

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Access to energy is a major factor for sustainability in both developed and developing countries. Yet about 1.5 billion of the world population does not have access to energy (World Bank, 2008). Rural areas of developing countries are particularly vulnerable in this regard: their geographic position strongly limits the possibility of grid connection to a larger electricity network. Deploying renewable energy technologies (RETs) in rural communities can help bring about sustainable development given the prohibitive costs of expanding grid into remote and rural areas, growing environmental concerns over conventional energy, the abundance of renewable energy resources, reduced costs of renewable energy technologies and their improved efficiency and reliability (World Bank, 2008). Provision of sustainable and affordable sources of energy to rural communities is also critical to poverty reduction and underlies the achievement of many of the Millennium Development Goals (MDGs) including goals related to education, health, and gender equality (IEA, 2008; ECA, 2006).

Enhancing energy service delivery for poverty alleviation and sustainable development is one of the Government of the Republic of Zambia's (GRZ) highest priorities. Over 70 percent of the Zambian population is described as poor and most of these are in rural areas (CORE, 2004). Many of the rural households depend strongly on traditional biomass (wood fuel and charcoal) for their energy needs. Energy services are essential inputs to all three pillars of sustainable development – economic, social and environmental. Further, achieving the MDGs in Zambia and the goals of the Poverty Reduction Strategy Paper (PRSP) requires the availability of reliable and affordable energy. Consequently, the GRZ has been undertaking a number of actions to improve access to energy and to improve sector efficiency (MEWD, 2006).

Provision of modern biomass through energy crops such as jatropha, sugar cane, and soyabeans is one of Zambia's strategies to meet the rural energy needs, and spur

development in rural areas. However, the gravity of the energy situation in rural Zambia calls for concerted efforts to ensure sustainable development of energy development initiatives.

This study sought to explore effective communication strategies for the dissemination of information about renewable energy technologies in rural Zambia. Specifically, the study examines communication activities in the implementation of Jatropha Biofuel Programme in Kasama and Mungwi districts of Northern Province with a view of drawing lessons for future energy development programmes.

1.2. BACKGROUND TO THE STUDY

1.2.1 Energy Development Effort in Zambia

1.2.1.1 Rural Electrification

Rural electrification is one of Zambia's initiatives to provide modern energy to rural areas. The overall national electricity access is less than 23 percent, with 48 percent of those with access to electricity in the urban areas whereas only two percent in the rural areas (MEWD, 2006). This lack of access to electricity undermines the pace and scope of economic development, reduces quality of life and welfare of the under-privileged population, and decreases the quality of basic social services such as schools and health centres (MEWD, 2006).

In an effort to boost rural energy and create improved conditions for socio-economic development in Zambia, the Government established a Rural Electrification Fund (REF) in 1994. This was to be funded by collecting 3.45 percent of the sales tax on electricity consumption. The REF was administered by Ministry of Energy and Water development (MEWD) and priority was accorded to health facilities, schools and community centres. Despite these efforts, the pace of rural electrification was very slow, resulting in only three percent of the rural population having access to electricity by 2004 (REA, 2009: 5).

In order to give impetus to the rural electrification agenda, the Rural Electrification Act No. 20 which established the Rural Electrification Authority (REA) and the REF was

passed by Parliament in 2003. The Act brought legislative backing to rural electrification (REA, 2009:5). The REA started operating in 2004 as a statutory body under MEWD. Through the Rural Electrification Master Plan (REMP), the Zambian government aimed to increase rural electricity access from three percent to 51 percent by the year 2030. According to the REMF which would be implemented between 2008 and 2030, the target household electrification rate nation wide would then increase to 66 percent (REA, 2009). The implication of this is that several rural households in will still remain without access to modern energy by 2030.

With donor assistance, Zambia is taking an integrated approach to energy development, marrying rural energy supply with achieving sustainable rural development and poverty alleviation goals, as envisaged in national energy policy (NEP): “To ensure availability and accessibility to adequate and reliable supply of energy from various sources at the lowest total economic, social and environmental cost consistent with national development goals of sustained growth, employment generation and poverty reduction”(NEP, 2008). The NEP incorporates the use of biofuels to boost the energy sector, especially in rural areas.

1.2.1.2 National Energy Policy

The 1994 National Energy Policy (NEP) was approved by government as a way to promote optimal supply and utilisation of energy, especially indigenous energy forms, for socio-economic development. This policy became a guide to decision-makers, policy makers and development managers in the government, private sector, Non-Government Organisations (NGOs) and civil society organisations on Government’s intended actions in the energy sector. This policy was later revised in 2008 so as to meet the new changes in the energy sector and in order to meet the National Vision 2030 for energy sector: “To provide well developed, managed, reliable and sustainable energy services for the improvement of the quality of life of all Zambians” (Salati, 2009).

The 2008 NEP sets out the government’s intentions aimed at insuring that the energy sectors potential to drive economic growth and reduce poverty is

harnessed. The new energy policy further takes account of important issues such as high incidents of poverty, HIV/AIDS epidemic, gender, environment, household energy, rural electrification and the role of biofuels in Zambia's future energy mix.

The revised energy policy recognizes biofuels as a viable option of meeting some of the country's energy requirements considering the disruptions in petroleum supply which is often experienced on the international market. This new policy of 2008 is anchored on the following guiding principles:

1. Development of an appropriate energy technologies and resources to enhance socio-economic development;
2. Reflect on current and future energy supply needs of the country and account for differing energy needs of various users;
3. Develop human resource for effective implementation of energy programmes;
4. Optimize energy efficiency for effective implementation of energy programmes;
5. Provide incentives to enhance the performance of the energy sector;
6. Integrate energy development into national development interventions and strategies;
7. Sector regulatory autonomy while ensuring efficiency and accountability in regulatory operations;
8. Resource mobilisation for development of energy sector;
9. Partnerships with the private sector, civil society and community groups; and
10. Participation of Zambian citizens in all aspects of the energy industry, including ownership of structures.

1.2.2 Renewable Energy

Renewable energy includes the energy sources that do not consume the resource permanently. These include wind, solar, hydro, geothermal, and biomass. Renewable energy is considered one of the potential measures to meet the challenges of the ever increasing energy use and related environmental concerns (Mfuno and Boon, 2007). Renewable energy offers a promising alternative to traditional energy sources in developing countries, which may face several constraints in meeting their energy requirements in future. The Global Network on Energy for Sustainable Development (GNESD) states that the development and use of such forms of energy help sustainable development through economic growth and pollution control (GNESD, 2004).

1.2.3 Biofuels

Development of biofuels is of regional and global interest as it increases prospects for reducing global warming through reduced carbon emissions, and will substitute depleting fossil fuel reserves. Their usage as transport fuels in OECD countries, for example, through substituting or blending with petrol and diesel is contributing to regional development by increasing employment opportunities and diversifying activities for farmers through energy crops (REN21, 2010).

Worldwide, the use of biomass in the energy supply will invariably increase in the coming decades. The United Nations Development Programme (UNDP) report stated that the global production of biofuels had doubled over the past five years and was predicted to double again in the next four years (UNDP, 2007).

Further, the Food and Agriculture Organisation (FAO) report stated that the demand for biofuels was expected to increase by 170 percent in the next three years and would contribute 25 percent of the world energy needs in the next 15 to 20 years. The increase would be accompanied by large scale planting of energy crops and would offer opportunities for farmers, producers, processors and investors involved in this industry (FAO, 2007).

Biodiesel technology is an emergent one in Africa but plans are far advanced for the commencement of large-scale productions, with countries like Senegal, Ethiopia, Nigeria, Kenya, Ghana, Zambia, Liberia, Tanzania and South Africa having large-scale investment projects in preparation (Wagdy, 2006). Currently, small-scale operations using *Jatropha Curcas* are scattered around the continent. Apart from developing production plants and feedstocks, a number of African countries have put in place targets to push the biofuels agenda in various strategy proposals (ibid).

Biofuels such as vegetable oils and biodiesel can contribute to small-scale power production in rural areas and be competitive if displacing more expensive fossil fuels. Ensuring that the economic and social benefits of biofuels reach small scale producers, however, will require on going efforts to reduce costs and enhance efficiencies of these small scale systems. It may also require government support such as incentives for small scale producers, seed distribution programs, minimum price warranties, organization of farmers and cooperatives, information exchange and awareness raising, technical assistance and training, and so on (Darkwah et al, 2007).

Promotion of biofuel industry in developing countries has the capacity to propel such countries to achieve the MDGs through poverty reduction (especially job creation and economic enhancement), health impact (reduction in indoor pollution) and climate change mitigation (ECA, 2006).

In Zambia biofuels is a new export sector. A number of biofuel crops can be easily grown in the country, with potential to improve the country's trade balance (from importation of fossil fuels) as well as increase farmers' incomes through additional earnings from crop production and processing. It is expected that demand for energy in Zambia will rise at a rate of five percent per annum or more in line with economic growth, especially with increasing investments in the mining sector (Civil Society Biofuels Forum, 2010).

The Zambian government envisages increased use of biofuels as one way of reducing continued use of fossil fuels, thus reducing the costs of crude oil importation if significant quantities are produced within the country.

In order to ensure that the production and use of biofuels is carried out in an efficient and sustainable manner so as to derive maximum benefit to the people of Zambia, the MEWD has developed a draft Zambian Biofuels Strategy which indicates Government's desire to create an industry that meets strategic energy needs while contributing to significant rural development. At the national level, Zambia is considering using both biodiesel and bioethanol production. The proposed feed is sugarcane and sweet sorghum for bioethanol and palm oil, soyabeans and jatropha for biodiesel. There is a strong drive to promote jatropha as the main feedstock crop for biodiesel but the productivity and crop husbandry techniques are still largely in experimental stages (Salati, 2009).

1.2.4 Jatropha as a Biofuel Crop

Jatropha has the potential for providing environmentally friendly source of energy and income for the rural communities. Tests conducted show that out of the various vegetable oils including copra, palm, groundnut, cottonseed, rapeseed, soya and sunflower - the lowest exhaust gas emissions were obtained with copra and Jatropha *Curcas* crude oil (BAZ, 2007). Energy crops in eastern and southern Africa are supported by Southern Africa Development Committee (SADC), FAO and the European Union essentially through a fund created by the Kyoto Protocol for global carbon emissions aimed at reducing global warming.

Small-scale farmers and entrepreneurs have a role to play in leading the creation of biofuels markets, particularly in rural areas, and providing access to modern energy for local populations that were previously unserved. As biofuels industries grow, significant economic opportunities can emerge for small-scale farmers and entrepreneurs as the production, processing and transportation of crops often takes place in rural areas. Rural communities can also derive income from the processing of biofuels by-products, such as soap production, fertilizers, and cattle cakes.

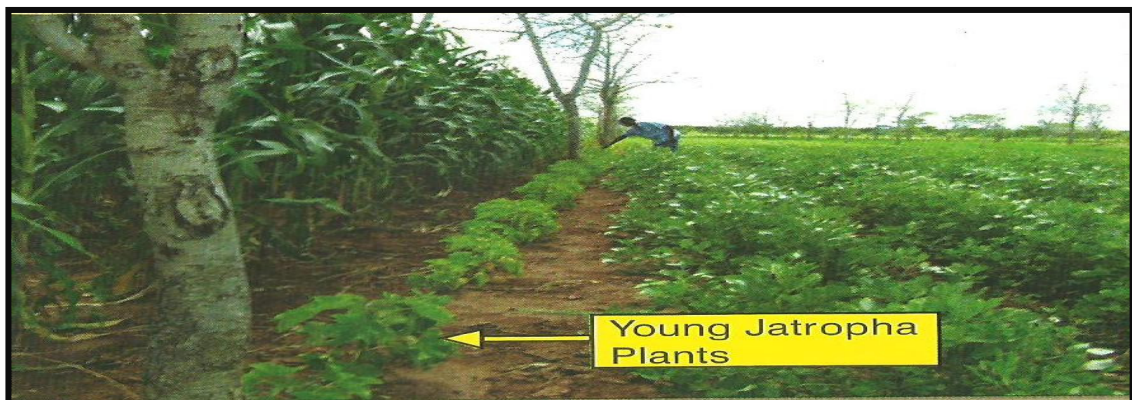
Figure 1: Raw jatropha fruits



Source: UNDESA, 2007

Furthermore, recent data shows that Zambia is the biggest charcoal consumer in the region, and also that Zambia is losing about 350,000 to 400,000 hectares of forests every year due to deforestation. The deforestation can be abated by engaging communities to make charcoal from Jatropha cake without further depletion of our forestry. Moreover, because of the escalating mineral oil prices, Jatropha has a promising future as a source of biodiesel, which is made by transesterification of the crude oil (MACO, CFU, 2007).

