

POWER TO THE PEOPLE

HOW SUSTAINABLE ENERGY SERVICES AND
DEVELOPMENT CAN BE FACILITATED THROUGH GRASS
ROOT DEVELOPMENT – A CASE STUDY FROM THE
BONDO DISTRICT IN KENYA

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This Master Thesis is carried out as a part of the education at the University of Agder and is therefore approved as a part of this education. However, this does not imply that the University answers for the methods that are used or the conclusions that are drawn.

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Master thesis

Power to the people:

How sustainable energy services, and development, can be facilitated through grass root development – A Case study from The Bondo District in Kenya”



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Master of Science Development Management

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The University of Agder, Kristiansand, 25th of May 2010

Abstract

Serious international actors like the IPCC, the UNFCCC and the WEO, highlight the need to implement sustainable energy resources as fossil fuels has contributed to increase the global CO₂ emission, which again has contributed to climate change. In many parts of the developing world there is currently no access to energy services. WEO predicts that developing countries will be responsible for much of the expected increase in CO₂ emissions until 2015. As a result of this much research has been focusing on the potential sustainable energy services can bring to developing countries. However, I find that less research has been conducted on how this change that sustainable energy resources will bring, will be met in the local community. This thesis is therefore directed at how the current environment for the implementation of sustainable energy services is in a traditional rural village in Kenya.

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Front-page: Solar lights being charged (Marius Thoresen, 2009)

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List of Abbreviations

ARC	-	Action Resort for Change
ARO	-	Angila Rapul Organization
AMREF	-	African Medical and Research Foundation
DFID	-	Department for International Development
FAO	-	Food and Agriculture Organization
GDP	-	Gross Domestic Product
GECHS	-	Global Environmental Change and Human Security
GHG	-	Green House Gases
GNP	-	Gross National Product
GTZ	-	Deutsche Gesellschaft für Technische Zusammenarbeit
HDI	-	Human Development Index
IEA	-	International Energy Agency
IMF	-	International Monetary Fund
IAP	-	Indoor Air Pollution
IPCC	-	International Panel on Climate Change
KAU	-	Kenya African Union
KANU	-	Kenya African National Union
KES	-	Kenya Shilling
KFRI	-	Kenya Forestry Research Institute
MDG	-	Millennium Development Goals
MIT	-	Massachusetts Institute of Technology
NARC	-	National Rainbow Coalition
NEMA	-	National Environment Management Authority (Kenya)
NGO	-	Non-Governmental Organisation
POST	-	Parliamentary Office of Science and Technology
PV	-	Photo Voltaic
SSA	-	Sub-Saharan Africa
UN	-	United Nations
UNEP	-	United Nations Environment Programme
UNFCCC	-	United Nations Framework Convention on Climate Change
UNDP	-	United Nations Development Programme
W	-	Watt
WB	-	World Bank
WCED	-	World Commission on Environment and Development
WEO	-	World Energy Outlook

Chapter 1: Introduction

1.1 Background

Research shows that access to energy is linked to development in the way that energy can help provide basic human needs, which again can be seen as a prerequisite for human development. POST (2002) links energy with addressing basic human needs like controlling infant mortality, reducing illiteracy, increasing life expectancy, and checking total fertility rate. Based on this, access to energy can be seen as a prerequisite for human development. However, research also indicates that there is a strong link between increased energy use and environmental degradation, as improved access to energy often is associated with increased Greenhouse Gas (GHG) emission.

The World Energy Outlook in 2006 argues that, if we continue the trends of today, developing countries would have surpassed OECD-countries in relation to energy demand by the year 2015 (IEA, 2006). This would entail a huge environmental problem, as fulfilling this demand would lead to a vast increase in GHG emission and thus environmental degradation.

Therefore it is vital that action is taken to transform the energy development of the developing countries into energy forms or carriers based on renewable energy and avoid following the already developed countries into the fossil fuel area. In order to achieve this, developing countries of today need to leapfrog the development-phase of the already developed nations, and focus on modern energy sources in order to be able to establish an energy sector based on new, clean, sustainable technology.

Even though these issues are straightforward, and many people understand this, development seems to go very slowly in these areas. Most people in rural areas of developing countries still lack access to modern energy services and also lack behind in development. Much research has been aimed at highlighting the need for the implementation of renewable energy resources in developing countries and how these resources can contribute to the development of the developing world. However, less research has been aimed at how changes that the renewable energy resources may cause in the local community would be welcomed or embraced.

1.2 Research objectives

In order for renewable energy resources to be successfully implemented in a traditional rural community, there is a need for the local population to embrace it. However, this can only happen if the local people inside the community can acquire knowledge on renewable energy resources. In addition to this, the community needs to be ready for this sort of change as the implementation of modern energy sources into a community that currently has no such thing is an all-embracing change to the community. The main objective of this research is thus to explore the current environment for the implementation of renewable energy services, in the

form of solar energy systems and bio-diesel from the *Jatropha Curcas*, in and around the village of Majiwa in Kenya. The research is titled: “Power to the people: How renewable energy services, and development, can be facilitated through grass root development – A Case study from The Bondo District in Kenya”.

1.2.1 Sub-objectives of the research

- To assess the current energy use in the area
- To assess the relationship between the local culture and development/new thinking and how this relationship affects development
- To assess the relationship between the local culture and the *Jatropha Curcas* and how this relationship affects the cultivation of the *Jatropha Curcas*
- To assess what can be done in relation to improve the environment for renewable energy services
- To assess how international and national development actors can contribute to grass root development in the area

1.3 Personal motivation

My personal motivation for doing this research is, first and foremost, a profound interest in the state of the environment both present and in the future. This is the same environment that will provide the basis for the livelihood of our children and future generations. If we do not take action and act in a sustainable way towards the environment, the legacy we provide to the future generations might not be as full of opportunities as the one we inherited.

In addition to this environmental concern, there is currently a situation in the world between the developed and the developing world that is not viable. Billions of people are living in poverty struggling to maintain their lives while people in the west are getting richer and richer. The inequalities in the world are growing, which again is something that could act as a catalyst for conflict. People in the developing world have a right to be able to develop themselves in a way that meets the basic criteria in life, meaning that the basic necessities in life, like health, education, reducing infant mortality and so forth, are met.

In this context the access to energy would be an imminent component in this quest for development, as research shows that access to energy and poverty are closely linked in the way that energy helps provide for basic human needs. Last, but not least, I would like to contribute to give light to development-barriers that exist in many communities today, and acts as a poverty-factor in many societies and thus crippling empowerment. In addition to this I also possess an interest in traditional cultures and their effect on the life of people both in the everyday life and in the structures that exist in the society. I would also argue that some of

the main reasons behind much of the failure of aid is the fact that in many cases the failure to include the goals of the aid, the people and their culture into the actual aid-process.

In addition to this, I see that much research has been done on the impact renewable energy resources can make on development in rural, traditional societies. However, I see little research that includes the local community, in which the sphere inside the community is researched.

