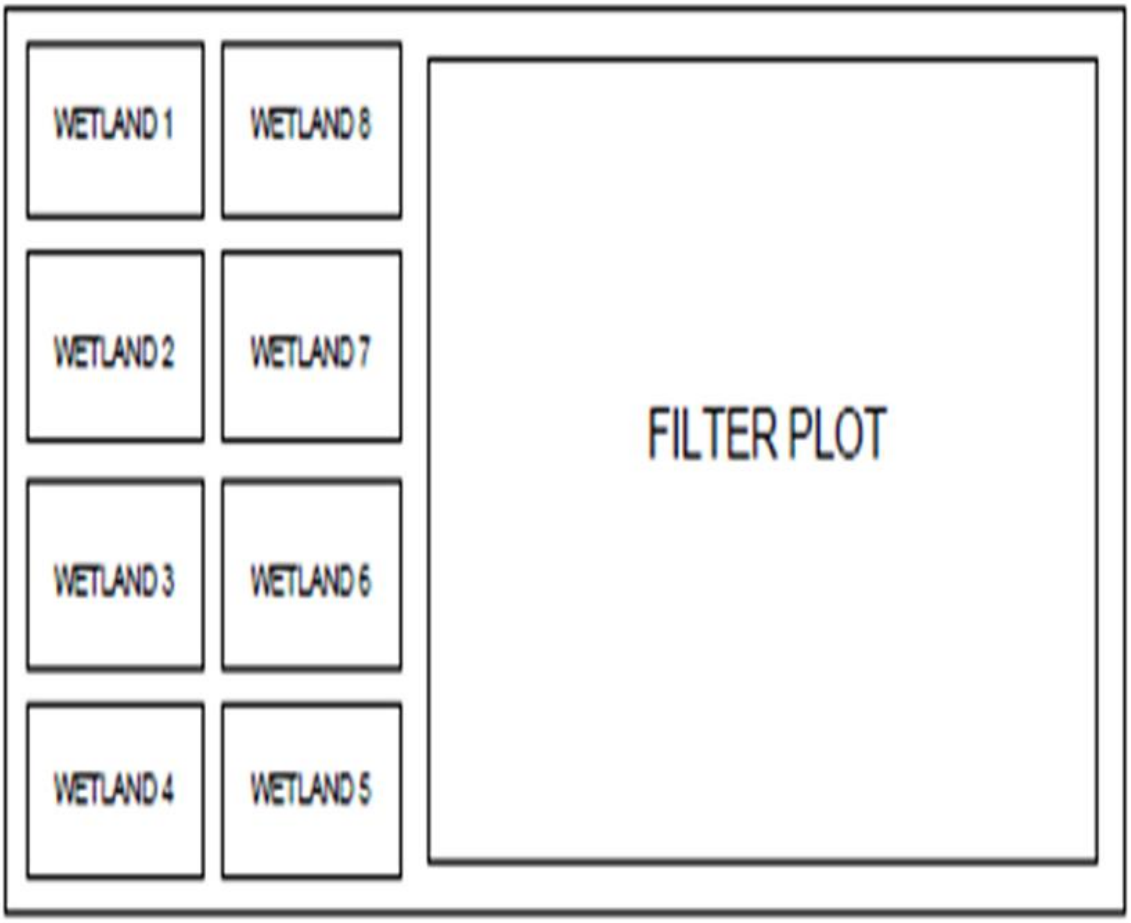

Figure 25: Filter Plot

5.2.2.1. Methodology

Water will enter in the ponds after fine screening and settling. Fine screening will remove all type of floating particle from the untreated sewage. After screening, wastewater will start to flow in the ponds and will move from one to another pond for reducing of pollution load. Plants perform two operations is their roots absorbs the nutrient in the wastewater and second it helps to maintain the anaerobic conditions in the ponds. So that proper anaerobic digestion may be done by the anaerobic microorganisms. Settling during the process also lowers Bacteria content of water. After passing from the ponds with plants, it finally enters into last pond of bigger size so that sunlight and open-air oxygen further aggravate aerobic digestion of wastewater. Finally, the treated water can be used for irrigation or for mixing with other water body mentioned in figure 26, 27 &28.