Figure 2: Young jatropha plants



Source: MACO, CFU, 2007

Jatropha, which easily grows in most parts of Zambia and can be harvested for 40 years has one of the highest oil/energy ratio content of oil seed crops and is second only to palm oil. It can also be used to produce fertilizer, soap and medicines. Rural areas can

be self sufficient in electricity power generation, thereby stimulating balanced industrialization of the rural sector, resulting in economic benefits for the poor.

Engaging in production of jatropha biofuel can help rural communities improve their livelihoods through increased income and health benefits resulting from using clean energy for heating and lighting.

Figure 3: Lantern and stove using jatropha oil



Source:MACO, CFU, 2007

1.2.5 The Jatropha Biofuel Programme in Northern Province

The Jatropha Biofuel Programme is one of the initiatives by the Netherlands Development Organisation (SNV) in the energy sector in Zambia, under the programme titled: “Support to Rural enterprise development in the Jatropha subsector; a focus on rural energy supply, rural cottage industries and Jatropha feed stock production for increased incomes and employment in Northern, Northwestern and Western provinces.”

Figure 4: Jatropha seeds



Source: Field Photo by author

The main objective of the jatropha programme is to produce oil for electricity generators and vehicles, households and such institutions as schools and hospital. However, the programme is still in its infancy and has not yet reached that stage. Currently, only soap, lantern oil and organic fertilizers are produced.

Figure 5: Jatropha soap, oil organic fertilizer



Source: Field Photo by author

The energy sector was chosen because of its potential to contribute to increased production, incomes and employment throughout the value chains. In terms of outreach, the programme has potential to involve millions of small scale farmers who are already involved in agricultural crop production. Development of the sector is also in line with the Government's 5th National Development Plan objectives of improving agricultural productivity and developing affordable and reliable energy sources to drive the national economy, including in rural areas, and to contribute to poverty reduction.

The focus is on three main areas:

- I. Development of effective out grower schemes, aimed at increasing availability of sufficient levels of feedstock for processing of biodiesel in the country through partnership with private sector companies currently promoting production in this regard and producer organisations whose members are producing Jatropha.
- II. Development of rural enterprises involved in processing of other Jatropha products like fertiliser, soaps, oil as kerosene substitute.

- III. Rural electrification through pilot projects in partnership with Africa Rural Energy Enterprise Development (AREED) to develop an association-driven energy platform.

The strategies used are mainly a mix of Local Capacity Builder (LCB) for (business proposal formulation, competitiveness support, marketing, business linkages facilitation and contract farming), knowledge brokering, networking and lobbying through support to the Biofuels Association of Zambia.

1.3 Statement of the Problem

Communication is usually marginalized and sometimes underutilized in most development initiatives. An effective communication campaign strategy for renewable energy technology (RETs) especially biofuels is needed for knowledge transfer and information dissemination among stakeholders. Further, unlike other sectors of the Zambian economy, few initiatives exist for awareness raising and information dissemination of RETs (Mfuno and Boon, 2007). Apart from that, little is known of communication strategies that can be effective for implementation of renewable energy technologies so as to facilitate sustainable development in the rural areas of Zambia.

This report examines communication activities in the implementation of the Jatropha Biofuels Programme in Mungwi and Kasama districts of Northern Province and proposes other communication actions to further the effectiveness of the programme.

1.4 Rationale

Excessive reliance on traditional fuels is exhausting natural resources and degrading productive land. Heating with these fuels such as wood fuel causes serious respiratory illnesses, particularly among women and children (WHO, 2002). Moreover, women and children spend most their valuable time not on income generating activities and education but collecting firewood. Development in rural areas is also constrained by the lack of reliable modern energy to support large and small scale business as well as agricultural activities which could assist in reducing poverty. Renewable energy technologies offer a solution to this problem but their deployment is not without

challenges. Lack of systematic approach for awareness raising, lack of participation in energy issues especially by end-users and conflicting messages on the energy market have been identified as some of the barriers to successful diffusion of RETs (Reddy, 2001; UNEP, 2002; GNESD, 2007; BAZ; 2007). With the realisation that renewable energy technologies offer a solution to this problem, and the fact that their implementation is not without challenges comes the need for exploring ways of achieving success in RETs development initiatives.

The process of any development, such as renewable energy technology development, is a communication process, because during this process, development agents transfer information or technologies to consumers via communication channels. According to Inagaki “Communication can make development interventions more vernacular, and more sensible to specific local contexts and can also make development initiatives scalable by employing different communication techniques and devices that address varying spatial requirements for local, regional, national and international levels of action” (2007: 14).

Studying communication activities in the Jatropha Biofuel Programme is important as it would help to identify effective communication strategies for successful implementation of renewable energy technologies, especially the biofuel technology using *Jatropha Curcus*.

1.5 Research Questions

The main research question for this study is: What strategies are effective for communication of renewable energy technologies in rural Zambia?

In order to answer the main question and achieve the objective of the study, the following are secondary research questions:

1. How is knowledge transferred among the local level stakeholders in the programme?
2. To what extent has communication been utilized in the programme?

3. To what extent are the local communities, especially small scale farmers participants in the communications?
4. Which are the credible sources of information for the rural communities?
5. Which communication media and approaches are effective for rural communities?

1.6. Objectives of the Study

1.6.1 Main Objective

The main objective of the study is to identify effective communication strategies for the diffusion of renewable energy technologies in rural Zambia.

1.6.2 Specific Objectives

1. To examine communication activities in the implementation Jatopha Biofuel Programme in Mungwi and Kasama districts of Northern Province of Zambia;
2. To investigate the extent of stakeholder participation, especially that of the local communities;
3. On the basis of the findings, recommend effective communication methods for the dissemination of information about renewable energy technologies in rural areas.

1.7 Outline of the Report

Chapter one presents the study background, the statement of the problem, the rationale, objectives and research questions. Chapter two consists of the methods used for sampling, data collection and data analysis. Chapter three comprises with conceptual and operational definitions, and the main theories underpinning the study. Chapter four deals with literature review. Chapter five is the presentation of the findings. Chapter six consists of data analysis and interpretation thereof while chapter seven contains the conclusions and recommendations.

CHAPTER TWO

METHODOLOGY

2.1 Introduction

This chapter presents the methods employed in the gathering and analysing of the data. Section 2.2 outlines the data gathering techniques, section 2.3 is the presentation of sampling procedure, section 2.4 consists of methods used to analyse the data and section 2.5 is the conclusion.

2.2 Data Gathering Techniques

The study used triangulation to collect data from primary sources. Triangulation refers to multiple methods of data collection in order to understand fully the nature of the problem (Wimmer and Dominick, 1987: 51). Data was collected using survey, in-depth interviews, focus group discussion, observation and document review.

2.2.1 Qualitative Data

Primary data was gathered through interviews with key informants and focus group discussions. Secondary data was collected through document review and observation.

2.2.1.1 In-depth Interviews

In-depth interviews were used to collect data from key data sources. Three interviews were conducted. The key informants were the SNV programme advisor, the chairman and vice secretary for Mungwi District Biofuels Association, and the Local Capacity Builder.

2.2.1.2 Focus Group Discussion

A focus group discussion is a controlled discussion involving 6 to 12 people interviewed simultaneously, with a moderator leading the respondents in a relatively free discussion about a focal topic (Wimmer and Dominick, 1987: 151). The participants for the focus group discussions were members of the jatropha processing enterprises.

Three focus groups discussions, each lasting between one and two hours, were conducted. The first focus group discussion was conducted in Mungwi with Mulondolwa Enterprises on October 26, 2010. The number of participants was 11 of which five female and six male. The second focus group discussion was conducted in Kasama district with 7 participants (three female and four male) from Kasama Agro Enterprise on November 2, 2010, at Munthali village where the group operates from. The last one was the discussion with Lulenco Enterprises on November 9, 2010 in Lunkulu Settlement of Kasama district and the participants were 8 of which two were female and six were male. An interview guide was designed prior to the discussions.

2.2.1.3 Observation

The researcher visited the SMEs to observe their operations.

2.2.1.4 Document Review

Relevant documents were reviewed for secondary data.

2.2.2. Survey

Seventy semi structured questionnaires were administered to jatropha growers (farmers), members of farmer groups (SMEs), and members of the district biofuels associations in Mungwi and Kasama districts to gain insight into the communication and stakeholder participation in the programme, communication activities and to assess the perceived impact of the programme on the lives of the rural community. This method afforded the researcher to reach out to a larger number of respondents than could be reached through focus group discussions and in-depth interviews (Morgan, 1997: 17-30). Out of the 70, there were 59 responses received.

2.3 Sampling Procedure

2.3.1 Selection of the Study Area

Non-probabilistic sampling method was used to select the study area. The two districts were purposefully conveniently selected basing on the existence of the jatropha biofuels programme. The small and medium jatropha enterprises were also purposefully selected. Further, key informants – the SNV programme advisor for private sector

development, the Local Capacity Builder and the representatives of the district biofuels association – were also purposefully selected.

2.3.2 Selection of Respondents

The 59 survey respondents were purposefully and conveniently selected based on the fact that they were involved in the programme as jatropha growers, members of biofuels association or members of jatropha processing enterprises. Similarly, the focus group discussion participants and the key informants for interviews were purposefully selected.

2.4 Data Analysis

In analyzing the data, the Special Package for Social Sciences (SPSS) was used for quantitative data. Analyzed data has been presented in charts and tables. As for qualitative data, analysis was done manually and presented in specific thematic areas according to research objectives and questions.

2.5 Limitations

Like any other study, there were limitations in this study. Time and resources were major constraints. As such, the study could not cover all the five districts of Northern Province where similar programmes are being conducted. Further, the study was conducted between October and November when farmers are busy preparing their fields.

2.6 Conclusion

Despite the limitation of the chosen methods, the study was able to bring out valuable findings and conclusions. Triangulation of all the data collection methods was useful for cross-checking the data for accuracy thereby enhancing validity. The number of people interviewed was low, but since case study research does not aim at statistically generalized conclusions, the sample size does not gravely affect the findings. The overall aim of the study was to develop knowledge on effective communication strategies in the implementation of renewable energy technologies to ensure sustainable development in rural areas. This goal can be realized regardless of the number of interviewees.

CHAPTER THREE

CONCEPTUAL AND THEORETICAL FRAMEWORK

3.1 Introduction

This chapter presents the concepts and theories on which this research is based. The chapter begins with the analysis of key concepts (Section 3.2) followed by an analysis of the communication theories and approaches (Section 3.3). The last section (Section 3.4) is the conclusion.

3.2 Conceptual and Operational Definitions

3.2.1 Renewable Energy Technology (RETs)

RETs are a production of energy from sources infinitely renovated (hydro, solar, wind) or generated by combustible renewable (sustainably produced biomass). RETs are energy providing technologies that utilize energy sources in ways that do not deplete the Earth's natural resources and are as environmentally benign as possible. These sources are sustainable in that they can be managed to ensure they can be used indefinitely without degrading the environment (Renewable Energy Association, 2009). In this report, term RETs exclude large hydro sources but is used to refer to what are called "new and renewable sources of energy" (MEWD, 2006).

3.2.2 Jatropha Grower

Jatropha grower refers to farmers engaged in the growing of jatropha.

3.2.3 Subsistence Farmer

A subsistence farmer is one who grows crops mainly for consumption.

3.2.4 Emergent Farmer

The term emergent farmer has been used in this report to refer to those farmers who grow crops for consumption but have surplus for sale.

3.2.5 Stakeholder

The concept ‘stakeholders’ is used to mean community members, active community groups, local and regional authorities, NGOs, government technical services and other institutions working at community level and policy makers who are or should be involved with a given development initiative (Heruala, 2003: 9). A stakeholder is any organization or individual, which may affect or may be affected by the issue under consideration. When applied to energy resource management, it is easily understood that almost everybody has an interest in energy (Heruala, 2003: 9). The stakeholders focused on in this study are those at the local community level and these include the programme facilitators (SNV) and technical expert contracted by SNV (local capacity builder) jatropha growers and processors and the district biofuels association.

3.2.6 Communication

Various definitions of communication have been given by different scholars. In simple terms, communication is an exchange of meaning expressed in verbal or non-verbal gestures. According to Mefalopulos “the term communication encompasses a forms of human interaction, from interpersonal to mediated ones and from the one way linear flow to two way dialogical processes” (2008: 40). Inagaki defines communication as “the act of transmitting information, ideas and attitudes from one person to another and it enables expression and dialog, raises awareness of socio-structural problems, and fosters self-reflection among marginalised and disadvantaged populations” (2007: 14).

In the context of this study communication should be understood as both transmissions of messages aimed at raising awareness of RETs, their social, environmental and economic benefits among rural communities and as a dialogical transaction forming the basis for consensus building, generating participation in energy development and making informed decision.

3.2.7 Communication Strategy

A communication strategy is a well planned series of actions aimed at achieving certain objectives through the use of methods, techniques, and approaches. The term can also

be defined as the high level method that will be used for the life of a project to exchange messages and information with identified stakeholders or groups.