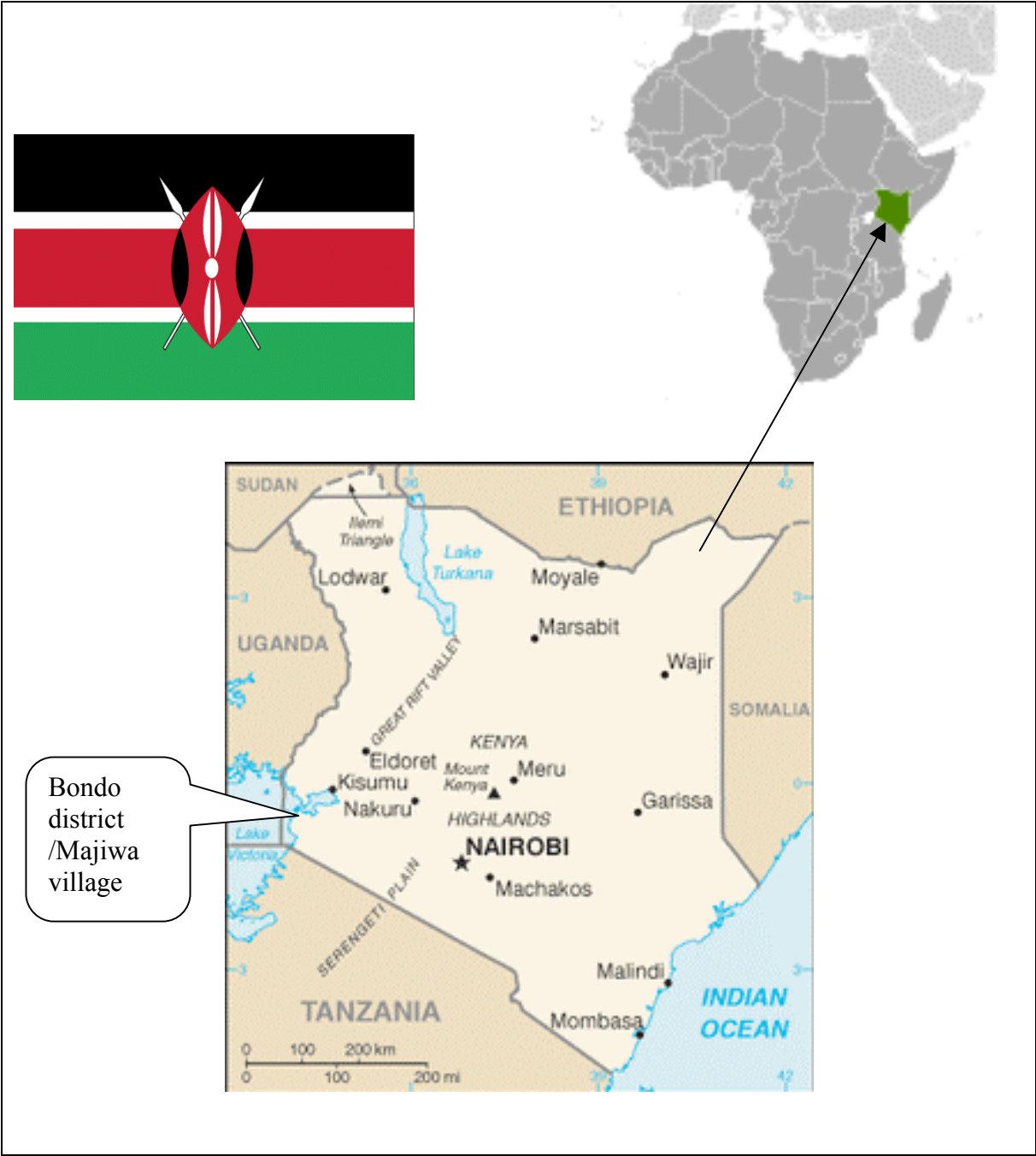
1.4 Organisation of the thesis

After this introduction to the topic, in **chapter 1**, an overview of Kenya and a more detailed overview of the region of my fieldwork, in addition to a short overview of some key elements in the Luo culture is the focus of **chapter 2**. In **chapter 3**, I present literature that is relevant for the topic, in which literature on development and energy and how these two affect each other is highlighted. **Chapter 4** deals with how I went about gathering my data, or in other word the chapter tells how I conducted my fieldwork. In **chapter 5**, I present my findings and discuss these finding in relation to future development and renewable energy resource approaches, before I do my conclusion about the thesis in **chapter 6**.

Chapter 2: Area and contextual overview

2.1 Kenya

Figure 2.1: Map and Flag over Kenya



(Source: CIA, 2010)

Table 2.1: Statistics on Kenya

Total Area	580,367 sq km
Capital city	Nairobi
Population	39,002,772 (2009)
Population growth rate	2.691 % (2009)
Ethnic groups	Kikuyu (22%), Luhya (14%), Luo (13%), Kalenjin (12%), Kamba (11%), Kisii (6%), Meru (6%), other African (15%), non African (1%)
Religion	Protestant (45%), Roman Catholic (33%), Muslim (10%), Indigenous beliefs (10%), other (2%)
Language	English (official), Kiswahili (official), numerous indigenous languages related to ethnic groups
HDI – rate (0-1, with 1 being top)	0.541 Unrelated comparison: Norway 0.971
Total Literacy Rate (People over 15 can read and write)	73.6%
GDP (PPP)	\$30.21 billion (\$63.52 billion) (2009)
GDP growth rate	1.8 % (2009)
GDP per capita	\$ 1,542 (2009)
GDP composition by sector	Agriculture: 21.4%%, Industry: 16.3%, Service: 62.3% (2009)
Foreign Debt	\$7.729 billion (2009)
Labour Force (by occupation)	17.47 million (Agriculture 75%, Industry and Service 25%) (2009)
Unemployment rate	40% (2008)
People living below the poverty line	50% (2000)
Infant mortality rate	54.7 deaths/1,000 live births (2009)
Life Expectancy at birth	53.6 years (2009)
HIV/AIDS Adult Prevalence Rate	6.7% (2003)
People living with HIV/AIDS	1.2 million (2003)

Source: CIA (2010), UNDP (2009)

2.1.1 Overview

Kenya is situated in the Eastern Part of Africa, in an area that is called the African Horn. Border countries are Somalia, Ethiopia, Sudan, Uganda and Tanzania, including the Indian Ocean to the Southeast and Lake Victoria in the West. The Rift Valley runs all the way through the country, from the north to the south, and in a way divides the country from being mountainous on one side and mainly consisting of vast plains or steppes on the other. Some of the highest mountains in Africa are located in Kenya with Mount Kenya (5,199 m) and Mount Elgon (4,321 m) being the highest. Kenya is a popular tourist destination because of the vast animal life and plentiful national parks and wildlife reserves.

Kenya is a relative poor country, situated as 147th in the Human Development Index (HDI), thus defined as a Medium Developed Country (UNDP, 2007). Even though Kenya is being labelled as one of the success stories of Africa by the IMF and the World bank, there is a total of 58,3 % living below \$2 a day (UNDP, 2007), which is the national poverty line. Most people reside in rural areas, 63,7 % (2003) (IFAD 2007) sustaining their livelihoods as subsistence farmers. Only 2 % of the households have access to electricity (Karekezi and Kithyoma, 2002), meaning that a staggering 98% of the population still has no access to electricity.

2.1.2 Historical overview

The Republic of Kenya (Jamhuri Ya Kenya) gained independence from the United Kingdom in 1963, after over 100 years of heavy British influence. The British took over Mombasa, an important port-town in 1822 and claimed Kenya as British Protectorate in 1895 (Leraand 2005). The British ruled Kenya in a traditional, oppressive way, in which the best and most fertile land was given to white people, while the Kenyans were put in reservation areas with less fertile land and without political powers or influence (Leraand 2005). The status of Kenya changed in 1921 from being a Protectorate to becoming a Colony, and a guiding council among Africans was established, with the main purpose of staggering oppositional forces among the locals (Leraand 2005).

KAU, later to become KANU, was established in 1944 as the first main nationalist organisation working against the British colonial powers. The opposition against the British continued to rise and escalated in the 1956 “Mau-Mau” rebellion, which was guerrilla warfare for land rights and independence that was brutally fought down by the British resulting in about 13,000 Kenyan deaths and 80,000 internees into concentration camps. This was however the start of the Kenyan independence, and except from the “Mau-Mau” rebellion the road was relative peaceful, compared to many other African liberation movements (Simensen, 2004).

Kenya has been a rather peaceful country since achieving independence, despite having over 40 ethnic groups. However, lately there has been some tenacity between different ethnic groups, especially between the Luo and the Kikuyu, which culminated during the 2007 elections. Today, there is peace in the country again, but this is however what can be labelled as a “fragile peace”, in which there is a possibility of tension once again arising in the next election in 2012.

2.1.3 Political overview

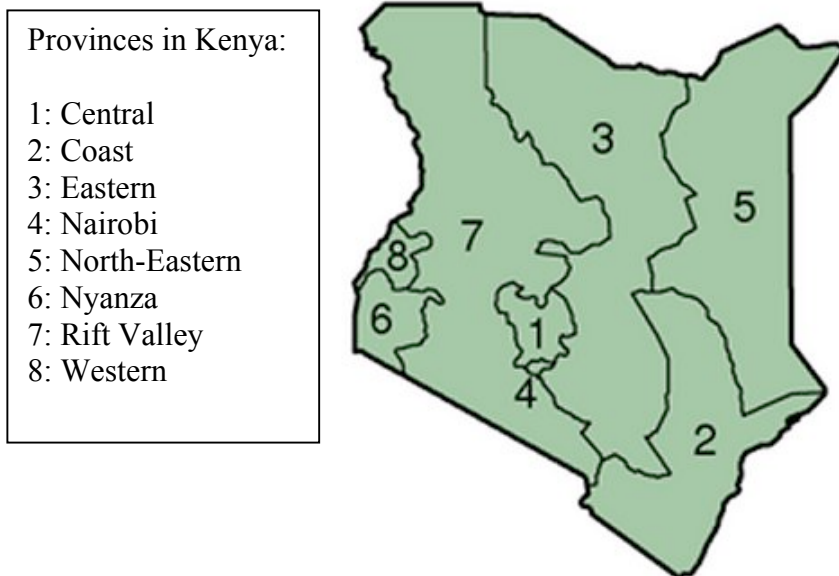
Jomo Kenyatta has been portrayed as the father of the liberation movement and took charge as President of Kenya from achieving independence until his death in 1978. After his death his successor was the highly debated Daniel Arap Moi, which held the presidency for 24 years, only to lose the 2002 presidential election to the leader of the NARC coalition, Mwai Kibaki.

Arap Moi turned Kenya into a one-party state during his time in office, in which KANU was the only legal party. It was not until the early 1990s, after international pressure, that a multi-

party system was restored in the country (BBC 2010). In addition to being a dictator, several reports state that massive oppression and human rights abuses in the form of restriction on the freedom of speech and oppositional political actions, was common under Arap Moi's presidency. Corruption grew steadily and it was on the promise of crippling this high corruption that led the way to the 2002 landslide victory for the NARC candidate, Mwai Kibaki (CIA 2009, BBC 2010).

The Kibaki government was very popular with Kenyans in the beginning, but as time went on and the corruption level increased again, turbulence along the ethnic divides started to appear. This ethnic turbulence surfaced during the 2007 elections, especially between Kikuyu and Luo (with Kibaki being a Kikuyu and the main rival, Raila Odinga, being a Luo), and riots broke out between these two ethnic groups in late 2007, early 2008, killing around 1,500 people (CIA 2009).