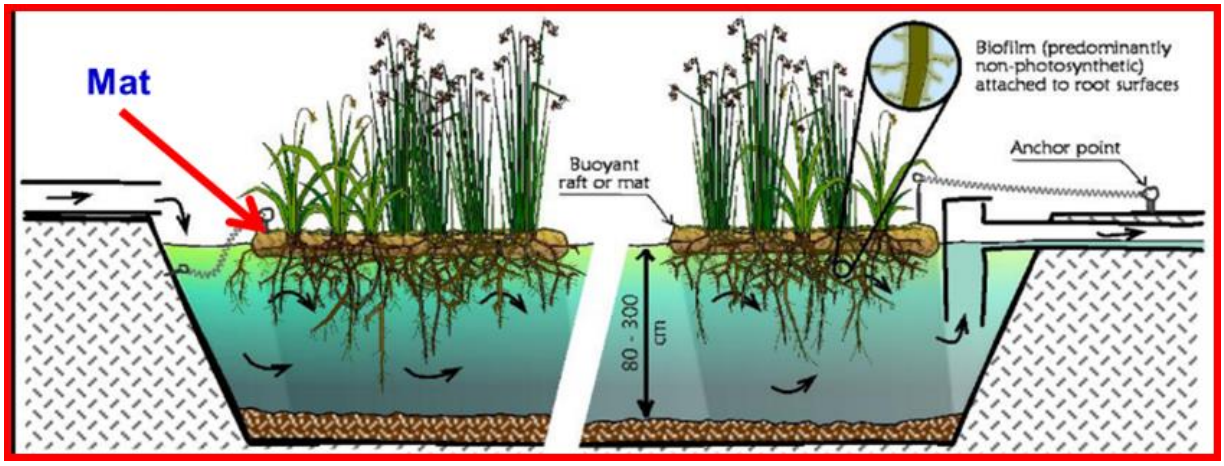

Figure 26: Pectoral View of Remedial Waste Water Treatment

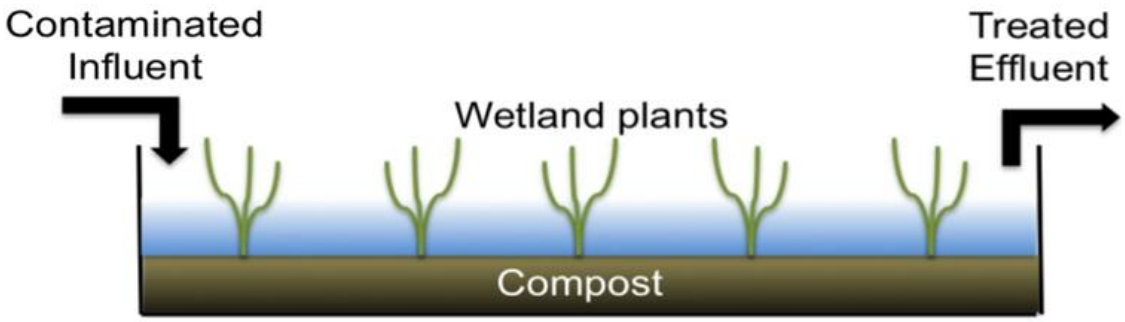

Figure 27 Wetland Plants

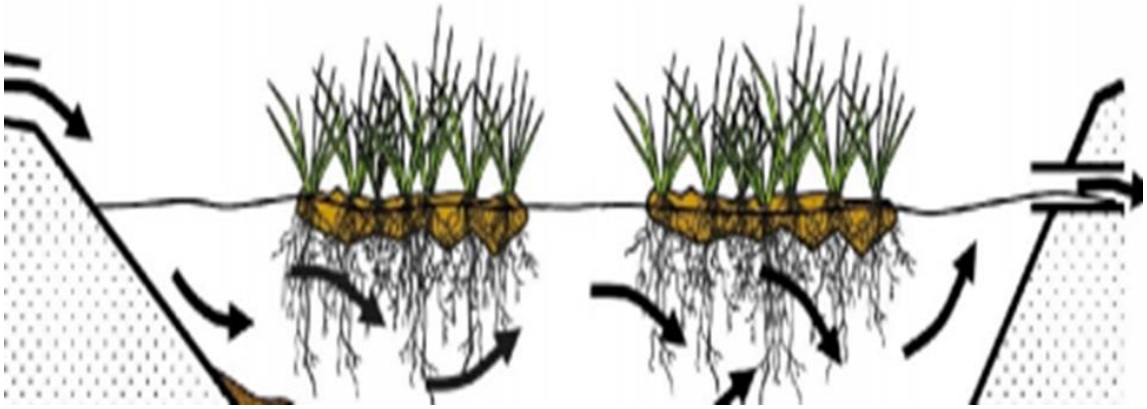

Figure 28: Working

A number of locally available Bio-remediation plants that can be used for treatment of wastewater are mentioned in figure 29
Proposed plan for Treatment system in open land mentioned in figure 30