3.2.8 Communication Channel

A communication channel is a means by which a message gets from a source to a receiver (Rogers, 1983: 209). Channels referred to in this study include mediated and unmediated on one hand and mass and local small scale media on the other hand.

3.2.9 Participation

Participation is defined as a process in which groups with common interests jointly construct a message oriented to the improvement of their existential situation and to the change of the just social structure (Mody 1991: 30). The common goal in participation is to create ownership of the project by those for whom development is meant. However, the concept of participation is used in many ways and covers practices of all kinds. Sometimes it is used to legitimize non participatory approaches (ibid) Participation is not limited to the notion of “consultation”. In development communication, communities must be involved in identifying their own development problems, in seeking solutions, and in taking decisions about how to implement them. White et al state “Participation is a complex and dynamic phenomenon, seen from the “eye of the beholder” and shaped by the “hand of the power holder” and thus categorizes participation into: pseudo participation which involves domestication – informing, therapy and manipulation and assistencialism – which includes placation and consultation” (1994:16). “Genuine participation on the other hand includes cooperation – partnership and delegation of power and citizen control – empowerment” (ibid).

3.2.10 Capacity Building

Capacity building generally refers to the ability of individuals, institutions and communities to analyse and assess problems and take part in relevant decision-making processes (Mefalopulos, 2008: 41). Mafalopulos cites the World Bank working stating that effective capacity building should be demand-driven and must transfer quality operational skills and knowledge. This is achieved not only through knowledge transfer

and formal training, but as through experience, in a learning-by doing mode, and through dialogue and collaboration in various phases of an initiative (ibid).

3.2.11 Empowerment

Mefalopulos states empowerment is more of an inner condition. It is not something that can be done to people, but something people can do by and for themselves (2008: 42). By taking part in decisions about their own lives, even disfranchised and marginalised individuals tend to gain confidence and feel more empowered and consequently the chances for achieving sustainable projects' objectives increase as well.

3.3 Theories and Approaches Underpinning this Study

3.3.1 Agenda Setting Theory

The theory falls within the realm of powerful media effects (McCombs, 1977). The theory posits that “the public agenda or what kinds of things people discuss, think, and worry about, and sometimes ultimately press for legislation about, are powerfully shaped and directed by what the news media choose to publicise” (Wimmer and Dominick, 1987: 385).

McCombs and Shaw investigated presidential campaigns in 1968, 1972 and 1976. In the research done in 1968 they focused on two elements: awareness and information. In investigating the agenda setting function of the mass media, they attempted to assess the relationship between what voters in one community said were important issues and the actual content of the media messages used during the campaign (McCombs and Shaw, 1977). They concluded that mass media exerted a significant influence on what voters considered to be the major issues of the campaign. The core assumptions of the agenda setting theory are the creation of public awareness and concern of salient issues by the news media. McQuail (1983) states that the media, by simply paying attention to some issues and neglecting others will have an effect on public opinion. Media constantly present objects suggesting what individuals in the mass should be thinking about (Ibid). In short, the press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about.

The relevance of this theory to this research is that the mass media has to create awareness in rural communities regarding availability of renewable energy technologies and their social, economic and environmental benefits. As noted by Harper (1993) while the mass media may not directly cause social change, the ideas presented through mass communication often become both normalised and become the topics and ideas discussed interpersonally.

3.3.2 Diffusion of Innovations Theory

Diffusion of innovation theory examines how new ideas are spread amongst groups of people. Rogers defines diffusion as “The process by which an innovation is communicated through certain channels over time among the members of a social system” (1983: 5). An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The theory posits that the mass media play a crucial role in the first stage, to raise awareness, but the decisions of the people whether or not to adopt “innovative ideas” are influenced primarily by interpersonal factors (e.g. friends, family, opinion leaders, government bureaucrats, and so on) rather than directly by the media. In this theory, communication is defined as “a two-way process in which participants create and share information with one another in order to reach a mutual understanding” (Rogers, 1983: 5).

Diffusion researchers believe that a population can be broken down into five different segments, based on their propensity to adopt a specific innovation: innovators, early adopters, early majorities, late majorities and laggards. Also outlined are five qualities that determine the success of an innovation: relative advantage; compatibility; simplicity; trialability; and observability. These five qualities determine between 49 and 87 percent of the variation in the adoption of new products (Rogers, 1983: 5).

The diffusion of innovation theory is relevant to this study in that it explains how knowledge is transferred and highlights the role of mass media and interpersonal channels in knowledge transfer. The renewable energy through the jatropha system depends, firstly, on farming activities which form the basis of supplying biomass and

processing of the seed. These activities would include conducting farming operations such as planting, fertilising, protecting against pests, harvesting, handling and transporting. Each of these activities requires differing degrees of technical expertise as well as specialised knowledge and access to resources, and would require some kind of education to learn about how to grow such crops. Specialised knowledge would most likely have to come from some outside actor, but may also come from someone within the local community, and this specialised knowledge would need to be communicated with others (Helman, 2007:10). The same goes for those involved in the processing of the seed into oil.

3.3.3. Participatory Communication Approaches or “Another Development”

Another Development or the multiplicity paradigm emerged as a criticism of the modernisation paradigm and its diffusion model (Melkote, 1991; Servaes and Malikhao, 2005). Failures by the modernization approach to satisfy the human needs for development made scholars reconsider the meaning of development. Within the multiplicity paradigm, modernisation programmes were criticised for promoting modern consciousness without doubting whether it would be sustainable and desirable for people in less developed countries to move from the traditional toward modern lifestyles (Servaes, 2001; Servaes and Malikhao, 2005).

Bessette generally defines participatory communication as “a planned activity, based on the one hand on participatory processes, and on the other hand on media and interpersonal communication, which facilitates a dialogue among different stakeholders, around a common development problem or goal, with the objective of developing and implementing a set of activities to contribute to its solution, or its realization, and which supports and accompanies this initiative” (2004: 8).

Participatory communication is informed by the work of Paulo Freire’s liberating pedagogy and, participation and self-management articulated in the UNESCO debates of 1970s (Serveas and Malikhao, 2005). It emphasizes cultural identity and

multidimensionality and calls for endogenous self-reliance, participatory democracy and life in harmony with the environment – sustainable development (Waisbord, 2000).

Development is understood as a bottom-up process that encourages empowerment, participation and self-development of the local communities. From this perspective, communication is seen as equal information exchange or dialogue between all stakeholders of the project through horizontal and bottom-up communication structures (Servaes, 2001).

The approach allows the intended beneficiaries to communicate vertically and horizontally, with the development providers and among themselves. By sharing their views, they easily understand their problems and open up to collective strategies for confronting them. It is crucial that individuals at the grassroots participate in defining and planning development goals and that local knowledge, as well as cultural and national identity are integrated (Melkote and Kandath, 2001). According to Ascroft and Masilela (1994) “If peasant do not control or share control of the process of their own development, there can be no guarantee that it is their best interest that is being served”.

Empowerment is essential to the approach, since it enables the local people to participate actively in national development. The underlying assumption is that “one cannot help people permanently by always doing for them what they can do for themselves or, more to the point, what they can be taught to do for themselves” (Agunga et al., 2006: 2).

Local small scale media and interpersonal channels of interventions at the micro-level are emphasised. The use of appropriate communication channels rather than costly and complex high technology is favoured (Tehrani, 1999). However, modern media can also be used to support the development process (Lingela, 2006). Even when used in mass media, messages are expected to originate from people themselves rather than from the experts (Mody, 1991). Interpersonal communication tools can be workshops, debate, visioning sessions, focus group discussions, role-playing and home visits. Furthermore, local small-scale media such as photography, flip-charts, video and audio

recordings, theatre, songs, stories, rural radio, and local press can be employed (Besstte, 2004). This process-oriented approach is more “receiver-centric” (Servaes, 2001: 11) and is concerned with process, context, exchange of meanings, and their interpretation rather than persuading information transmission.

Mefalopulos concludes that any development intervention needs to be based on a participatory model in order to be sustainable: “Achieving sustainability in rural development depends largely on the way stakeholders perceive the proposed change and the way they are involved in assessing and deciding about how that change should be achieved” (2005: 248).

It is important to note that participatory processes may sometimes not be genuine. White notes three caveats to participatory communication. She points out that participatory communication processes are not a panacea for development. Such processes are not suitable for solving urgent problems such as an outbreak of a disease. Secondly, to attempt to ‘sell’ solutions to ‘target population’ is not ‘participation’ but ‘manipulation’. Equally, to enter a community with preconceived picture of reality and set of values is manipulation. Finally, the price people have to pay for taking part in participatory processes is often overlooked (White et al, 1994: 18).

3.3.4 Communication for Sustainable Development

Communication for sustainable development is the application of participatory development communication approaches to sustainable development. The 1987, World Commission on Environment and Development (WCED), also known as the Brundtland Commission, defined sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (Elliott, 1994: 4). Sustainable development implies a participatory, multi-stakeholder approach to policy making and implementation, mobilizing public and private resources for development and making use of the knowledge, skills and energy of all social groups concerned with the future of the planet and its people (Servaes and Malikhao, 1994).

Communication plays a strategic and fundamental role contributing to the interplay of the different development factors, improving the sharing of knowledge and information as well as the active participation of all concerned. It takes into account the needs and capacities of all concerned through the integrated and participatory use of communication processes, media and channels, responding to three main functions:

- Facilitating participation – giving a voice to different stakeholders to engage in the decision-making process.
- Making information understandable and meaningful. It includes explaining and conveying information for the purpose of training, exchange of experience, and sharing of know-how and technology.
- Fostering policy acceptance – enacting and promoting policies, especially when these bring new opportunities for rural people to access services and resources.

Sustainable energy is defined as energy providing affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of the society for which the services are intended, while recognizing equitable distribution in meeting those needs (UNCTAD, 2009: 6).

When referring to development projects, the term “sustainability” can be defined as “the degree to which assisted activities remain active or continued delivering benefits to people after international funding ends” (Rondinelli, 1993: 20). This report is grounded in the broad definition of sustainable development which incorporates continuity of development initiatives as well as energy resources.

3.3.5 Advocacy Communication

Advocacy communication is primarily targeted at policy-makers or decision-makers at national and international levels. The emphasis is on seeking the support of decision-makers in the hope that if they are properly “enlightened” or “pressured”, they will be more responsive to societal change. Serveas (1993) presents a general definition of advocacy. He defines advocacy for development as a combination of social actions designed to gain political commitment, policy support, social acceptance and systems

support for a particular goal or programme. It involves collecting and structuring information into a persuasive case; communicating the case to decision-makers and other potential supporters, including the public, through various interpersonal and media channels; and stimulating actions by social institutions, stakeholders and policy-makers in support of the goal or programme. Therefore, three main interrelated strategies for action can be identified, (Serveas, 1993):

Advocacy - Generating political commitment for supportive policies and heightening public interest and demand for development issues;

Social support - Developing alliances and social support systems that legitimize and encourage development-related actions as a social norm;

Empowerment - Empowerment in this context refers to equipping individuals and groups with the knowledge, values and skills that encourage effective action for development.

In this study, advocacy communication is relevant for understanding communication aimed at generating policy and donor support for renewable energy development. The concept is also necessary for assessing the effectiveness of communication channels used by the programme facilitators.

3.4 Conclusion

The above are concepts, theory and approaches in which the study is grounded. The communication theory and approaches presented are a basis for understanding and interpreting of communication activities in the Jatropha Biofuels Programme – the case under study. The next chapter is a review of literature relevant to this study.

CHAPTER FOUR

LITERATURE REVIEW

4.1 Introduction

This chapter presents relevant literature to the focus of this study. The literature review highlights communication studies in energy projects as well as gaps in the literature. However, due to paucity of literature on the study of biofuels in Zambia, the literature reviewed is general, but it is hoped that even in this case important lessons can be drawn to inform the present study. The chapter includes case studies on communication activities in the implementation of sustainable energy development projects.

4.2 Implementation of Renewable Energy Technologies

Renewable energy technologies offer developing countries, more so rural areas, some prospect of self-reliant energy supplies at national and local levels, with potential economic, ecological, social, and security benefits (Amigun et al 2006: 698). In other words, renewable energy technologies offer rural communities a possibility to speed up the transition to modern energy services through the acceleration of off-grid renewable energy systems. Without access to clean and environmentally benign energy, sustainable development for rural areas cannot be realised (Haper, 2009).

The Renewable Energy Policy Network (REN21) report states that “RETs play an important role in the process of integrating the environment into energy policy, through its potential to contribute to the objectives of sustainable development” (REN21, 2010: 15). Apart from that, according to the United Nations Conference on Trade and Development (UNCTAD) report “Renewable energy use is also important for reasons of social and economic cohesion”. The report further states that “by exploiting these energy sources, RETs have great potential to meet the energy needs of rural societies in a sustainable way and that the decentralized nature of some RETs allows them to be matched with the specific needs of different rural areas” (UNCTAD, 2009: 5).