Figure 2.2: Provincial map over Kenya



Source: Kenya-advisor.com (2010)

2.2 Overview of the Luo culture

The Luo, or the Nilotic Luo, are originally pastoralists and originated from the Southern Sudan where they lived in the higher grounds, leaving the vast grassland to provide for their cattle. In addition to being cattle-herders, the Luo also cultivated crops like Millet and other root plants (Ochieng, 1985). Due to a growing population and less and less arable land, the Luo began to disperse and move into other lands in search of a suitable place for herding their cattle and growing their crops. This dispersion resulted in the Luo occupying land from the

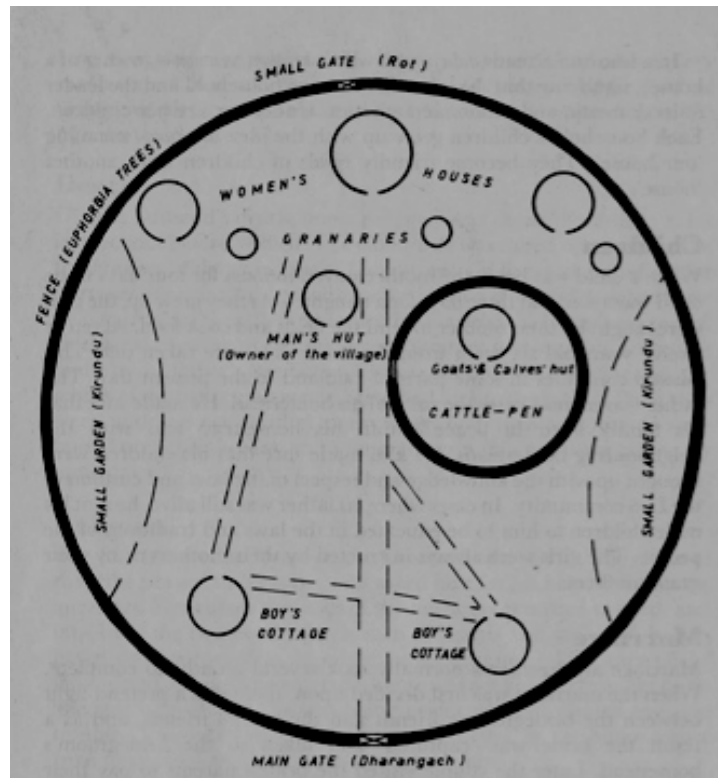
Eastern Congo, Northern and Eastern Uganda and the Western Kenya (Ochieng, 1985, Agot, 1967).

The Luo arrived in the land that we today know as Nyanza in the fifteen-century. This was then a region that only scarcely had been touched by humans, excluding some hunters and gatherers and a pastoralist tribe originating from the Ethiopian Highlands, which today is called the Southern Cushites (Ochieng, 1985). According to Ochieng (1985) the Luo invasion began sometime between 1490 and 1560. During the invasion, other tribes living in the area were driven out through fighting and intermarriage only to leave the whole of Nyanza, from the North to the South, to be dominated by the Luo by the beginning of the twentieth-century (Ochieng, 1985, Agot, 1967).

2.2.1 Cultural life

The Luo society is a strong patrilineal and patrilocal society, in which it is decent through the male line that has importance, and men are seen as decision-makers both when it comes to economy and property (Luke 2002). Women have no right to inheritance, but are more seen as an investment as they are supposed to be married away. Upon a marriage, the groom has to pay what is called a dowry, a kind of bride's wealth that has to be paid to the bride's family based on the bride's reproductive and productive capabilities (Blount, 1973, Cohen and Adhiambo 1989, Ndisi 1974, Ocholla-Ayayo 1976, Okeyo 1980). Polygamy is also widespread and seen as a common feature in the Luo society. Luke (2002) shows that according to the 1989 Kenya Census, "24.3 percent of ever-married Luo women were in a polygynous union at the time" (pp. 6).

Another important aspect of the Luo culture is the role of the homestead (*dala*), which acts as a small society on its own. The size of the homestead is decided by the wealth of the man, as wealth decides how many wives a man can have and in return how many children he will have. In some cases the homestead can also include the more extended family and thus include grandparents to the man and his brothers and sisters, including his brother's wife, children and grandchildren (Ochieng, 1985). Ochieng (1985) states that the size of the family has much impact both on the power of the clan and also inflicts the ability to survive epidemics, as small families were more likely to be wiped out by epidemics than larger ones (pp. 11). Also the homestead acts as a cultural training ground for children in their path to become a Luo, in which boys are educated by their father in how to become a Luo based on knowledge and traditions. Girls are in the same way educated to become a Luo by their mothers or grandmothers (Ochieng, 1985). Figure 2.2.1, below, shows a typical Luo homestead.

Figure 2.3: Overview of a traditional Luo homestead

(Ochieng, 1985, pp. 11)

The home is seen as the origin of a man, so upon his death, he has to be buried near his home, even though he should live in another town, city or even country. Upon the death of the husband in the homestead, the property is to be divided as instructed by the husband before his death (Ochieng, 1985). The sharing is to be done in a hierarchical way, in which the oldest wife is the one to pass on the order from the husband. The actual funeral is in fact a party lasting for days, in which many people will be invited to celebrate the passing of the husband.

The traditional Luo belief is a belief very much based in nature, in which Nyasaye (the creator of the world) was prayed to through the ancestors. The ancestors were believed to return to the homestead in the shape of animals or insects like lizards or snakes, and was therefore seen as sacred (Ochieng, 1985). Trees, rocks and hills have a great influence in the religious life as many are seen as sacred places, where animal sacrifices are taking place. Much emphasis is put on the spirits, which can enter the mind of people and alter their behaviour. The role of the medicine man is thus an important one, in the sense that the spirits come to the medicine man and tell him what kind of herbs to use in order to cure diseases, or getting people intoxicated by the spirits (Ochieng, 1985). Witchcraft also plays an important role in the traditional Luo society as the witch doctors may create evil spirits that intoxicate a person and make him sick or do evil deeds (Ochieng, 1985).

The Luos organize themselves in clans, which hold families descended from a joint ancestor. Clans living together inside a specific geographical location are called an “oganda”, which again is divided into an “ogendini” (Ochieng, 1985, pp. 13-14). Ochieng (1985) states there

existed 13 “ogendini” at the time of the British arrival in Kenya, and that it was based on this “ogendini” that the British based their administrative locations (pp.14).

Age is a very much-respected phenomenon in the Luo society, and the members of the Elder Council are seen as the leaders in the communities. One elder is chosen from each clan and, together with the other elders from the different clans, they make up the Elder Council (Ocholla-Ayayo, 1980). His clans-members, based on age, wealth and community respect, choose the elder. It is seen as natural in the Luo society for the Elder to control important issues like brides-wealth, cattle, land, when to plant and when to harvest, to some extent labour and cash, and in some instances the elders can control family resources (Ocholla-Ayayo, 1980).

2.3 Local research area

The Nyanza province is the 5th largest province in Kenya and is situated at the shores of Lake Victoria, thus being the most western province in the country bordering both Uganda and Tanzania. Kisumu, the third largest city in Kenya, is the province capital and main city. The total population of the region is 4,393,196 (1999) and covers an area of 16,182 sq km (MIC, 2007). The Luo tribe predominantly populates Nyanza, but there are also other tribes such as the Gusii, the Kuria and Luhya living in the province (MIC, 2007).

Kimalu et al (2002) show that in 1997, Nyanza had the highest poverty estimate (63.1 %) in the entire country, and can thus be seen as the poorest province in entire Kenya. Nyanza is, besides the main city of Kisumu, mainly consistent of rural areas, in which the main livelihood systems are subsistence farming, petty trading, agricultural wage labour and small-scale commercial fishing (CDC, 2006). The main energy source in use in Nyanza is biomass, mostly used for cooking.

Bondo District is a district inside Nyanza province that covers an area of 972 km² (NCAPD, 2005), with an average population density of 288 persons/km², which in turn make out the total population of Bondo District to 279,936. 83.5% of the population is rural population, while only 16.5 % is urban and lives in Bondo District’s two towns, Bondo or Usenge. Table 2.3, below, shows a statistical overview of the Bondo District.

Table 2.2: Statistical overview of Bondo District

Demography	
Area	972 km ²
Total Population	279,936 (2005)
Rural population	233,542 (2005)
Urban population	46,398 (2005)
% Rural population	83,5 %
Average population density	288 km ²
Population < 25 year	58 % (2002)
Population growth rate	1,79 % (2002)
Health	
Life expectancy: Male, Female	48 years, 55 years (2002)
Infant mortality rate	110/1000 – 11% (2002)
Under 5 mortality rate	199/1000 – 19,9 % (2002)
Under weight under 5 year	31 % (2002)
Maternal mortality	620/100000 – 6,2 % (2002)
HIV/Aids prevalence rate	29,4 % (2002)
Energy	
Total No. of households	56,607 (2002)
No. of households w/elec. power	705 (2002)
% of households w/elec. power	1,25 % (2002)
% trading centers w/elec. power	12 % (2002)
% using Kerosene, gas, biogas	65 % (2002)
% rural population using solar electricity	1 % (2002)
% of households use trad. Biomass (firewood, charcoal)	96 % (2002)

Source: NCAPD (2005)

Majiwa is a small rural village that is situated inland from the northern shore of Lake Victoria. The town of Majiwa is dispersal populated and there is no real town-centre. Nearest market place is called Ndori, situated around 3 km away. The nearest town is the district capital of Bondo, the main town in Bondo District with a population of around 30,000 (NCAPD, 2005). ARO Development Centre, Majiwa Primary and Secondary School and two churches are the main attractions in the area. The village is situated inside Maranda Division, inside North Sakwa Locations and inside Bar Chando Sub location. Bar Chando is populated with 3675 people (2003) and consist of 25 Clans that makes up the Elders of Bar Chando (one from each clan). The town of Majiwa consists of 5 Clans, and thus has 5 Elders that represent the leaders of this village. According to the local chief, Majiwa village has currently a population of around 2,250 (2009).

Majiwa is currently not connected to the national electric grid, so the village has therefore no electricity. However, there is currently some work in process with the grid, the poles have been set up and the cables stretched, but the power has not reached the houses yet. As the population is so disperse, it is not expected that every household in the village will get connected to the national grid. The main source of energy in the area is traditional biomass, namely firewood, and charcoal, in which the primary use is for cooking.