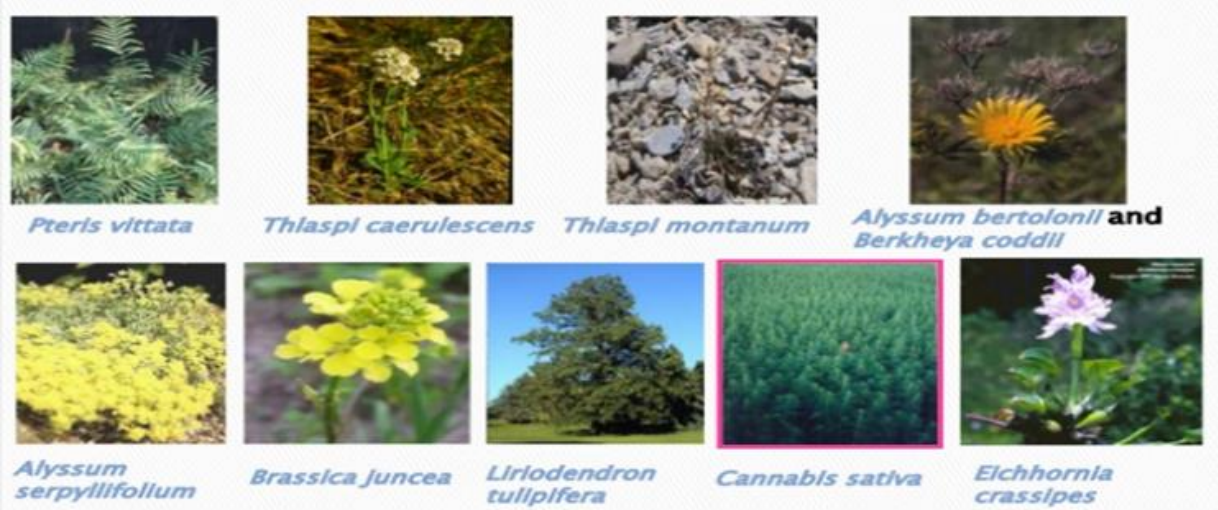

Figure 29: Plants

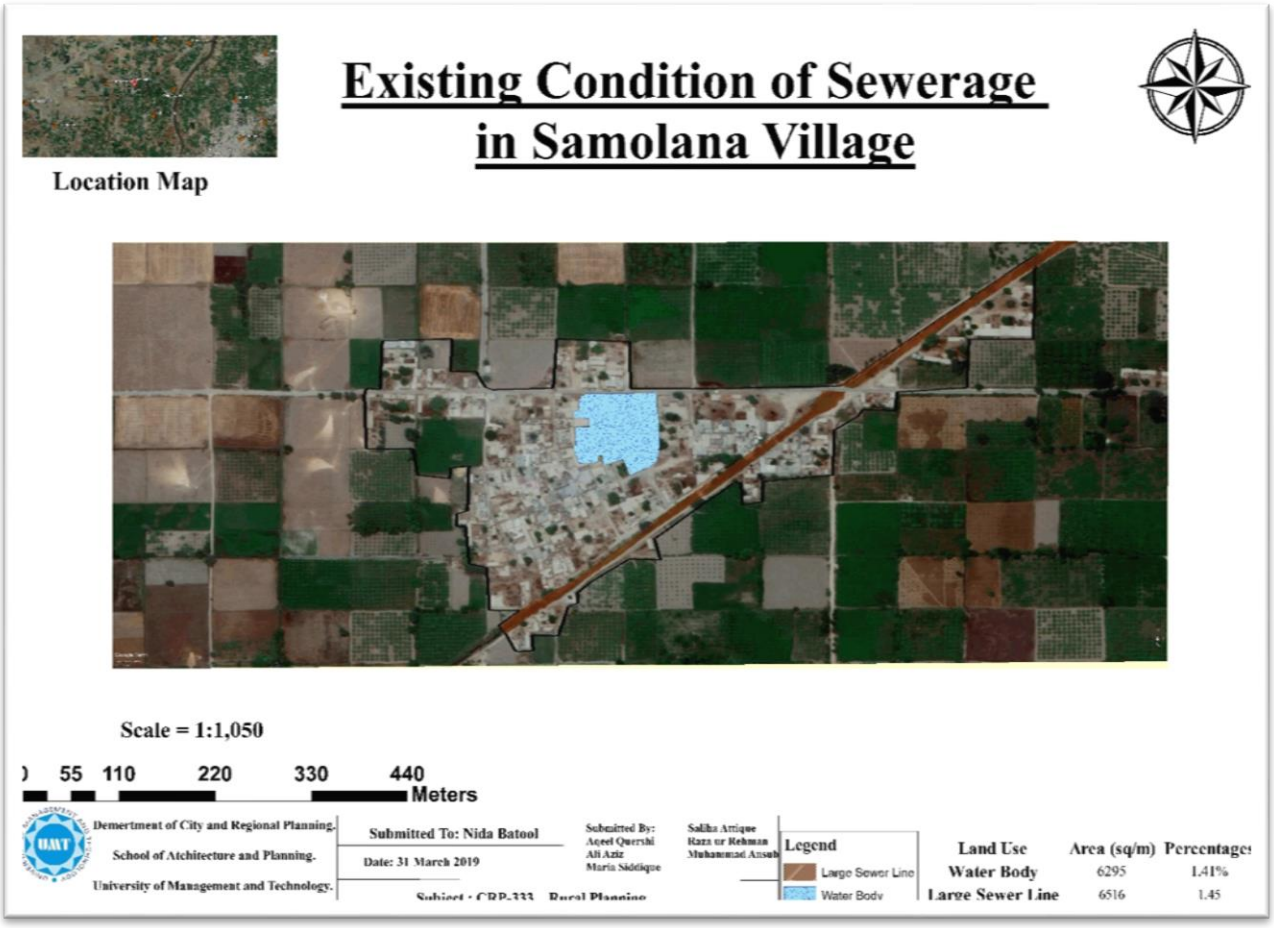

Figure 30: Sewer Unit

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