Support for renewable energy has been building among those in governments, multilateral organizations, industry, and nongovernmental organizations (NGOs)

pursuing energy, environment, and development agendas at local, national, and global levels (Martinot et al, 2002:310). One of the new forces propelling renewable energy development, especially biofuels, is the potential to create new industries and generate millions of new jobs. Jobs from renewables now number in the hundreds of thousands in several countries (REN21, 2010: 52). Further, according to the UN-Energy report, “Successful bioenergy industries bring significant job creation potential because the vast majority of bioenergy employment occurs in farming, transportation and processing, most of these jobs would be created in rural communities where underemployment is a common problem” (UN-Energy, 2007).

Renewable energy in general and biofuels in particular, has begun to look like an increasingly viable mitigation option for addressing climate change. For rich countries they offer prospects for meeting emission reduction commitments. For low- and middle-income countries they offer potential to reduce energy import bills as well as earn precious foreign exchange (Dufey and Grieg-Gran, 2010: 5). Despite the potential of RETs to catalyse rural development, access to these technologies has not always translated into widespread adoption and effective performance (REN21, 2010).

4.3 Barriers to Successful Implementation of RETs

Several developing countries have attempted to promote renewable energy but despite their efforts, renewable energy contribution to the total energy use has not increased significantly. Despite the immense benefits from utilization of RETs, their use is not as widespread as would be expected due to technical, economic and social constraints (ECA, 2006; Reddy and Painuly 2004). These barriers need to be addressed if renewable energy technologies are to be successfully implemented.

Studies on barriers to implementation of RETs involve surveying or interviewing households, firms and industry groups, technology developers, policy experts or other actors and stakeholders to elicit their opinions on factors that they see impeding the development of renewable energy (Reddy and Painuly 2004; Amigun et al, 2006; UNCTAD, 2009). These studies usually conclude by suggesting strategies to overcome barriers identified. Examples of common barriers to the development of renewable

energy include lack of information and awareness, participation, policy, legal and financial (IEA, 2001; IEE, 2001; ECA, 2006).

Lack of awareness, information and training has been identified as a barrier to successful implementation of RETs. Lack of awareness potential and possibilities for renewable energy has been identified as a barrier in both developed countries (EEA, 2001: 27) and developing countries (Amigun et al, 2006). Information dissemination activities to promote the benefits of RETs are vital components of a national RETs support programmes. These include provision of information to all the principle actors and groups involved – financiers, planners, politicians (local and national), and the general public – to raise awareness and educate them about the potential of renewable energy. It is also important to support training initiatives for renewable energy development, such as for solar heating installers or for farmers wishing to grow energy crops (IEE, 2001: 30).

Related to awareness and information are knowledge and understanding. Low levels of knowledge and understanding of renewable energy technologies are factors often used to explain why adoption rates are lower than their potential. Studies have found that the level of local knowledge, exposure or access to information and experiential learning affects local acceptance (Steffen, 2007). Low levels of knowledge and understanding of renewable energy technologies restrict the level of participation and discussion in decision-making about these technologies, and favour continued use of established technologies (Steffen, 2007). Conversely, improving understanding and providing information would assist in facilitating project sustainability.

In addition, lack of adequate policy support promoting renewable energy has also been identified as a barrier to their uptake. For example, within sub-Saharan Africa, there is a lack of policies to support small-scale biofuels development at the local level, including fiscal and financial incentives and provision for SME fuel blenders (Darkwah et al, 2007; Steffen, 2007). In cases where biofuels policies do exist, they tend to focus on subsidies for large industrial biofuels producers, with smaller scale farmers mentioned as providing crop inputs for these larger operations. Policies are needed to ensure that

local households, businesses, and communities capture the benefits of energy services afforded from biofuels development, as well as associated income and job opportunities. To ensure effective policy promotion, government decision makers will need to engage small farmers and producers in the policy formulation discussions (Steffen, 2007: 30). Policies support is also needed for the development and implementation of research projects and public awareness campaigns.

4.4 Strategies to Overcome the Barriers

It has been demonstrated that economic and technological inputs will go underutilized without knowledge, and it is for the sharing of knowledge that communication is indispensable (Panos, 1998). To be sustainable, efforts to strengthen access to RETs need to be accompanied by the right incentives, policy alignment, political and institutional support, and the development of local technological capabilities (UNCTAD, 2009: 6). Real development would be achieved only when all of social, cultural, economic and political sectors are developed simultaneously. Different programs related to these sectors are implemented through a communication process. In this process, the development agents send some messages as new technologies to customers via some media. Identification of effective media and approaches for the purpose of dissemination of energy information and for knowledge transfer is cardinal.

4.4.1 Capacity Building, Education and Public Awareness

A transition to RETs requires more than simply making the technology available; it must be actively advertised and also be affordable (UNCTAD, 2009: 25). Increased awareness creation through workshops and seminars for the entire populace on the advantages of using biofuels over petroleum fuels, for instance, are needed. The public acceptance of biofuels as a visible and important industry will be based on manifestation of continental and national governments' commitment (ibid).

Further, there must be comprehensive public awareness and educational campaigns targeting various groups in the biofuels production and consumption chain (potential energy producers, distributors, consumers and policy makers) to educate these groups

on the long-term financial savings and health benefits of biofuels technologies and to help create a demand for biofuels. Community-based organisations (CBOs) and NGOs, with their skills and experience in grassroots public education and mobilization need to be involved in this activity (Hagan, 2006).

In addition, it has been suggested that “support programmes must be implemented to promote awareness; to assist the private sector to carry out technical and financial feasibility studies and to prepare investment dossiers; and to facilitate technology transfers and research and development at the level of local specialized institutes” (Darkwah et al, 2007: 42).

4.4.2 Participation, Ownership and Benefits to Local Communities

Participation, ownership and benefits to the local communities are interlinked factors determining social acceptance of renewable energy technologies. Local participation has been identified as one of the key factors that influences acceptance of renewable energy projects. Khan argues that stakeholder engagement can ensure broad support and buy-in for decisions on bioenergy at both project and policy level. It ensures that stakeholders are informed of the developments, which is a first step to gaining support for the policy or project and its subsequent implementation. It does this by allowing stakeholder differences to be addressed through dialogue, and for conflicts to be managed. Early inclusion can help deal with stakeholder differences from the beginning, and clear up misconceptions as soon as possible (Khan, 2005:1).

Moreover, stakeholders can usually provide insight into development initiatives and how best they can be implemented. Therefore, the quality of the decisions made will improve due to the addition of locally sensitive knowledge. They can also point out less obvious negative impacts that might be missed by consultants from outside the community; thus, bringing the programmes and projects closer to a win-win solution whereas without this input, it is possible that decisions will be largely driven by the investors (Khan, 2005: 2).

Further, Shrivastava (2004) stated that public participation in energy development initiatives and ownership are critical in ensuring system viability and sustainability. He points out that the impacts caused by increased and effective public participation include: (i) empowerment of rural consumers through participation in management and/or ownership, (ii) local employment and income generation, (iii) local capacity building in the process of energy system management and operation, (iv) decreased rural to urban migration due to higher rural employment and income generating opportunities, (v) enhanced economic and social development, (vi) democratization through decentralization, and (vii) private sector development. He concludes by stating that people's participation requires organizing and mobilizing communities and their representatives and empowering them by contributing through collective actions to achieve a common goal.

Similarly, Waisbord (2001) stated that communities should be encouraged to participate in decision-making, implementation, and evaluation of projects as that would give a sense of involvement in their lives and communities, and provide them with a sense of ownership and skills that they would use beyond the timetable of development projects.

Perceived benefits by the local community are also a determining factor for acceptance and consequently the success of RETS deployment. According to Toke (2005) local perception of the economic impact of renewable energy is of crucial importance in forming judgment by local residents, and that unless they saw direct financial benefits to the community from the development, there would be little support.

In the context of bioenergy development, Upreti (2004) found that if there were few perceived benefits to local people, there was little support for projects. He found that there was conflict at the local level if the development was involuntarily imposed on communities, if there was a lack of decision-making power given to the local communities and if profits were directed to corporate entities rather than local ones.

Darkwah et al suggest that "farmers and citizens (who would be contributing feedstock to production plants) of local communities must be given some stake in production

facilities situated within their localities to avoid exploitation by large companies. Biofuels should be viewed as an agricultural strategy with energy-security implications instead of energy-security strategy with agricultural implications,” and that, “locally owned rural energy production should be an integral component of farm policy where farmers become owners of processing and manufacturing facilities” (2007: 44).

4.5 Case Studies of Communication in Renewable Energy Development

4.5.1 France - Réunion

Through the European Renewable Energy Islands projects, various actors on the French island of Réunion tried to enhance the acceptance of sustainable energy by means of education. To this end, a Regional Agency for Energy on Reunion (ARER) was founded. The agency managed an extensive network of projects on the island, varying from energy efficiency to renewable energy. ARER organised entertainment and exploratory expeditions with respect to the projects, disseminated technical information on the projects and systematically evaluated the results of the projects. These demo-parks were well visited by international authorities and engineers. The social benefits of the demo parks network were generated indirectly through tourism to the parks and the development of employment on and nearby the parks (Mourik et al, 2007: 33)

4.5.2 The Case of Samsøe

The Danish island of Samsøe has also participated in the European Renewable Energy Islands project. This small island aims to become 100 percent self-sufficient and sustainable in the short term. Similar to the above case, the population of the island is closely involved in the implementation of renewable energy on the island. In the framework of the European Renewable Energy project, inhabitants were involved in the process by means of information evenings which explicitly addressed the benefits of sustainable energy projects for the local population and economy. During these evenings the population was asked to indicate why and under which conditions they would be willing to participate in sustainable energy projects and what these projects should look like. The various reactions were collected and translated into concrete projects in which the population indeed wished to participate. As this approach was

applied for a longer period increasingly more inhabitants became enthusiastic and more and more people wanted to participate in the projects. Various projects were started by cooperatives of inhabitants (insulation projects, Solar heating and PV, heat production, transport). Often the projects were built and maintained by local contractors. The projects did not only lead to a high degree of self-sufficiency and sustainability on the island; they also created employment and they lowered the cost of living by producing heat and electricity in cheaper ways (import of fossil fuels decreased by 60%). As a result, there were ten offshore wind turbines that yield profits through the sale of electricity. The money realised was started up and an energy academy was founded (Mourik et al, 2007:40).

4.5.3 The Highflat Energy Centre (HEC) in South Africa

The Highflat Energy Centre (HEC) is an Alleviation of Poverty through the Provision of Local Energy Services (APPLES) project. The project, supported by the Intelligent Energy Europe programme of the European Commission was implemented in South Africa in 2005. One of the HEC objectives was to increase the energy awareness among the communities served by the HEC using various materials which included energy guides, energy books, information leaflets and posters on various fuels and brochure on the products offered by the HEC as well as non written information such as video or DVD.

The project activities focused on information provision and energy-related education activities. The centre was operated and owned by a co-operative consisting of entrepreneurs who had their own outlets within the geographic coverage of the centre, or by entrepreneurs who wanted to start an energy-related business based on their proven entrepreneurial skills. This co-operative model offered a mechanism to build a better understanding of energy issues amongst potential consumers of new energy sources in remote areas who would otherwise have no access to such information. This means that a key function of HEC was to facilitate the effective transfer of information to rural energy users and therefore, of particular priority was the availability of appropriately targeted information material. For people in rural areas, word-of-mouth

was usually the most common and most effective form of communication. The recent availability of cell phones and widespread access to radios (requiring batteries for operation and having inherent mobility) meant that such communication tools were also be considered for transmitting information. Community meetings were another widely used and so effective tool for information transfer.

As part of the energy policy development process in South Africa, the national Department of Minerals and Energy (DME) supported a programme to raise the capacity of community representatives so that they could participate actively in making the new energy policy for the country. The process included a number of capacity-building community energy workshops that took place around the country.

During this process, community representatives repeatedly prioritised two issues: firstly the need for access to appropriate energy information and, secondly, the need for capacity to address energy needs at the local level. In response to these needs, DME established the Household Energy Action Training (HEAT) programme, which developed and tested energy information packages and messages with community groups, at least half of which were women's groups. Soul City, a TV and radio series, carried these messages and 750,000 Energy Use in the Home Soul City booklets were produced and distributed (Cooper, 2008: 7).

In the above cases, a wide range of communication activities were employed in the diffusion of energy information. The communication tools and approaches range from one way education entertainment as in the case of France-Réunion to more participatory communication approaches used by HEC where the messages were not designed by outsiders but developed and tested with the community. As argued by Balit (1999) in the past communication specialists relied almost exclusively on alternative media for activities at community level. But, the advent of new technologies and their convergence now means that new mixes and matches can be made for more effective communication. Further, communication initiatives should make use of all media

channels available, both modern and traditional. There is merit in combining electronic media with other media that people already like, use and know how to control.