ARO Development Centre is a centre that is operated by ARC-Kenya, an NGO (Non-Governmental Organisation) based in Kisumu, in combination with ARC-Aid, an NGO based in Kristiansand, Norway. The centre operates many development activities in the area like the Kenya Change-Agent, Eco-tourism, a women's weaver-group that includes a little shop, an Adventist health clinic, and an orphanage. In addition there are departments doing research on renewable energy, through Fablab, in which serious international actors like MIT and Elkem Solar are partners. The centre bases their electricity on Solar panels, with a generator as back up. ARO was also my base under my fieldwork.

Chapter 3: Theoretical Framework and Prior Research

3.1 Prior research

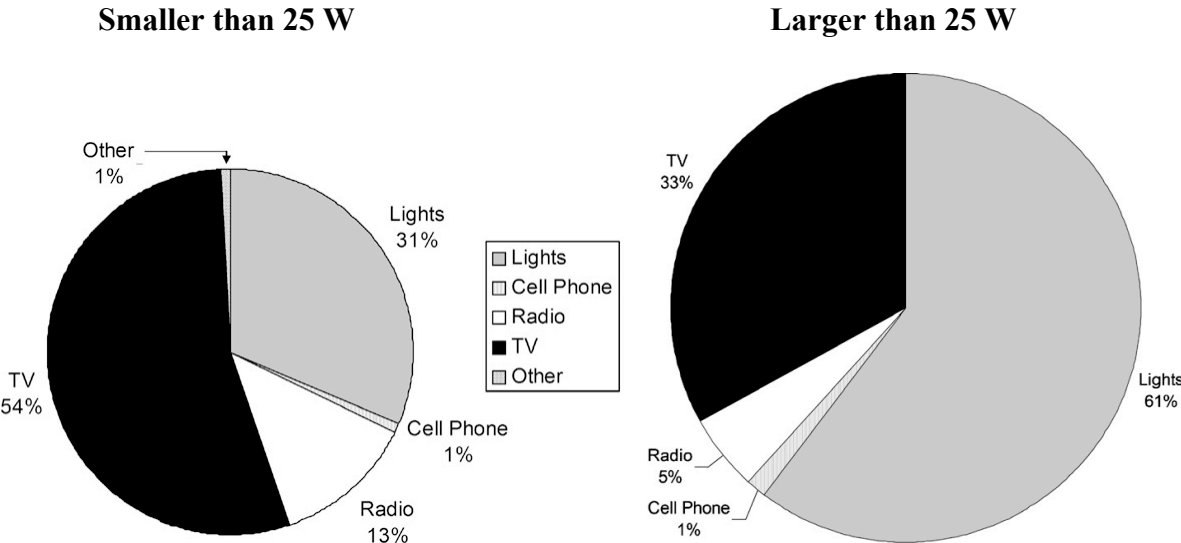
Jacobson (2004) has conducted extensive research on how the implementation of solar electrification has led to social change in Kenya, in relation to a PhD dissertation. The study was undertaken in the same area as I have done my research, namely Nyanza, Kenya.

His findings gave a rather dark view of the development effect of the implementation of solar electrification in the area. His findings can be divided into three main claims:

1. The rural middle class primarily captures the benefits that solar electrification can offer.
2. Solar electricity only plays a modest role in supporting economically productive and education-related activities.
3. Solar electrification are more closely tied to increased television use, the expansion of markets, more rural-urban communication, and other processes that increase rural-urban connectivity rather than poverty alleviation, sustainable development or the appropriate technology movement.

Another interesting aspect of the research conducted by Jacobson is that use of solar panels are closely related to the size of the panels, and that smaller panels are more likely to be used in “non-developmental” areas like television and radio, while larger panels are more directed towards lights. This is shown in the figure below.

Figure 3.1: Energy allocation in Solar systems



(Source: Jacobson, 2004, cited in Jacobson, 2006, pp. 154-155)

3.1 Development theory

Development theory has been a subject for discussion since it saw the light in the 1950s. In the early stages two main, opposing, paradigms that mirrored the state of the world at the time, emerged. First, the development “school” was mainly concerned with economics and thus representing a modernization paradigm, where economic growth was seen as the panacea to development. According to the latter, development was seen as an evolutionary journey, in which there is a linear path where underdeveloped countries move towards the developed countries through emancipating the latter. This system is best pictured in the work of Rostow and his “take-off”-model (1960). In this sense the already developed countries are seen as role models for the underdeveloped countries. Development is in this sense measured by GNP, and the acknowledged way to generate development is through the Trickle-Down theory, where economic growth at the top, will automatically lead to enhance the living standards at the bottom (Gardner and Lewis, 1992).

An opposing development “school”, called Dependency Theory, arose in the late 60s, through the influential work of Frank and Wallerstein, which based their concepts on the work of Karl Marx and anti-capitalism. The Dependency Theory saw development as an asymmetrical, imperialist process in which the rich country is getting richer and poor are getting poorer because of the rich countries’ exploitation of the poor ones. Wallerstein (1974) described the process as centre-periphery, in which the rich (North) are at centre, the centre of capitalism, and the poor (South) are the periphery, supporting the economies at the centre through supplying raw materials.

None of these two main paradigms are today been practiced in the development field in its pure form, as neither offers a realistic solution to development in the present world. However, these two paradigms still influence the development thinking, and can thus not be ignored. Economic development is still seen as a major part of development, but not in its pure form and there is a need for economic development to take place within the context of the developing country and on its terms.

3.1.1 Sustainable development

In the developing world today, the theory of Sustainable Development can be seen as the frontrunner of development theory. However, as the notion of development is such a wide sphere of researchable issues, it is vital to outline the exact meaning development, and thus sustainable development, and what it inclines in this context. The notion of sustainability incorporates the future into today’s development, in the way that development today should not interfere with the possibility of future development, as it is something that should be able to sustain for the next generation to come. The formal definition of sustainable development was defined by the World Commission on Environment and Development (WCED), also known as the Brundtland Commission, in 1987 as: “Development that meets the need of the present without compromising the ability of future generations to meet their own needs” (WECD, 1987: pp. 24). Since then the notion of sustainability has been transferred to cover many other areas that deals with futuristic continuity.

However, one can argue that today's sustainable development is vague in the sense that "everything" should be sustainable development, and thus everything is sustainable development. The definition put forward by the WCED is also vague in the sense that it covers too much. Is everything that meets the present need without affecting needs of the future sustainable? Or even more importantly, what are the ingredients in sustainable development? Who are included?

Here it is important to acknowledge that development never can be static or rigid, in the sense that it deals with people. All people are different, and something that might work for one individual is not necessarily going to work for another individual. Therefore it is important to include this versatility in a development thinking that is sustainable or in other words development that is kept alive over time and thus continues.

As this thesis deals with people and their search for a perpetuating life, the notion of sustainable development is thus defined around people and their way of life. In this sense the notion of sustainable development is in this thesis seen as a people-centred focus on the quest for a livelihood that can persist over time, and thus be sustainable. This again implies that the thesis does not cover the macro issues concerning development, like global economics and politics, but is rather focusing on the micro level – the livelihoods of an individual and what influence it from within its own society.

3.1.2 Sustainable livelihoods: A direct form of sustainable development

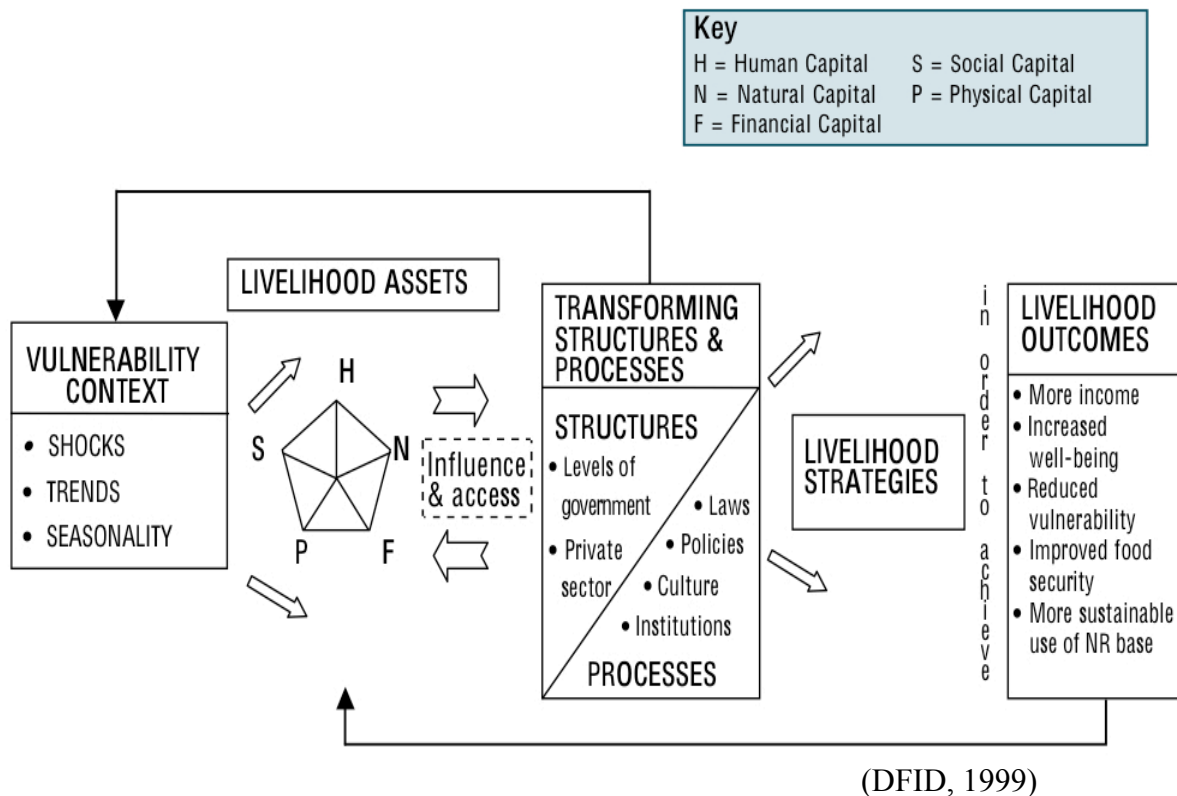
The sustainable livelihoods approach is an approach to development that puts the local people at the centre stage of the development agenda, thus being a development approach that is completely different from what is traditionally common. Schafer (2002) states that this approach can be seen as an "anti-development" (p. 13) approach, as the sustainable livelihoods approach cuts across earlier mainstream focus that has focussed on developing whole nations, and not individuals, which again has contributed to many poor people not being included in the so called development. Livelihoods approaches towards development strategies grew out of the belief that there is a need for bottom-up approach to development as a result of the failed traditional top-down approach (Schafer 2002). The bottom-up approach to development highlights the role of the individual, and treat the poor like rational beings and in this sense encourage the poor to empower themselves.