4.6 Promotion of Renewable Energy Technologies in Zambia

The study of the solar photovoltaic deployed through the Energy Supplying Company (ESCO) system in Nyimba, Chipata and Lundazi districts of Eastern Province found that there was an increased but slow adoption of renewable energy. The range of adopted RETs in that area remained narrow with solar home system leading in households. Wind energy was predominantly used for water pumping in rural institutions. Geothermal, micro-hydro, solar thermal and modern biomass technologies remained unexploited, both in the district and the country as a whole, despite the enormous existing potential. One of the recommendations was that applicability of the technologies and awareness raising on energy resources should form important elements of promotion activities (Mfunne and Boon, 2007).

A general lack of or marginalization of communication is evident from this. Effective communication plays a major role overcoming not only in policy dissemination but it also gives a voice to the marginalized to be heard by the wider community. Communication can be used for advocacy, lobbying, sensitization, networking and alliance building, capacity building and so on (Mckee, 1992).

4.7 Conclusion

The above literature highlights issues to be considered in renewable energy development and highlight the role of communication and participation in development projects in general and renewable energy development in particular. One of the factors which can be drawn from the literature is the importance of appropriate communication strategies which can only be arrived at through involvement of the target population. Also, the study of the promotion of the solar photovoltaic in Eastern Province of Zambia by Mfunne and Boon (2007) brings to the fore the need for coming up with effective communication strategies in the renewable energy sector in Zambia.

CHAPTER FIVE

PRESENTATION OF FINDINGS

5.1 Introduction

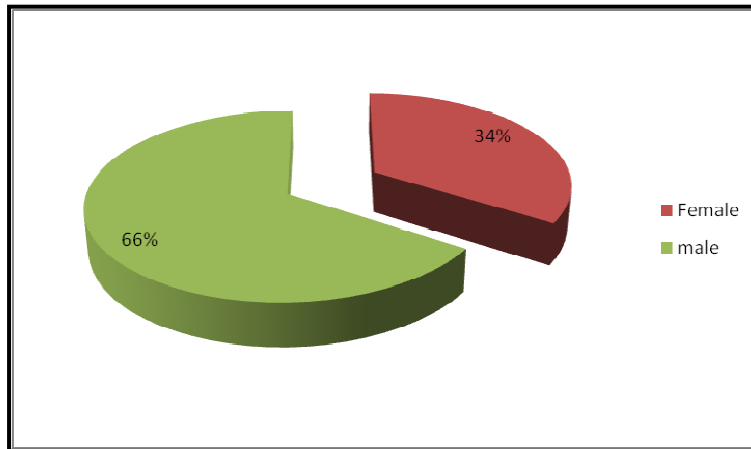
The section describes data sourced from the study population. The chapter is divided into four sections. The first section (5.1) is the introduction. The second section (5.2) presents survey data. Section 5.3 is a presentation of data from in-depth interviews and section 5.4 contains data from focus group discussions.

5.2 Findings from the Survey

5.2.1 Sex of Respondents

The respondents from the survey were 59. Figure six below shows that of these 59 respondents, the majority were male (66%), compared to 34 percent were females.

Figure 6: Sex of the Respondents



Source: Field data

5.2.2 Occupation of the Respondents

Of the 59 respondents, the majority (81.4%) were predominantly subsistence farmers who mainly grow crops for consumption whereas 18.6 percent were emergent farmers, as shown in Table 1.

Table 1: Occupation

Occupation	Frequency	Percent (%)
Subsistence Farmer	48	81.4
Emergent Farmer	11	18.6
Total	59	100

Source: Field Data

5.2.3 Sources of Income

Slightly above half of the respondents (52.2%) depended on farming for their income. 42.4 percent were running small businesses besides farming. Only a small number, 5.1 percent are in formal employment besides farming. Table 2 below shows the distribution of the respondents' source of income:

Table 2: Respondents Source of Income

Source of Income	Frequency	Percent (%)
Farming	31	52.5
Farming and small Business	25	42.4
Other	3	5.1
Total	59	100

Source: Field Data

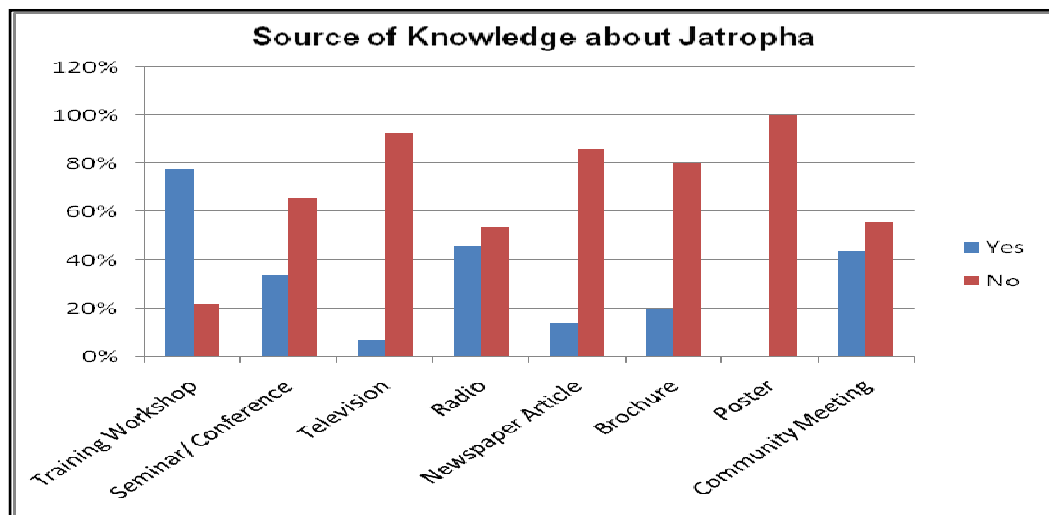
The above phenomenon could be explained by the fact that one of the criteria used in selecting members of the community trained for the formation of small and medium jatropha processing enterprises was that one had to be interested in or be an entrepreneur.

5.2.4 Sources of Knowledge about Jatropha

The main source of knowledge in the programme is training workshops as shown in figure seven below. About 78.2 percent of the respondents acquired their knowledge

about jatropha thorough training compared to 21.8 percent who said they did not. About 33.9 percent attributed their knowledge to seminar and conference, 45.8 percent said their source of knowledge was radio, 44.1percent community meetings, 20.3 percent brochure and less than 20 percent attributed their knowledge to newspapers. Television was the least with 6.8 percent television. None said they got their knowledge from poster.

Figure 7: Respondents Source of Knowledge about Jatropha



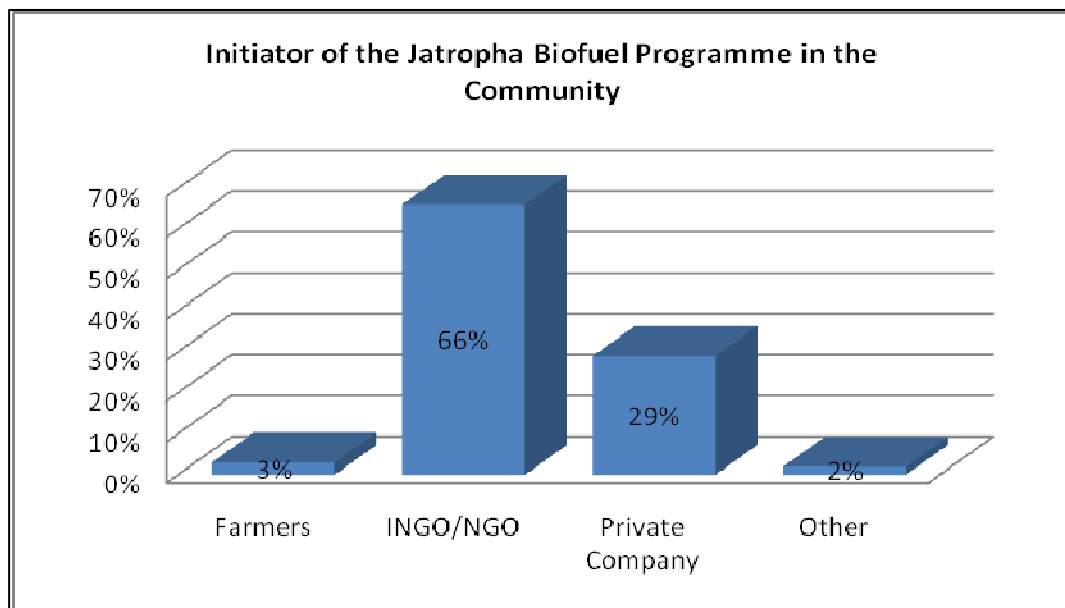
Source: Field data

The knowledge acquired through the training workshops, seminars and conferences, and community meetings included soap making (bar and powder), organic fertilizers, lamp oil, glycerin and candle making. Although the respondents were aware that diesel could be produced from the jatropha seed, they lacked knowledge and machinery for the process. Besides, the general feeling was that it was cheaper for the small business enterprises to produce soap and organic fertilizers than diesel because of lack of skill and the high cost of machinery. The knowledge acquired through radio, television, newspapers and brochure was general mostly meant to create awareness on jatropha farming.

5.2.5 Initiator of the Programme

The question “Who initiated the programme” was asked to determine the extent of the small scale farmers participation in the programme. More than half of the respondents (66%) said the programme was started by the international nongovernmental organization SNV, about 26 percent said a private company, about three percent of the respondents said the programme was initiated by the farmers themselves and two percent mentioned the biofuel associations as shown in figure eight below:

Figure 8: Who Initiated the Programme

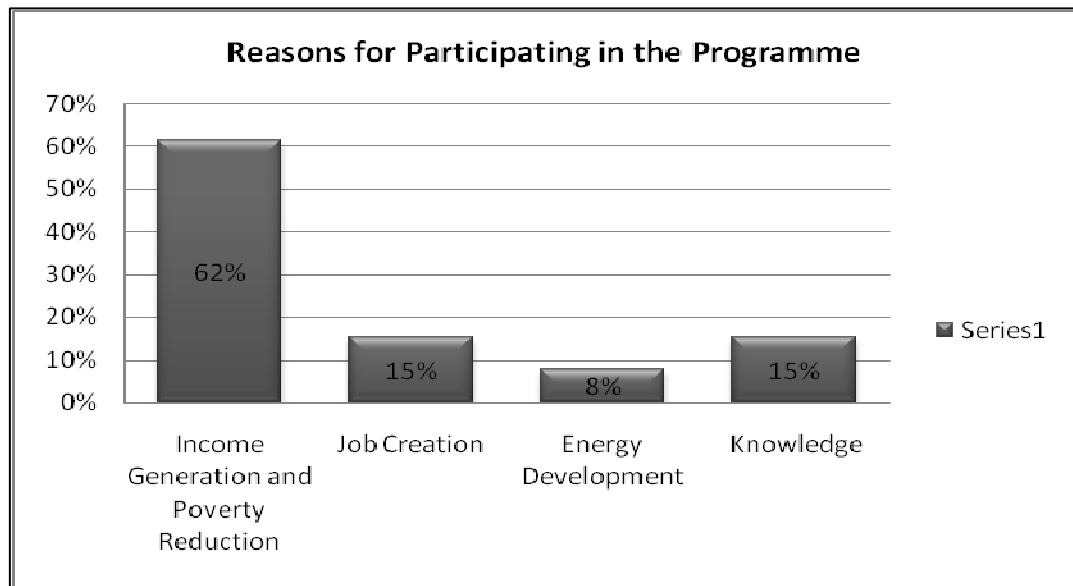


Source: Field data

5.2.6 Reasons for Participating

The respondents expressed varied reasons for participating in the program. Figure nine below shows the respondents’ reasons for participating. More than half of the respondents (62%) said they decided to participate in the programme because they saw it as an income generating venture and a way of reducing poverty, 15 percent participated because the programme would generate income for them and their community and another 15 percent participated in order to gain knowledge. Only eight percent participated because they wanted to contribute to energy development.