This approach towards development can be seen as a direct form of sustainable development. In order for sustainable development as a theory to become sustainable, there is a need to incorporate the information, knowledge and values of sustainable development at a bottom-up approach for it to be absorbed by the individual.

The Agenda 21 deals somewhat with this issue, and devotes chapter 7 of the report to "promoting sustainable human settlement development" (UN, 2004). The objective is here to "improve the social, economic and environmental quality of human settlements and the living and working environments of all people, especially the urban and rural poor" (UN, 2004). The sustainable livelihood approach could be a tool in achieving this goal. DFID is one of many organisations and NGOs that has incorporated this approach to development and defines livelihoods as something that "comprises the capabilities, assets (including both material and social resources) and activities required for a means of living" (DFID, 1999, p.1). A sustainable livelihood is thus a livelihood that can "cope with and recover from stresses and

shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base” (DFID, 1999, p.1). Figure 3.2, below, show what is called the framework of a sustainable livelihood and

Figure 3.2: Sustainable livelihoods framework



This framework shows the key indicators affecting the livelihood of people and the relationship between them (DFID 1999b). The framework shows how people’s assets are affected by the surrounding circumstances. Assets in this context are:

- Human capital: Skill, knowledge, labour ability, health;
 - Social capital: Networks and connections, relationship of trust;
 - Natural capital: Access and quality of natural resources;
 - Physical capital: Infrastructure and producer goods;
 - Financial capital: Savings, income, ability to get loan;
- (DFID, 1999)

These assets are an integral part of the ability of people to create a livelihood, and in order for this livelihood to become positive there is a need to incorporate several of these assets. People require a mixture of these assets, as one is not adequate to generate the many and varied livelihoods outcome they seek (DFID 1999b). Central to this approach is the view that poverty is not stable and homogenous, quite the contrary, poor people experience different “levels” of poverty and in a sense they “move in and out of relative poverty as they respond to the opportunities, shocks and stresses – social, economic and environmental – which they experience” (Meikle, Ramasut and Walker 2001). Similar to this view, UNDP (1997a), argues

that people in the developing world are pursuing “multiple activities, rather than relying on a more limited range (e.g. one household member with full time paid employment) of livelihood strategies to ensure their well being” (p. 10).

Access is a central issue in discussing the assets of poor people. Access to many of these assets is usually limited for the poor people (DFID 1999), and this highly affects their ability to create a sustainable livelihood for themselves. Access and opportunity goes hand in hand and a lack of access to resources would seriously cripple the opportunities of livelihoods (Meikle, Ramasut and Walker 2001).

3.1.3 Alternative development theory

The Alternative development theory approach emerged as a synergy between theories of the 1970s ‘another development’ and the more recent ‘post-development’ (Pieterse, 1996), and can be seen as protest against the established paradigms of development that existed in the 1950s, 60s and 70s where the Modernization theory was the main paradigm. According to Pieterse (1996) there exists a discussion on what Alternative development is conceived as; It can be viewed as a critique of Modernization theory or as a stand-alone development paradigm, anyway the theory still stand as a opposite of the Modernization theory and especially as a opposite of how to understand Development as a discipline.

As mentioned earlier, according to the Modernization theory, economic growth was seen as the panacea to start the linear journey from being an underdeveloped country to become a developed country similar to the western countries. As mentioned earlier, an example here is Rostow’s “take-off” model (1960), where level of development uses the metaphor of aeroplanes take-off routine. The underdeveloped countries are on the ground and the already developed countries are in the sky and the underdeveloped countries have to go through certain stages in order to be able to take-off from the ground. In this sense the already developed countries of the time were seen as the role models, and the key for poor countries was to emulate the developed countries and their path to becoming a ‘modern’ society, in order to obtain development (Gardner and Lewis, 1996). Development is thus seen as a top-down model, in which incentives taken from the top, like technology and investments in the likes of infrastructure, manufacturing and effective government (good governance), will automatically lead to societies becoming self-sustaining again leading to a society based on mass-consumption with high levels of productivity and urbanization (Robertson, 1984).

However, some critics argued that there exist another way to development, in which the top-down approach to development is rejected and focus is put on the opposite, namely a bottom-up approach where the focus is put on people and their development. Here important actors are NGOs, the informal sector and social movements, in other words development takes place at the grass root in a society, again in opposite to the state-led development focus undertaken in the Modernization theory.

One way to define development in correspondence to the Alternative development theory could be like the way Korten (1990) has defined development as “a process by which the members of a society increase their personal and institutional capacities to mobilize and manage resources to produce sustainable and justly distributed improvements in their quality of life consistent with their own aspirations” (p. 67). Empowerment is also another key word, because it is through participation and capacity building that empowerment takes place.

Empowerment can in short be defined, as the potential people inhabit themselves to change their lives to something better. Gardner and Lewis (1996), define empowerment as “the transformative potential of people to achieve positive change in their lives by asserting their rights as women, citizens, etc., usually by group action, and thereby gaining greater power to solve problems” (pp. xiii). Friedman (1992) directly combines alternative development with empowerment and sees that alternative development needs to acknowledge the individual and the need of the individual household. Linked to this are what Bjørke (2010) calls 'Transition Cultures'. Bjørke argues that an integral part of any sustainable future is a cultural transition in which the 'cowboy culture' of exploitation, destruction and consumption of ecosystems is left behind and the 'spaceship economy' of preserving, reinforcing and enriching ecosystems is entered (p. 51). Finally, Bjørke (2010) argues that in completing this transition, "we transform, from the fossile fuel an unlimited, consumerism paradigm to a paradigm of local resilience and sustainable livelihood within the carrying capacity of the ecosystems" (p. 51).

3.1.4 People Centred Development

People-centred development (PCD) is a development theory that puts the alternative development theory in practice. The aim here is to change the traditional development set-up up side down and focus on people and their own capabilities to develop, instead of focusing on “how the west can develop the rest” through economy and so forth, which is more or less the way the modernist approach to development, can be portrayed. Key words in the PCD approach are: social capital, participation, empowerment, culture and NGO's. People need to take part in their own development (participation), through cooperation and the management of resources (social capital), based on their own culture with guidance from NGO's. Taking these steps would thus lead to the empowerment of people that earlier has been systematically excluded from participating in the development process (Friedman, 1992: pp. vii). Another notion that is very much linked to empowerment is the notion of capacity building. In the PCD framework capacity building is about getting people to acknowledge their own capabilities, awareness and skill in leading themselves to development.

Based on the former 'People Centred Development' approach combines the notion of sustainable development and empowerment in the sense that it focussed on including the local people in their own development, and thus makes them responsible for taking the steps by themselves with support from the “developers”, something that again results in grass root development.

3.2 Culture and Development

The notion of culture is such that most people have a basic, common notion of what it is, and have some own, maybe idiosyncratic perceptions. Therefore it is almost impossible to get all people to agree to a common definition.

One of the first to define culture was Edward Taylor, who gave this definition in his work *Primitive Culture* (1871): “Culture is that complex whole that exist of knowledge, beliefs, art, moral, law and customs, in addition all other skills and habits a human absorbs as a member of a society” (Tyler, 1871, cited in Hylland-Eriksen, 1998, p. 17) Even today, this definition holds water and is the most common used by anthropologist (Hyllland-Eriksen, 1998). Hylland-Eriksen (1998) further gives light to the differences and the relationship between culture and society, in which the first points to the “learned, cognitive and symbolic aspect of the subsistence”, while the latter points to the “constant social organization of the human subsistence” (p.25).

Indigenous knowledge is also a term that is hard to define as it lacks a common definition and incorporates so many aspects, like rural people’s knowledge, local knowledge, traditional knowledge and so forth (Ahmed, 2002). Chambers (1983) defines indigenous as something that “implies originating from and naturally produced in an area, but rural people’s knowledge is also added to, influenced by, and destroyed by knowledge from outside the area” (p. 83). Ahmed (2002), however, combines all the different aspect into the common features of indigenous knowledge and defines it as something that is “local, experimental, dynamic yet resilient, often orally transmitted, experimental (learned through repetition and practices), informal, utilizes local resources, adheres to local social environmental, cultural and economic systems, and it is complex” (p. 3)

3.2.1 Local culture and indigenous knowledge in development

In developing a People Centred Development framework, in which the focus is to empower the local people, it is an all-encompassing feature to include the local population and their knowledge and thus make the local population responsible for their own development. Freire (1968) argues that to liberate oneself is the greatest humanistic and historical task of the oppressed. In this sense, the poor can be seen as the oppressed and in this sense poverty can be seen as a state of mind, in which poverty is also a highly psychological aspect as well as an economical aspect, and that this has been facilitated by the non-participation of the local people in their own development. In this sense, development as a discipline that does not include the local population, only acts as an observation of the poor and does not contribute to the development of the poor, which again oppresses the poor. Escobar (1995) supports this view and argues that development that fails to include the local population and their knowledge acts as a hegemonic discourse, in which the “third world” and its resources serve the development of the “first world”. Escobar continues to argue in relation to Shiva (1988) that the more local the development is, meaning the more included the local people are, the more all-encompassing the development process would be, and the more sustainable the development outcome would be. In relation to this, it is highly vital to acknowledge the internal aspects of development as well as the external ones (Derman, 2003). Internal aspects in this sense mean the psychological processes that development includes, which in many cases are equally important to the more traditional external features of development.