Figure 9: Respondents Reasons for Participating in the Programme

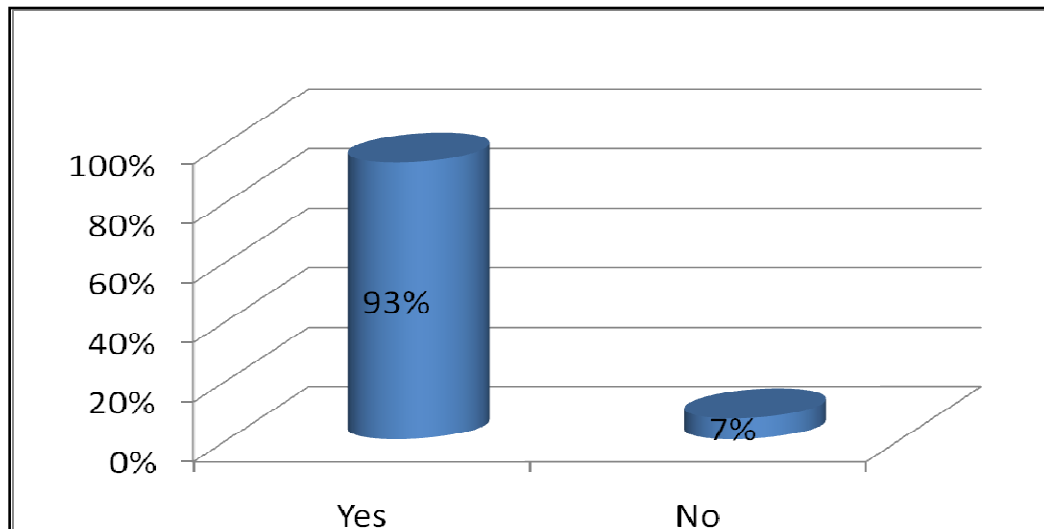


Source: Field data

5.2.7 Ownership

About 93 percent of the respondents expressed a sense of ownership of the programme. This is because they have control over their resources. In the case of the enterprises the working capital was from their contributions. On the other hand, seven percent said they did not feel they owned the programme as shown in figure 10 below:

Figure 10: Sense of Ownership

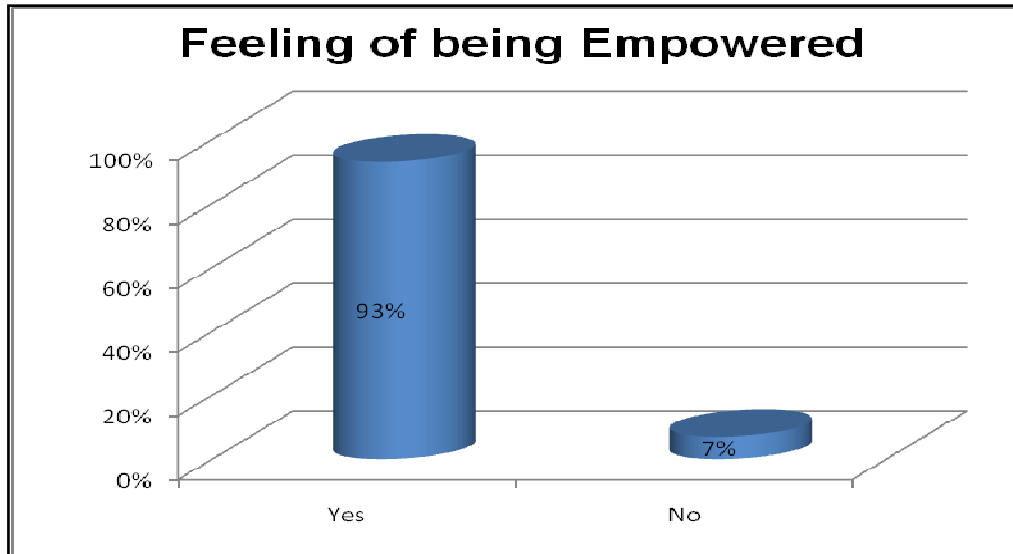


Source: Field data

5.2.8 Empowerment

A large number of the respondents (93%) said that they felt empowered to chart the course of their development, whereas only seven percent said they felt disempowered as shown in figure 11 below.

Figure 11: Empowerment



Source: Field data

5.3 Finding from in-depth Interviews

The data below was collected through in-depth interviews:

5.3.1. Interview with the SNV Advisor for Private Sector Development (Mr. Kapalu Muswala)

Information from this interview was that SNV engages clients in the different Jatropha value chains, including farmer groups and associations and processing companies and other key stakeholders in public sector, INGOs and local nongovernmental organisations (NGOs) and research institutes. The organisation provides services through direct advisory services as well as through partnering with local capacity builders (LCB) to deliver services to value chain actors. The LCB is engaged for business proposal formulation, competitiveness support, marketing, business linkages facilitation and contract farming. The other strategies used by SNV include lobbying

and, advocacy to achieve desired impact in this sector. Besides that, knowledge brokering and networking and widening extension services are also employed. Further, local consultants from the industry are drawn in to enhance better understanding of industry dynamics.

Workshops and conference are used to bring together various stakeholders for knowledge sharing and for advocacy. Brochures, manuals, fliers and the internet are also used to communicate with policy makers, donors and other stakeholders outside the local community. Communication between SNV and jatropha farmers and processors is mainly through workshops, community meetings, and regular visits to jatropha processing enterprises, and cell phones for urgent information. The programme is reviewed annually by all the stakeholders.

5.3.2 Interview with the Local Capacity Builder (Mr. Joseph L. Mutale)

The local capacity builder, Mr. J.L Mutale of JL Mutale Enterprises, contracted by SNV, provides expertise in terms of business development. In terms of operation, SNV in conjunction with the local capacity builder identified areas with raw materials, jatropha trees for this case, and arranged for meetings with the local farmers. From the meetings core groups (groups to be trained) were identified through community meetings.

According to Mr. Mutale, a participatory approach was used in the selection of those to be trained. The criteria used for selection of the core groups were developed by both the local capacity builder and the farmers. The criteria varied depending on the community but the common aspects included in the criteria were literacy, jatropha farming as well as interest in entrepreneurship. Gender issues were also taken into consideration. Women participation was encouraged at between 30 and 40 percent.

The local capacity builder trained the core groups so that they could develop into small and medium jatropha processing enterprises. The groups were trained in value addition to jatropha, marketing and packaging, and entrepreneurship skills. Together with the

core groups, the local capacity builder developed business plans which were forwarded for funding. So far only one, of the three SMEs under the study, only Mulondolwa Enterprise has had a successful business plan and has received external funding from the Africa Development Fund (ADF).

The training materials included printed and visual aids. Further, on-hand (demonstrations), group dynamics and mapping were also used. The local language was used in the training sessions.

5.3.4 Interview with the Mungwi District Biofuels Associations Representatives (Mr. Pride Mwelwa – Chairman, and Mr. Alfred Mumba – Vice Secretary)

The expected roles of the district biofuels associations include advocacy – defending the programme against political interference and negative notions against jatropha, sensitization, business development, group oil industry promotion, control of activities related to jatropha and market development. Market development involves the development of groups into enterprises which will in turn become markets for jatropha. The associations are also engaged in capacity building through trainings and coordinate all jatropha related activities at district level.

Furthermore, the district biofuels associations are involved in production and productivity development, information dissemination mostly through community meeting. Apart from that, the associations are responsible for organizing inter group and inter district exposure visits and implementation of government policy at local level. However, most of these activities are being carried out as the programme is still in its infancy and because of challenges which include transport.

5.4 Findings from Focus Group Discussions

Focus group discussions were conducted among the members of the jatropha processing enterprises. Some of these members of the enterprises are jatropha grower at the same time. The following is some of the feedback from these discussions:

5.4.1 Composition of Focus Groups

The focus group discussions were conducted with three groups, Mulondolwa Enterprise, Kasama Agro Enterprise and Lulenco Enterprise. Table three below shows the composition of the participants by group and gender.

Table 3: Composition of focus group discussion participants

Farmer Group (SME)	No. of participants		Total
	Male	Female	
Lulenco Enterprises	6	2	8
Kasama Agro Enterprises	4	3	7
Mulondolwa Enterprises	6	5	11
Total	16	10	26

Source: Field Data

5.4.2 Communication Activities

The results from the focus group discussions indicate that communication activities can be grouped into two broad categories – small scale media and mass media with most of the communication activities falling into small media category.

5.4.2.1 Small Scale Media

These include unmediated and mediated communication. These channels were used for information dissemination and knowledge transfer within the programme. Table four below shows the communication channels, messages, sources and the target audience.

5.4.2.1.1 Training Workshops, Seminars and Conferences

Training workshops, seminars and conferences were used for transferring of knowledge on jatropha growing, processing, seed varieties and pests that attack the plant. Workshops were also used to facilitate participation of stakeholders in policy matters.

Table 4: Small Scale Media Communication

Communication Method	Key Message(s)	Source	Target Audience
Training Workshops, Seminars/Conferences	- jatropha processing - Capacity building (entrepreneurship, business proposal writing, jatropha processing) - Energy policy - seed varieties, pests, etc	SNV LCB MEWD, DOE	Jatropha growers. SMEs (farmer groups)
Community Gatherings	- Sensitisation - Announcements - Product Launch	SNV Jatropha processing SMEs	Community members in general and jatropha growers
Community Radio (Radio Mano)	- Announcements	-Northern Biofuels Association	Jatropha growers, SMEs
Cellular Phone	- Urgent information	- SNV - SME	- SMEs
Agriculture show (2008 Agriculture and Commercial Show)	Advertisement	Mulondolwa	National

Source: Field Data

5.4.2.1.2 Radio Mano

At the time of the research, the community radio station in the area, Radio Mano, was mostly used for advertisements by the enterprises and announcements by the Northern Biofuels Association.

5.4.2.1.3. Cell Phone

The channel is used between SNV and the farmer groups, and among the farmers themselves. SNV uses the channel usually when calling up for meetings or communicating urgent information. SNV communicates to the group leaders who in turn pass on messages to other members of the groups by word of mouth, or using mobile phone. Members of small and medium enterprises utilize mobile phones to circulate urgent information among themselves.

5.4.2.1.4 Community Gatherings

Community meetings were cited as the most effective ways of communicating within the rural setting. This channel was used by SNV to sensitise members of the community about jatropha growing and to identify community members to be trained in jatropha processing and entrepreneurship skills. The district biofuels association and jatropha processing enterprises (Mulondolwa, Lulenco and Kasama Agro) use this channel to educate farmers on jatropha growing and marketing. One way of communicating in these gathering is through theatre. For example, Mulondolwa Enterprise engaged a theatre group to sing songs about their products as a way of advertising to the community.

Faith gatherings are also used as channels of communication for the purpose of disseminating information to a sizable number at one time. Through church announcements, the messages are passed on to members of the congregation who later disseminate the information to other members of their community by word of mouth.

In addition, gatherings at health centres serve as another channel of communication. One of the SMEs, Lulenco Enterprise, used such a gathering to advertise its products. People gathered at the clinic would share the information with their family and friends.

5.4.2.1.5 Personnel Visits

SNV personnel in charge of the programme regularly visit the enterprises to monitor the progress and discuss with them issues pertaining to the running of the enterprises.

5.4.2.2 Mass Media Communication

Some focus group discussant from Mungwi said they had listened to discussion programmes on ZNBC Radio Two on jatropha. The key message was mostly sensitization of the general public on the benefits of jatropha. According to the FDGs, the sources of these messages were the Biofuels Association of Zambia (BAZ) and some academics as shown in Table 4 below. Also, ZNBC Radio One has been used for announcements by BAZ. However, the discussion programmes were not specified.

Table 5: Mass Media Communication

Communication Method	Key Message(s)	Source	Target Audience
<ul style="list-style-type: none"> • ZNBC Radio 1 • ZNBC Radio 2 	<ul style="list-style-type: none"> - Announcements (e.g. calls for meetings) - Sensitisation - Discussion programmes 	<ul style="list-style-type: none"> - National Biofuels Associations - Academics 	<ul style="list-style-type: none"> - Jatropha Farmers - General Public

Source: Field Data

5.4.3 Credible Sources of Information

Neutral sources were preferred as credible sources of information. Traditional leaders were preferred as credible sources of information. Apart from that organizations like SNV and academics and associations such as the BAZ, district and provincial biofuels associations were also preferred. Politicians, especially those at the local level, were not preferred as they, in most cases, stood for a particular political party and were presumed to represent views of their political parties.

5.4.4 Participation of Local Communities in the Programme

The members of the community participate in the programme as jatropha growers, small and medium jatropha processing enterprises and as members of the district and provincial biofuels associations. They also participate in the review of the programme.

The FGD discussants said that the jatropha seed was introduced in their community around 2006 by Mali Investment and the farmers were engaged through contracts. However, Mali Investment later on withdrew leaving the farmers without market for jatropha seed. SNV took advantage of the already existing raw material (jatropha trees) to help the farmers find market and also to help them add value to their product. After the resource mapping, SNV called a meeting for the farmers where the idea of jatropha processing was sold to them.

The members of the jatropha processing enterprises said the model for jatropha processing through farmer groups in form of SMEs used was good since there could be no deception as the budgets were made and monitored collectively as well as decisions on how to utilize funds.

5.4.6 Benefits

Among the benefits of the programme cited were knowledge and skills gained. Besides knowledge, members of the jatropha processing SMEs said they benefited in terms of dividends at the end of each year. “We now have money and are able to buy ourselves ‘chitenges’ and can send our children to school” (Female FGD discussant).

The jatropha growers benefited in terms of agriculture knowledge and income realized the sale of the jatropha seed. According to one focus group discussant “Jatropha does not need fertilizers and is not labour intensive. Further, it can generate income for more than 30 years and the yield increases with years” (male FGD).