When looking at the possible outcome of a development process, it can also be stated that it is vital to include the locals and their indigenous knowledge. Øyhus (1989) argues that the local population inhabits the necessary knowledge that is needed to be able to predict and evaluate the most important, social and economical impacts by importing new technologies, and it is

therefore vital for any successful development process to activate the local population and establish a lasting dialog between the local population and the so called “experts” (p. 123).

Indigenous knowledge can also be seen as a sustainable approach to development, as most of these knowledge systems are very much nature orientated. Chambers (1983) argues that indigenous knowledge is very much a sustainable knowledge in the way that the local knowledge on their own environment is often very high, especially in societies living close to the nature, and state that “people often know not only the *what*, but also the *where* and the *when* of the plants, animals, water, fruits and other elements of their environment” (p. 89). Ahmed (2002) supports this view and gives the examples of pastoralism, as most of the people in the East African Countries base their livelihoods on. Ahmed (2002) argues further that when it comes to natural resource management, conflict management and resolution, and human and animal health, the nature of pastoralism and thus indigenous knowledge is such that it incorporates cultures, practices, norms and values to act as a sustainable mechanism to manage development.

Verheist and Tyndale (2002) pinpoints the role of local culture in the development process and see culture as being the most essential part of any development process both in a negative and positive way, and state that “any development process must be embedded in local culture, or development simply will not take place. In fact, ‘de-development’ often occurs in the absence of cultural sensitivity” (pp. 11).

3.3 Climate change

3.3.1 Climate and environmental change

The notion of global warming and climate change has now become one of the most serious challenges facing the world today. Human kind is slowly coming to grasp the extent of the environment’s impact on all life on Earth, and is starting to take measures to deal with this, as most scientists agree that human induced emissions are contributing to climate and environmental change. The big discussion on this environmental change deals with how to cope with it, how to adapt and mitigate the impact and thus reduce the vulnerability towards this impact. UNFCCC (2007) defines it as something that is directly or indirectly linked to human activity, which alters the environmental configuration. It exists in addition to natural climate variability, and is observed over comparable time periods. The environment refers here to the surrounding, external habitat in which humans depend to live their life. The environment is basically the air we breathe and the food we eat. Bucknall (2000) defines the environment as the natural resource base that provides sources and performs sink functions (p. 3). Sink function means the ability of the environment to absorb pollution.

Most of the scientists today agree that humans are, to at least some degree, responsible for these environmental changes, mainly due to emission of greenhouse gases. In this sense, climate change is often seen as synonymous to global warming, in which emissions of greenhouse gases are one of the key reasons for this changing climate. Greenhouse gases contribute to retain heat within the atmosphere of the earth, not letting the radiation slip out

into space but reflect it back to the Earth (UNFCCC 2007). This again contributes to warming up the planet, thus the phrase of global warming. The impacts of climate change are environmental change, meaning that a warmer earth is changing the earth's ecosystem (IPCC 2007). IPCC (2007), state that global warming is unequivocal, and that there are several evidences of this, most prominent however is:

- Increase in global air and ocean temperatures;
- Widespread melting of snow and ice;
- Rising global sea level.

In addition it is very likely that weather patterns change and become more unstable and irregular. This jeopardises the relatively regular climate patterns of the last thousands of years under which our current agricultural practices have developed. Climate change is directly affecting all living creatures on the earth and their habitats. In this sense there is a need for humans to adapt to these environmental changes, thus adopting adaptation strategies as a way of dealing with environmental change.

3.3.2 Adaptation

IPCC (2007) defines adaptation as: “the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploit beneficial opportunities” (p. 6). In this sense adaptation can be seen as a way of dealing with the impacts of environmental change. Adapting to environmental change is essential in order to be able to live a sustainable life, as it “entails taking the right measures to reduce negative effects of climate change (or exploit positive ones) by making proper adjustment and changes (UNFCCC, 2007: p. 10). It is important because, as The Stern report states, “adaptation is the only response available for the impacts that will occur over the next several decades before mitigation measures can have an effect” (Stern 2006). However, adaptation to climate change involves a quite dramatic change in society. UNFCCC state, “adapting to climate change will entail adjustments and change at every level – from community to national and international” (UNFCCC 2007). This entire change of society will probably come with quite a high cost, and it is also reasonable to believe that information and knowledge would be two key elements in order to be able to adapt. A third element would be the planning needed in order to implement adaptation. It is reasonable to believe that in order to really be able to adapt to the climate changes, there would be a need for serious and long-term planning.

The UNFCCC (2007) states that developing countries are facing some real challenges to be able to implement adaptation strategies in order to face the climate change. This is mainly because of limitations in human, financial and institutional capital. On the other side UNFCCC (2007) states that on the knowledge and information elements there is sufficient available on both strategies and plans in order to already now implement adaptation strategies. In a sense this can be seen as a management issue; there is a need for sustainable environmental management in order for people to adapt to the environmental changes.

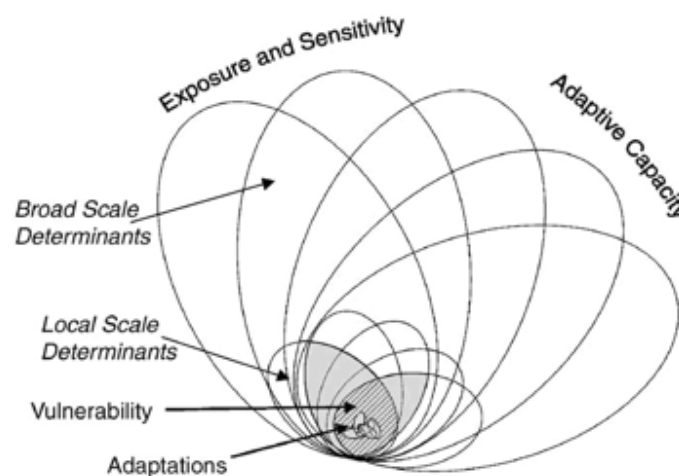
3.3.3 Vulnerability

Human vulnerability to environmental threats deals with human consequences of environmental disasters. United Nations Development Programme (UNEP) defines vulnerability as representing “the interface between exposure to physical threats to human well-being and the capacity of those people and communities to cope with those threats” (UNEP, 2002: p. 302). This means that vulnerability incorporates both how exposed humans are to impacts of environmental threats and their ability to handle these threats and overcome them. All humans are vulnerable to environmental impacts due to climate change in some form, but the ability to overcome these impacts and adapt to them are highly uneven. Even though all humans are affected in some way, and thus are vulnerable, poverty is seen as probably the most vital source of high vulnerability to environmental threats (UNEP 2002). In other words, it is usually the poor who bears the biggest burden of environmental disasters.

3.3.4 Vulnerability and adaptation

Vulnerability and adaptation are closely related and affect the ability of each other. Smit and Wendel (2006) show that adaptation and vulnerability go hand in hand, and state that on a general basis, “a system (e.g. a community) that is more exposed and sensitive to a climate stimulus, condition or hazard will be more vulnerable, and a system that has more adaptive capacity will tend to be less vulnerable” (p. 286). However it is important to distinguish between the two elements. Adaptation can be seen as direct action to be taken in order to protect one self from the impacts of environmental change, while vulnerability on the other hand can be seen as how susceptible a person or a community is to the impacts of environmental change. Figure 1, below, aims to conceptualize how the vulnerability of a community is shaped, in which relationships vulnerability is generated, and that vulnerability and adaptation are integrated parts of each other.

Figure 3.3: Vulnerability and Adaptation



(Source: Smit and Wendel 2006)

3.3.5 Climate Change and Africa

As outlined more detailed later, it is the poor who will be mostly affected by climate change. How will then Africa, the poorest continent on Earth, be affected if effective measures to curb climate change are not effectively undertaken? The IPCC (2001) states that there would be different regional experiences of the impact of climate change, and that SSA would possibly be one of the most negatively affected regions. This is due to the fact that many climate-sensitive sectors, like agriculture and fisheries, are of high economic and livelihood importance in Africa (Ag POVERTY and Climate change). The IPCC (2001) further states that Africa is likely to suffer from the following impacts of Climate Change, which again would impact water resources, food security, human health and infrastructure:

- Increase in droughts and floods together with other extreme events;
- Decrease in rainfall and intensified land use;
- Decrease in crop yield;
- Rise in sea level;
- Decrease in run-off and water availability in major rivers

These impacts, combined with low vulnerability and adaptive capacity, could result in disaster for many countries in SSA. If one looks at the rural areas, most of the people are subsistence farmers whose livelihoods are defined by what they are able to grow. An increase in drought and floods, again leading to soil erosion, and decrease in crop yield, would again seriously and directly impact the lives of the rural farmers. This would again lead to restrained development for the same people, and thus cripple development in many countries in SSA.