In terms of job creation for community members, Mulondolwa Enterprise has created employment for four members of the community. The other benefits to the local

community include availability of locally made products, that is, fertilizer, soap, and the oil used for lighting and as mosquito repellent.

5.4.7 Sustainability

The small and medium enterprises were established using contribution by the members. Each member was asked to contribute a certain amount. External funding is not the sole financier for these enterprises, and hence is self-sustained. For business advice, the arrangement when the programme comes to an end, the LCB will still be assisting the groups but they would have to pay consultation fees.

5.4.8 Communication Related Barriers and Challenges

- **Lack of extension services**

There is lack of adequate extension services by the Ministry of Agriculture and Cooperatives. These services are only provided by SNV.

- **Poor communication of research to end users**

The focus group discussant said that there was poor communication of research especially on varieties for jatropha and pests which attack the plant.

- **Low literacy levels**

Low literacy level was another challenge. Lack of education contributes to the rural communities' inability to participate fully in development projects and to articulate their needs. As a result, they cannot make demands of their own but simply accept what is brought provided they see benefits.

- **Low enthusiasm especially among jatropha growers. This low enthusiasm was attributed to the failure of the earlier project by Mai Investment and D1.**

5.5 Conclusion

The above information shows results of the study. The results include the communication activities, that is, the channels, messages, sources and target audiences. The results also show the extent of stakeholder participation in the programme.

CHAPTER SIX

DATA ANALYSIS INTERPRETATION OF RESULTS

6.1 Introduction

The chapter contains the analysis and interpretations of the results.

6.2 General Characteristics of the Respondents

6.2.1 Sex of Respondents

The results of the study show from the survey a disparity between male (66%) and female (34%). A similar disparity was shown from the composition of the focus group discussants, about 61.5 percent were male whereas less than half, (38.5%) were female. In the case of FGDs the explanation for this disparity is that most of the females were out at the time of the research. Nonetheless, the implication for this study is that gender mainstreaming should be considered in communication of renewable energy. Particular interest should be taken in designing messages targeting women as they are the most vulnerable group when it comes to issues of energy.

6.2.2 Occupation of the Respondents and Sources of Income

The majority of the respondents were predominantly small scale farmers (81.4%) who mainly grew crops for consumption. Less than a quarter (18.6%) were emergent farmers. For income, the study findings show that slightly above half of the respondents (52.2%) depended on farming and about 42.4 percent had small businesses besides farming. Only a small percentage (5.1%) were in formal employment besides farming. The study was interested in the occupation and sources of income of the respondents in order to understand the economic status of the communities under the study. The literature surveyed show that income was one of the factors for people's willingness to participate in development programmes.

6.3 Communication Activities

The results show several communication activities which included advocacy and lobbying. The findings of the study also indicate that information and knowledge was transferred through community meetings, workshops and radio among others.

6.3.1 Advocacy, Lobbying and Coalition Building

Communication can be used as a tool for advocacy, lobbying and coalition building. The deployment of renewable energy technologies requires policy and financial support and it is through advocacy communication that the policy makers can be reached and donor support be sourced for.

From the results, SNV as the facilitating organization in the renewable sector in the study site has employed mostly workshops. The results of the study also show that workshops have been used as a platform to bring together stakeholders at different levels. According to the key informant and documents reviewed a stakeholders consultative workshop was held on 21st October, 2008 in Kasama district. This was workshop organized by SNV Northern Portfolio in collaboration with the Department of Energy, MEWD and it aimed at initiating and establishing a systematic Biofuels Association and Jatropha Stakeholders Forum. The main objectives of the workshop were to make the participants understand the Biofuels Policy of Zambia, contribute towards the Biofuels Policy and establish a Jatropha Forum and Biofuels Association for Northern Province.

The workshop brought together the policy makers and all the actors down to the farmers (see appendix four for list of participants). Following this meeting, the Northern Biofuels Association interim committee was formed. Participatory method was also used in the formation of the Northern Biofuels association constitution where stakeholder representatives reviewed the draft constitution and made their inputs. Other than that, the workshop accorded the small scale farmers to have an input in the draft biofuels policy.

6.3.2 Capacity Building

From the study it was revealed that capacity building is one of the strategies used to enhance participation. Through the LCB contracted by SNV, farmers are trained in entrepreneurship skills. The methods for training included printed and visual aids, hands on demonstrations, group dynamics and mapping were also used. Shrivastava (2004) emphasises training for rural consumers and local potential energy providers. He argues

that local communities need to be well informed and trained on their expected roles and responsibilities. Further, appropriate public awareness campaigns and dedicated capacity building programmes are best approaches for timely involvement of a wide variety of local stakeholders in the mainstreaming of rural energy service development process (ibid). However, the capacity is more concentrated on entrepreneurial skills than communication which is also important if rural communities are to participate fully in their development.

6.3.3.1 Community Radio

Community radio enables marginalised communities to be heard and to participate in democratic processes within societies. It reflects their interests, and plays an important role in reinforcing cultural expressions and identity as well as local languages. It can provide timely and relevant information on development issues, opportunities, experiences, skills and public interests. It thus has the ability to involve rural communities, indigenous people and underprivileged sectors of urban societies in an interactive social communication process (Balit, 1991).

Further, radio remains the most widely available and affordable mass medium for disadvantaged groups. In rural areas, it is often the only mass medium available.

It can reach large numbers of isolated populations over widespread and geographical areas. In some rural areas it is the only source of information about agricultural innovations, weather and market prices. It is oral and thus corresponds to the culture of poverty, making it more adaptable to many indigenous cultures (Bessette, 2004). According to Waisbord, “more than mechanisms to disseminate information, small scale media could provide opportunities to identify common problems and solution, to reflect upon community issues, and mobilize resources” (2000: 19).

From the study, it was found that the community radio station in the area, Radio Mano, was mostly used for advertisements and announcements by the enterprises and the biofuels associations. Although the channel provided the users a way to communicate to relatively wider community at the same time, in most cases calling for meetings, its full

potential was not necessarily exhaustive. Apart from that, advertisements and announcements restrict radio to one way communication.

6.3.3.2 Cell Phone

The development of the mobile phone as a relatively cheap and powerful tool has enabled communities, even in remote rural areas to spontaneously and locally appropriate it for use (Balit, 2004). As indicated from the findings, cell phones were used as a channel of communication but were mostly used to disseminate urgent information.

6.3.3.3 Community Gatherings

The study results show that community gatherings have been an important channel of communication in the programme under study. These community gatherings have included community meeting, faith gatherings and gatherings at health centres. Community meetings were cited as the most effective ways on communicating within the rural setting. This channel is used by SNV to sensitise members of the community about jatropha growing. The district biofuels association and jatropha processing enterprises (Mulondolwa, Lulenco and Kasama Agro) use this channel to educate farmers on jatropha growing and marketing.

The study indicates that theatre through song was also a channel of communication. These songs were in local languages. In support of this, Waisbord states that “Community-based forms of communication such as songs, theater, radio, video, and other activities that require group intervention need to be promoted because, more than mechanisms to disseminate information, they could provide opportunities to identify common problems and solution, to reflect upon community issues, and mobilize resources” (2000: 19). Community based forms of communication, if widely used, can play an important role in communication of RETs information rates in rural communities. The participation of local artists, performers and musicians in the production and use of traditional media not only ensures respect for traditional values, symbols and realities and, but also ensures that such media productions appeal to

communities. It also increases the credibility of media programs and their effectiveness as vehicles to share knowledge and bring about social change (Balit 1999).

In addition to community meetings, the results of the study show that faith gathering are also used as channels of communication for the purpose of disseminating information to a sizable number at one time. According to the study results, this is done through church announcements where the messages are passed on to members of the congregation who in turn disseminate the information to other members of their community through interpersonal communication within their social networks. As noted by Wilson (1988) rural and low income groups relied more on interpersonal channels than on any other. These include peer groups, opinion leaders, and town-criers. They also gathered information from the radio and church leaders in that order. He recommends that for development messages to attain credibility, therefore, more use should be made of these channels (White et al 1994).

6.3.3.6 Personnel Visits

Effective extension services are necessary for effective jatropha growing. Extension services involve communication processes. The study shows that extension services were inadequate especially where the growing of jatropha was concerned since MACO did not have a programme for extension services in that sector. These were provided by the SNV through direct services and contracting of local experts. The study also revealed that the district biofuels associations are now mandated to provide extension services but are currently incapacitated as they do not have transport.

6.3.3.7 Mass Media Communication

Mass media can be used as tools for sustainable development to communicate renewable energy information to wider society. The mass media, because of their large audience, is an important player in the exchange of information and meaning between other community members, especially between governments and citizen. The media help set the public agenda by selecting from the enormous volume of available information items to which they give special prominence or continuing attention

(Harper, 1993). However, while the mass media may not directly 'cause' social change, they can be powerful tools for awareness raising as the ideas presented through mass communication often become both normalised and become the topics and ideas discussed inter-personally (ibid). The findings show that there are some of the respondents who had been exposed to mass media messages aimed at creating awareness about jatropha farming.

However, not all mass media channels are appropriate for the rural communities. The results of the study show that of the mass media channels, radio was the most popular as a knowledge source with 44.1 percent as compared to 20.3 percent brochure and 6.8 percent television. Because of low literacy levels, the print media may not be a suitable channel of communication for rural communities. On the other hand radio appears to be more popular channel of information than television.

Further, the cross tabulation between level of education and source of knowledge shows an increase in the number of respondents in the lower rung of the education ladder who said radio was one of their sources of knowledge. Table 6 shows that among the respondents with primary education radio was the highest as a source of knowledge nine (34.6%) compared to 11.1 percent for newspaper.

6.3.4 Credible Sources of Information

From the study, it was revealed that traditional leaders, church leaders and were preferred as credible sources of information. The support of village leaders is often crucial to a participatory project. This support should be obtained through extensive local dialogue, group meetings, and project initiation workshops aimed at convincing local traditional and administrative leaders that the project is in their own short- and long-term interest (Shrivastava, 2004). Apart from that, organizations such as SNV and academia were also preferred. Politicians, especially those at the local level, were not preferred as they in most cases stood for a particular party and were presumed to represent views of their political parties.

Table 6: Source of Knowledge * Level of Education Crosstabulation

			Level of Education			Total
			Primary	Secondary	College	
Television	Yes	Count	0	1	4	5
		% within Television	0%	20%	80%	100%
	No	Count	17	30	7	54
		% within Television	31.5%	55.6%	13.0%	100%
Total	Count		17	31	11	59
	% within Television		28.8%	52.5%	18.6%	100%
Radio	Yes	Count	9	14	3	26
		% within Radio	34.6%	53.8%	11.5%	100%
	No	Count	8	17	8	33
		% within Radio	24.2%	51.5%	24.2%	100%
Total	Count		17	31	11	59
	% within Radio		28.8%	52.5%	18.6%	100%
Newspaper Article	Yes	Count	1	5	3	9
		% within Newspaper Article	11.1%	55.6%	33.3%	100%
	No	Count	16	26	8	50
		% within Newspaper Article	32%	52%	16%	100%
Total	Count		17	31	11	59
	% within Newspaper Article		28.8%	52.5%	18.6%	100%

Source: Field data

6.4 Participation, Ownership and Benefits to Local Communities

Participation, ownership and benefits to the local communities are interlinked factors determining adoption of renewable energy technologies. Local participation has been identified as one of the key factors that influence sustainability of renewable energy technology programmes.

The results of the study show that the programme was conceived from outside the communities and then the idea was sold to the members of the communities. About 66% of the respondents said the programme was introduced by an international non-governmental organization, 26 percent attribute the initiation to a private company, 3% said it was initiated by the farmers and two percent said it was initiated by an association. Ideally, members of the community are supposed to be involved from the beginning of a programme. However, the study revealed that that other factors such as

low literacy levels may hinder the rural communities from participating in the conception of programmes aimed at assisting them. The rural communities were involved in formulation of the Northern Biofuels Association and also in the formulation of the Biofuels Policy through a consultation workshop mentioned above.

Varied reasons were given by the respondents as to why they decided to participate in the programme. The majority, 62 percent saw the programme as an income generating venture and a way of reducing poverty, 15 percent participated because the programme would generate income for them and their community and another 15 percent participated in order to gain knowledge. Only eight percent participated because they wanted to contribute to energy development. The results show that poverty is a pertinent issue in rural areas. It can be deduced that poverty alleviation is the major driver for participation. “Local perception of the economic impact of renewable energy is of crucial importance in forming judgment by local residents, and that unless they saw direct financial benefits to the community from the development, there would be little support” (Toke, 2005).

However, according to Henshelwood (2001) to assume that the “public” are willing and able to participate in energy development was a fallacy. Within communities there could be a lack of “community capacity” to be involved and maintain control over resources, confidence and support to raise finance and draw upon relevant expertise.

The need for awareness creation and education was expressed in the focus group discussions where it was stated that “People should say what sort of development or what they want so they can have confidence, to avoid bringing what is not necessary. However, people in the rural areas do not have much knowledge so the best would be to teach them (awareness creation) and let them make their own decisions” (FGD).

The implication for the study is that communication of renewable energy technologies should take into consideration the fact that rural communities may not be able to articulate their needs because they lack the necessary knowledge. Hence, what is needed in this case, is empowering the rural communities so that they can fully participate in

developmental programmes. Communication should take into account the needs and capacities of all concerned through the integrated and participatory use of communication processes, media and channels.

Among the benefits of the programme cited were knowledge, skills, income and locally available products such as soap, lantern oil and organic fertilizer. The jatropha growers benefit in terms of agriculture knowledge and income realised through the sale of the jatropha seed. “Jatropha does not fertilizers and is not labour intensive. Further, it can generate income for more than 30 years and the yield increases with years” (FGD).

The other benefit cited was the creation of employment. For instance, one of the focus group discussants stated, “We are able to create industries and have created employment for ourselves and other members of the community and we have money to send our children to school” (FGD). Although the community may benefit in terms of locally available products, employment benefits are not yet really significant as only four jobs were created. Further, these same employment opportunities were created by only one of the three enterprises under study – Mulondolwa Enterprise in Mungwi has created employment for four members of the community.

In addition, ownership of energy development initiatives by the local community plays an important role in ensuring sustainability of the programme. From the study, about 93 percent of the respondents expressed a sense of ownership of the programme resulting from their investment in the programme. The small and medium enterprises were established using contributions by the members. Each member was asked to contribute a certain amount. External funding is not the sole financier for these enterprises. This is supported by Heruala who stated that “most success stories of rural energy projects are associated with community commitment in terms of investment, or other in kind contribution of a substantial nature” (2003: 14).

The jatropha biofuels programme was a two year programme running from 2008 to 2010. The training offered to these groups was also meant to prepare them for

ownership and sustainability of the programme. At the end of the programme, the local capacity builder would continue to provide the groups with their services but the farmers themselves would have to pay for the

6.5 Empowerment

A large number of the respondents (93%) said that they felt empowered to chart the course of their development as compared to seven percent who said they felt disempowered. This sense of empowerment was attribute to the knowledge and skills in jatropha porcessing acquired from the training workshops and the fact that the farmers themselves were running the jatropha processing enterprises.

6.6 Barriers and Challenge

The study revealed a number of challenges faced by the rural communities. Among communication related challenges raised from the focus group discussions were lack of extension services, poor communication of research to end users low levels of education low enthusiasm among the jatropha growers as a result of the failure of the earlier project. The implication therefore is that strategies are needed to improve on the communication of research and as to raise enthusiasm among jatropha growers.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The chapter consists of the conclusions and recommendations. The chapter is divided into three sections. The first section (7.1) is the introduction, section 7.2 consists of the general conclusions and section 7.3 comprises the recommendations.

7.2 Conclusion

The main objective of the study was to explore communication activities of the Jatropha Biofuels Programme in Mungwi and Kasama districts so as to draw lessons for future energy development initiatives. Since Zambia is still grappling to meet the energy demand in rural areas amidst escalating prices of fossil fuels and environmental issues, it is imperative that the success of whatever energy development initiative is ensured. The success depends on firstly availing the rural communities with sustainable energy sources. However, energy alone does not spur development, and so marrying economic activities and involvement of the local population for sustainability of the programmes is ideal for rural communities.

Generally, the programme is a positive effort at uplifting the living standards of the rural communities and forming a base for transforming the rural communities through creation of industry, provision of rural communities with access to modern energy and facilitating the participation of local community in energy development.

Involving the members of the community in energy development projects or programme is important as it creates a sense of ownership in them thereby guarantying sustainability of the programme. The study shows that the members of the community have been involved in the programme not only as jatropha growers but also through the formation of SMEs and district biofuel association and as a result there has been a high sense of ownership. However, there is need to build communication capacities for the

members of the rural communities so that they are able to articulate their needs and to enhance their participation in the formulation ideas for development programmes.

Apart from that, it was evident from the study that perceived benefits play an important role, firstly, in decision to adopt and then in continuing with the innovation, especially among jatropha growers. As such communication strategies to be employed for renewable energy technologies need to clearly state the benefits to the local communities. Although the study show several communication activities, there still remains the need to scale up communication so as to reach out to a wider audience and facilitate adoption of jatropha growing upon which the whole programme hinges. Furthermore, the growth of the local industry, and subsequently, the increase in employment opportunities – which is insignificant at the moment – depends on the growing of jatropha. Effective communication is also needed at the processing level, policy and for donor support.

Effective communication plays an important role in the success of energy development initiatives. Communication activities can only be effective where appropriate strategies are utilized and it is through research that these can be identified. Despite the fact that communication has not been given a specific role in the programme, the communication activities studied give useful insights to the study objectives. Arising from the findings is the fact that a number of communication activities were taking place. The results of the study show that the rural communities rely more on unmediated communication played a significant role in facilitating information and knowledge transfer. The results show that workshops and community gatherings have played an important role in the transfer knowledge and information transfer. Despite radio being the most popular channel among the rural communities, and its potential to play an important role in communication of RETs information where more participatory programmes are incorporated, the channel was not fully utilised.

The study results show that certain channels of communication may not be effective in rural communities. From the study, it was evident that television and the print media

may not be effective as they are not popular among rural communities because of low literacy levels. The study results also show that radio as a mass media channel can play an important role in creating awareness. Therefore a combination of mediated and unmediated communication strategies would yield more results where renewable energy technologies are concerned.

7.3 Recommendation

The following recommendations are made to the policy makers, programme facilitators, researchers and the media:

7.3.1 Recommendations to the Government through the Department of Energy, MEWD

- There should be a deliberate policy for communication about renewable energy technologies in rural areas.
- Radio is the most appropriate mass media tool to reach out to most of the rural communities in Zambia.
- Effective unmediated communication channels include community meeting and workshops. There is need to organize more workshops for skills training and for the purpose of discussing energy issues.
- There is also need to organise workshops for the purpose of discussing issues related to RETs with member s rural communities.

7.3.2 Recommendation to the Programme Facilitators (SNV)

- Generally, communication has only been given an implicit role n the programme. Coming up with a strategy with clear targets and indicators and ways of evaluation and monitoring would be of much help to the programme especially where persuasive messages are need to encourage the adoption of jatropha growing.

- For advocacy, lobbying, and knowledge brokering, participatory approaches such as video should be used. Video can be a powerful tool to persuade policy makers and donors to devote additional resources to communication.
- The existing community radio stations should be fully utilized by including participatory programmes such as live phone in programmes or discussions.
- Effective communication entails building capacities for local communicators to facilitate the communication activities. The programme facilitators should consider training local communicators for this purpose.

7.3.3 Recommendation to Researchers

- From where this study has left off, communication researchers should undertake studies in this subject as it is wide and very important to close the energy gap in rural Zambia.
- There should be an improvement of communication of scientific research findings to end-users, especially those in rural areas.

7.3.4 Recommendations for the Media

- Through its agenda setting role, the media should create awareness of renewable energy technologies among rural communities, through such programmes as radio theatre, discussions, detailed articles in the local languages and so on.
- Media practitioners should carry out on site visitation to capture what is happening on the ground and help to give voice to rural communities.

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APPENDICES

Appendix One: In-depth Interview Guide

1. What prompted the initiation of the programme?
2. What is the role of your organisation in the programme?
3. What are the overall objectives of the programme?
4. Who are the target audiences of these objectives?
5. What channels of communication are used in the programme?
6. What is the nature of the messages communicated?
7. What do you think are the barriers to effective communication?
8. What is being done to improve communication?
9. Any other comments

Appendix Two

Focus Group Discussion Guide

1. How did the programme start?
2. What are your reasons for participating in the programme?
3. What channels of communication are used within the programme?
4. What are your sources of knowledge?
5. Which media are appropriate for rural communities?
6. What are the credible sources of information?
7. What are the benefits of the programme to individuals, households and community?
8. Do you think the programme will continue even after the programme time table set by SNV?
9. Are there any challenges faced, especially related to communication?

Appendix Three

QUESTIONNAIRE

Kindly answer all the questions in this questionnaire to the best of your ability.

Instructions:

- Tick [√] only one which is applicable to you in the spaces provided against each option.
- For the question without any options given, write your answer in words using the spaces provided.
- Do not write your name on the questionnaire.

SECTION A: Socio-demographic data

1. Age: 1. Below 25 []

2. 26 – 35 []

3. 36 – 45 []

4. 46 – 55 []

5. Above 56 []

2. Sex: 1. Female [] 2. Male []

3. Marital Status: 1. Single []

2. Married []

3. Divorced []

4. Widow/Widower []

4. Level of education: 1. Primary []

2. Secondary []

4. College []

5. University []

5. Occupation: 1. Subsistence farmer []

2. Emergent Farmer []

3. Commercial Farmer []

4. Other (Specify) _____

6. What are your other sources of income?

SECTION B: Main Questions

7. Who initiated the jatropha oilseed programme in your community?

1. The farmers []

2. An NGO []

3. A private company []

4. Other (Specify) _____

8. What were main reasons for initiating the programme ?

9. Are you part of the jatropha oilseed programme? 1: Yes [] 2. No []

10. If yes, in which way are you involved? (Tick all that is applicable)

1. Jatropha farmer []

2. A member of an association []

3. As a small or medium enterprise []

4. Other (Specify) _____

11. If you are a member of an association, write the name of the association below.

12. What is your reason (s) for being part of the programme?

13. What is your knowledge regarding the jatropha oilseed? (Tick all that is applicable)

	Knowledge	Tick
1.	Advantages of engaging in jatropha farming	
2.	Issues related to how to grow jatropha, (e.g. spacing, pest control, etc)	
3.	Processing the seed into different products	
4.	Maintenance of equipment	
5.	Availability of markets for jatropha oilseed products	
6.	Uses of jatropha biodiesel	

14. What is your source of your knowledge about jatropha? (Tick all that is applicable)

	Knowledge source	Tick	Specify when
1	Training workshop		
2	Seminar/ conference		
3	TV Discussion programme		
4	TV Documentary		
5	Radio Discussion Programme		
6	Newspaper Article		
7	Brochure		
8	Poster		
9	Community meeting/ gathering		
10	Other		

15. What methods of communication are used in the programme?

	Communication Method	Key Message	Tick	Source (Who sends the message)	Target Audience (Persons or groups for whom the message is intended)
1	ZNBC Radio 1				
2.	ZNBC Radio 2				
3.	Radio Mano				
4.	Print media (e.g. Newsletters, brochures, fliers)				
5.	Church announcement				
6.	Community drama shows				
7.	Songs				
8.	Demonstrations				
9.	Community meeting				
10.	Phone (mobile or land phone)				
11.	Other(Specify)				

16. Who makes most of the key decisions in the programme?

	Decision	Decision-maker
1.		
2		
3		
4		

17. Are there changes in your livelihood as a result of this programme?

1. Yes [] 2. No []

18. What are some of the benefits of the programme to you and your community?

19. What are some of the challenges you face in relation to the jatropa programme and can these be addressed?

20. Generally, how do you feel about the way the programme is run?

1. Empowered, because I can make decisions about my own development. []
2. Disempowered, because decisions are imposed by others []
-

Thank you for answering this questionnaire.

Appendix Four

List of participants at the Northern Province Jatropha Stakeholders Consultative Workshop held on 28th October, 2008

Name	Cell Number	Position
SNV Northern Province		
Ngosa Y. Mbolela		DOE, MEWD
Moses Chifunda		BP Fuels D1 Oils
Eshack Bwembya		Misamfu Research Station
Anold Sikaona		MACO
Simon S. Chisulo		DACO's office, Kasama
Kapalasha		MACO
Sunday C. Mwamulima	0978388711	Isoka DJFA
George Kasonde	0977176564	Mungwi JFG
Pride Mwelwa	0977793878	Chipalila Small scale Industries
Yafeti Musukwa		Mungwi
Baitwell Mfula	0979923683	Mungwi JFA
Stanislaus Mwila	0977304054	Mungwi DBA
Theresa Mulenga Kafunda	0977502958	Chinsali Jatropha Grower
Charle Sivile	0977261037	Chinsali Jatropha Grower
Christopher Nkole Mulenga	0979069367	Kasama DFA
Jackson Luhanga	0979046240	Muyombe Jatropha Grower, Isoka
Edward Mbalamweshi	0977423272	Mbala Jatropha Grower
Godwin Chilela	0979172321	Mbala DFA
Roy Popopo		Kasama District Farmers Association
Friday Chansonso	0978618589	Mporokoso, Bwafwano Jatropha Growers
Joyce Mukando	0979578931	Mporokoso Jatropha Growers
Daka Joseph Mutale		Mutale Enterprises
Edward Manda		GNRD consultant
Micheal Chishimba		GNRD Consultant

Source: report on Northern Province jatropha stakeholders workshop (SNV Northern Portfolio/ MEWD, 2008)