3.4 Poverty

There are several ways to define poverty. Traditionally poverty has been seen as an economical issue, with for instance WB and the IMF naming all that live under \$1 a day for extremely poor. However, the notion of poverty should include much more than just the economical aspect. UNDP (1997b) defines poverty as:

Deprivation in the most essential capabilities of life, including living a long and happy life, being knowledgeable, having adequate economic provisioning and participating fully in the local community

As a result of this definition of poverty, UNDP outlined the HDI index in the measurement of poverty as an alternative to the purely economical index. The HDI index incorporates human deprivation into the measurement and includes life expectancy, adult literacy, access to health service and safe water, and percentage of under-weight children below five years (DFID 2002). What is important however is that the poor cannot be labelled as a homogenous group (DFID 2002), in the sense that every poor person has the same experience of what it is like to be poor. Those who are labelled poor experience this in completely different ways and in this

sense poverty is a subjective label. Supporting this view, DFID (2002), state that poverty can be seen as a “local, diverse, and dynamic condition” (p. 10).

3.4.1 Poverty and the environment

There is a strong link between poverty and environment. According to Duraiappah (1998), The WECD report states that “poverty is a major cause of environmental problems and amelioration of poverty is a necessary and central condition in any effective program to deal with environmental concerns” (p. 2169).

More recently, both the UNFCCC and IPCC see poverty as a main contributor in reducing people’s ability to cope and overcome environmental threats (UNFCCC 2007, IPCC 2007, Scott 2006). The relationship between poverty and environment can be seen in two ways, both as a victim and as a contributor.

First, poverty can contribute to unsustainable environmental trends. This thought goes back to the 18th century and Thomas Malthus. Malthusian theory saw a relationship between poverty and environment as a spiral, in which the poor did not put attention towards the future and degraded their base of natural resources (Scott 2006). Another classic view of poverty and their relation to the environment is “the tragedy of commons” theory, developed by Hardin (1968). This theory is based on Malthusian theory; it builds on Malthus’ view on population growth, and foresees that mankind will continue to exploit natural resources unlimited for their own utility. This in a world that has a limited amount of resources, and eventually this would eventually create a shortcoming in resources. The WECD support this view to some extent and state, “poor people are forced to over-use environmental resources to survive from day to day, and their impoverishment of the environment further impoverishes them, making their survival ever more difficult and uncertain (UN 1987, page). This view represents one school of thought that has dominated the agenda for many years. Here the argument presented is that in order to become environmentally sustainable, there is a need to alleviate poverty first. Gallopin, Gutman and Maletta (1989) support this view and state that “the numerous poor over-exploit just to exist” (p. 377). In addition to this, Gallopin, Gutman and Maletta (1989), identify two major sources of environmental degradation; those associated with poverty, and those associated with “prevailing patterns of economic growth in the affluent societies” (p. 377), both within the rich and the poor world.

However, there exists another school of thought, which refutes this link of poverty’s direct contribution to unsustainable environmental trends. Here it is argued that there is a need to incorporate a more complex dimension, including several aspects, in order to really understand the relationship between poverty and the environment. Duraiappah (1998) denotes this direct link between poverty and contribution to environmental degradation, and states that there is a need to include more variables, like demographic, cultural and institutional factors. Prakash (1997), supports this latter view and states that institutional and policy issues, rather than poverty, is the root to environmental degradation. The relationship between poverty and environment is in this sense “mediated by institutional, socio-economic and cultural factors” (Prakash, 1997: p. 23).

The second view, in which poor people are affected by environment are more straightforward. Poor people are usually those who suffer most from environmental disasters. In this sense environmental degradation is a major contributor to poverty. DFID (2001) states that the lives

of poor people are closely tied to the environmental context they find themselves in, more so than better off people. A change in the environment can thus affect poor people to a great extent, and DFID (2001), shows that a change in the environment, which results in a lesser access to natural resources can precipitate problems directly tied to the livelihoods of the poor. In addition to this the occurrence of environmental disasters such as floods, fires or pollution could “push a person into extreme poverty” (DFID, 2001, p. 2). In this sense the environmental context affects poor people in two ways, both as a barrier in escaping poverty and as a direct cause for being poor.

In addition to this, as the poor are more directly tied to the use of natural resources than better off people are; the negative impacts of environmental change would cause more severe problems for the poor. Examples here could be health problems, diseases and even death, all more prone to the poor people. This again affects both the poor peoples ability to adapt to environmental changes and increases their vulnerability, as mentioned earlier.

GECHS (2007) state that environmental changes “affect poor people’s strategies to secure basic living standard” (p. 3), this because changes in the environment affect their opportunity to:

- Earn an income and meet material needs;
- Maintain health and basic education;
- Speak up for oneself and have rights;
- Maintain a sense of social and cultural affiliation.

(GECHS, 2007: p. 3)

3.4.2 Poverty in relation to adaptation and vulnerability

Poverty can be seen as a main contributor to the fact that some people have less ability to adapt to, and a higher degree of vulnerability towards, environmental change. Despite this link and relation, they are not synonymous in the sense that the one necessarily leads to the other. GECHS (2007) summarizes the linkages between poverty and vulnerability as:

- Any added risk by climate change to current ways of securing well-being;
- The particular strategies or adaptive capacity of poor people in the face of climate stresses;
- The causes of vulnerability, or specific factors and conditions that make poor people vulnerable to climate stress.

(p. 3)

The reason that the poor are more vulnerable towards environmental change is the fact it is usually the poor who get the most affected. This is, according to DFID (2004), due to where they live or/and their livelihoods activities. First, areas that are of high environmental risk are not usually populated by wealthy people, but by the poor. This is due to the lack of options that many poor communities inhabit. As a result from this it would be fair to establish that it is usually the poor who live in the most unsustainable places. Second, the livelihoods of poor people are also a key factor in why they are more vulnerable. Poor people’s livelihoods are generally more directly linked to the environment than better-off people. Let us use Nyanza as

an example. Most people in the rural areas of Nyanza are subsistence farmers and thus their livelihoods are more directly connected to the environment, than for instance an accountant working in Kisumu. As a result of this climate change, in the sense of less rain and thus drought, would directly affect the livelihoods of a rural subsistence farmer while the accountant would not directly be affected.

As mentioned earlier, the poor are not a homogenous group in the sense that they all are affected in the same way. It is possible to distinguish between different levels of vulnerability within the poor. Certain groups inside the “poor-group” can be seen as even more vulnerable towards environmental change. UNDP (2002) identifies the very young, the old, women, children, refugees and migrants as “especially vulnerable groups” (p. 304).

3.5 Energy

3.5.1 Energy and development

For developing countries to be able to develop there is an urgent need for energy services to be available for them to use, if not it will not be possible for them to achieve this development. Energy is seen as one of the backbones, or pillars, of society, and thus needs to be present in order for development to become a reality. Access to energy sources can be seen as a prerequisite necessity for human development to be able to take place. Research shows that there are clear linkages between lack of access to energy and vital development statistics like infant mortality, illiteracy, life expectancy, and total fertility rate (POST, 2002). Davidson et al (2007) go further and call energy “the pivot of economical and social development of all countries around the world” (p. 2). This would, as formerly stated, imply that energy is one of the main cornerstones in the development context. The United Nations (UN) also highlights the role of energy in development and links it to the possible fulfilment of the Millennium Development Goals (MDGs), which in many ways represents the blueprint of global development aims to be met by 2015. United Nations Development Programme (UNDP) states that in order to meet any of the goals there is a need for both better quality and quantity of energy resources in the developing world (UNDP, no date).

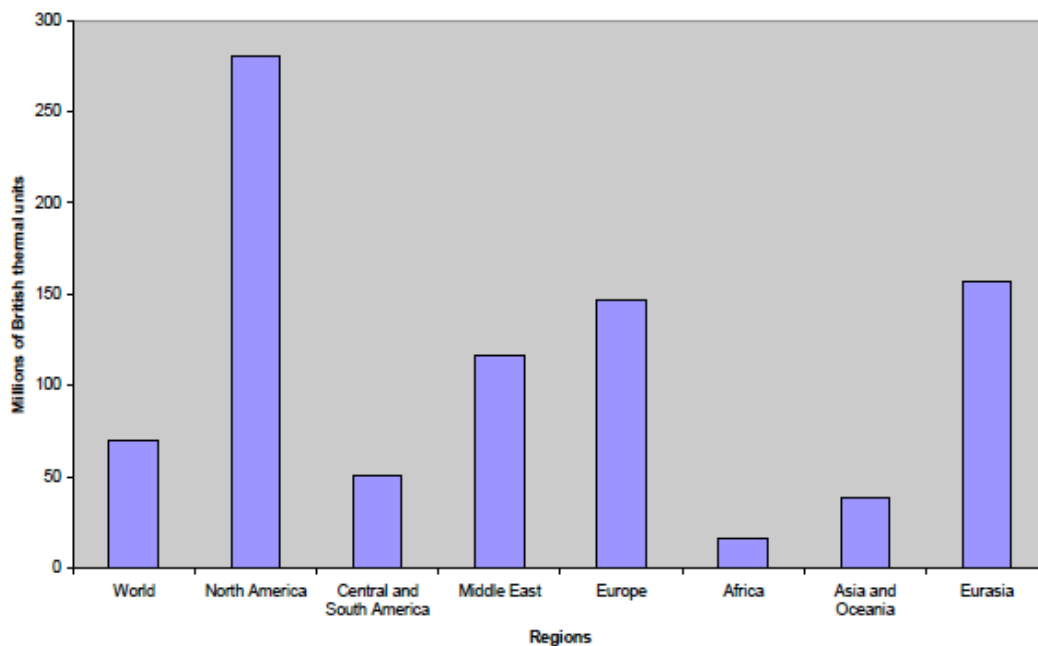
3.5.2 Energy consumption – Different realities

Today, many Kenyans, and especially Luo people, look to the USA for inspiration. This is quite understandable, especially as President Barack Obama is partly Kenyan and partly Luo, as his father was a Luo. People in the Nyanza province are really proud of this, something you cannot blame them for, and everywhere you go as a white man, someone will shout: “Hey, Obama, how are you?” or “hey, white man, have you met Obama?” However, you could argue that this American obsession has gotten a little out of hand, some people even believe that Obama is “their” president as well, and will do much for Kenya and Nyanza. Nowadays they are extending the Kisumu airstrip to become an international airport, some people say that this is done so that “Air Force One” can land there, so that “Obama doesn’t have to go all the way to Nairobi to visit his place of origin”. My thoughts are that they are not grasping the

enormous differences between Kenya and the USA. These two countries are a world apart, something that is difficult to grasp if you haven't visited both places, or even read the graphs portraying the differences. One of these differences, perhaps one of the most striking, between the already developed world, especially the USA, and the developing world will be highlighted in this section.

If one looks at the different levels of energy use between the developed world and the developing world, one really starts to see how big the differences really are, you can thus speak of different realities. Figure 3 shows this immense difference:

Figure 3.4: Per capita energy consumption (in million Btu) for selected regions, 2004



(Gaye, 2007, pp. 2)

What is seen from this figure is that North America consumes around 18 times the amount of energy consumed by Africa. North America even consumes four to five times that of the world average. If you at the same time include population into the equation you find that people in the developed part of the world outline roughly 20 % of the population, but consumes around 80 % of the resources. United Nations shows that “people in industrial countries account for about 20% of world population, yet consume 86% of its aluminium, 81% of its paper, 80% of its iron and steel, and 76% of its timber” (UNSEW, n.d.).

Even though there has been an increase in people in the developing world getting access to energy sources over the last years, there are currently 1.6 billion people lacking access to modern energy sources (Gaye, 2007). Most of these people live in rural areas, as most of energy resources in the developing world are consumed in urban areas.

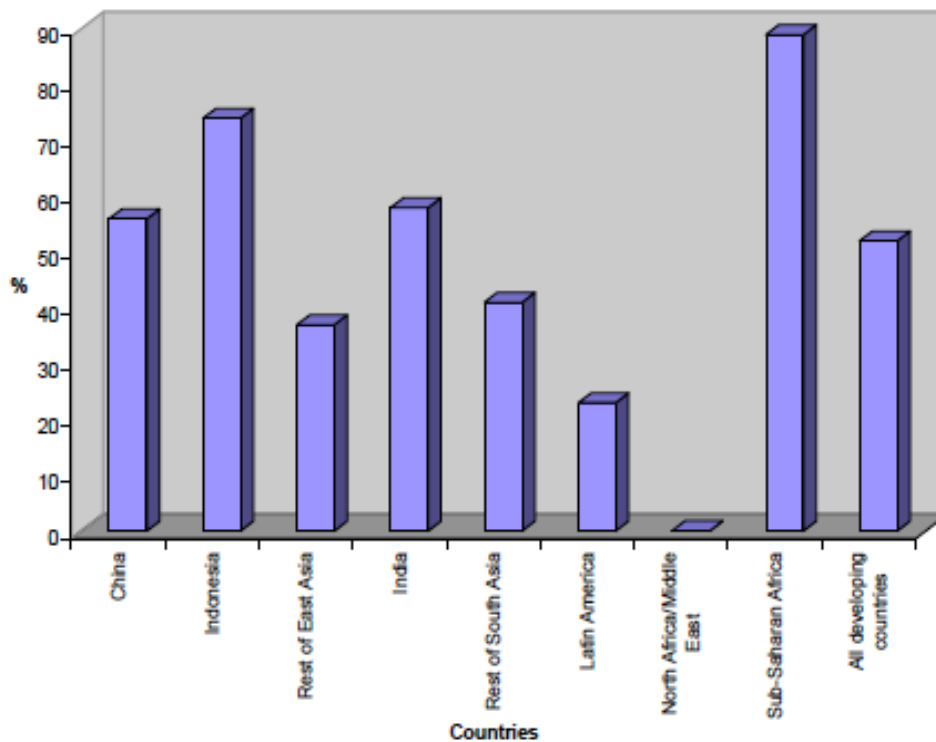
3.5.3 Energy poverty

These people that lack access to modern energy sources, can be labelled as energy poor. UNDP (2005) defines energy poverty as “inability to cook with modern cooking fuels and the lack of a bare minimum of electric lightning to read or for other household and productive activities at sunset”. If one follows this definition, 4.1 billion people would be labelled as being energy poor. These would include the 2.5 billion people that rely on traditional biomass, like firewood, for cooking and then the 1.6 billion people that have no access to electricity (Gaye, 2007). This is an extremely high number and accounts for around 60 % of the worlds population.

So, what does it mean to be energy poor? Friedman (2008) argues, “being energy poor is not what it used to be – not in a world that is hot, flat and crowded” (p. 158). Hot, flat and crowded means a world that is getting warmer, more integrated or interconnected and with more and more people. Being energy poor affects your ability to cope with these factors. Lack of access to modern energy sources is related to higher vulnerability, and lower adaptive capacity, towards climate change. Lack of access to modern energy sources is also related to lack of ability to use devices as computers and the Internet – devices that are an integral part of the global community. And lastly lack of access to modern energy sources are affecting the way people live their lives in the way that more and more people from the rural areas are moving to the big cities in search of making a living, often ending up in slums or shantytowns (Friedman, 2008).

In addition to these impacts on the global scale, where billions of people are effectively cut off from participating in the global community, being energy poor also affects ones livelihood. Using traditional energy sources has many negative effects when it comes to social cost like health effects, and disproportionate gender effects, in addition to high economical cost. Figure 3 shows the amount of people using traditional biomass in developing countries; take a special look at Sub-Saharan Africa (SSA), where around 90% of the people use traditional biomass for cooking.

Figure 3.5: Percentage of population using traditional biomass for cooking and heating in developing countries



(Gaye, 2007, pp. 5)

Using traditional energy sources such as biomass can have a serious effect on health. Indoor air pollution from using stoves with low efficiency or lack of ventilation causes several health problems and deaths in developing countries, something that are mostly affecting women and children and thus creating gender differences. UNDP and GTZ (2005) state, “woman and girls are disproportionately burdened by lack of access to modern fuels and electricity because they are responsible for fuel gathering, cooking and food preparation” (p. 5). This again leads to women, girls and children being most affected by the indoor air pollution. UNDP and GTZ (2005) further state, “an estimated 500,000 people die each year because of exposure to indoor air pollution in Sub-Saharan Africa” (p. 5). Gaye (2007) states that worldwide Indoor Air Pollution (IAP) “is responsible for about 1.8 million deaths per year – double the amount of malaria related deaths” (p. 7). Williams (2005) states that study projects show that with continued energy trends, 10 million women and children in SSA will prematurely pass away as a result of indoor air pollution.

3.5.5 Energy and the environment – The need for sustainable energy sources

However, there is a backside to this development as well: If developing countries are going to develop themselves following the path of the developed countries of today, focusing on fossil fuels, the increase in greenhouse gases (GHG) would be immense and thus the climate change would probably be even more severe. Therefore it is vital that the developing countries, with help from the international society, outlines a path that is different from that taken of the already developed nations, meaning using a different energy source than fossil fuels. The

developing countries need to leapfrog the already developed nation and thus base their energy-source on renewable, clean energy in order to be both able to develop themselves and not be a liability to the climate in the same sense as the development of developed nations today was.

There are several variables that would determine the future of SSA, and one of the main variables here is energy, both when it comes to intensity and source (World Bank, 1998). WEO predicts that under existing policies, global energy demand will grow by 25 % by 2015, in which 40 % (excluding China) of this increase would come from the developing world (IEA, 2006). Additionally, 36 % of the increase in global CO₂ emission would come from developing countries (excluding China) (IEA, 2006). This is due to developing countries energy use is more carbon-intensive, meaning more use of coal than gas as an energy source (IEA, 2006), which again can be labelled a more unsustainable energy source.

3.6 Renewable Energy – Sustainable Energy

To focus on the implementation of renewable energy can be seen as one way of adapting and mitigating towards climate change. In the following part, I will take a closer look at two options of renewable energy, namely Solar Energy PV systems and bio-fuel from the *Jatropha Curcas*.

3.6.1 Solar energy – sustainable energy in a large scale

One way of promoting renewable energy sources in SSA could be to focus on solar energy, as probably the most readily available renewable resource in Africa is coming from the sun. Solar energy is a clean form of energy, meaning that environmental impacts are few. Scheer (2002) highlights the role of solar energy and solar resources, and states that it “will do more to safeguard our common future than any other economic development since the Industrial Revolution “ (p. 33).

There is a lot of potential in solar energy. The sun produces a vast amount of energy that, if utilized, can completely cover the human need for energy. Crabtree and Lewis (2007) state that the sun delivers the current annual human energy-use in one hour. The challenge is here to transform the sunbeam into energy to power human activities. However, in the world today, solar energy only accounts for 0.015 % of the electricity production (Crabtree and Lewis 2007, p. 38) and thus represents a futuristic solution to the energy demand.

Solar energy can be used in a number of ways to ease the livelihood of the rural poor. As most of the rural population uses biomass as the main energy source, which both is environmentally unsustainable and unhealthy, the use of solar energy for cooking can thus

vastly improve the health condition of many people. Another viable use of solar energy in this context could be solar water disinfection, in which energy from the sun is used to eliminate pathogens in water (Karekezi and Kithyoma 2002).

The main setback in the quest for solar energy is the high cost of installing the equipment needed. Karekezi and Kithyoma (2002) argue that this high cost is one of the main barriers for greater dissemination of solar energy in SSA. Furthermore they state that the cost of household based solar energy is far greater than GNP per capita in most SSA-countries (ibid, p. 1075). However, Scheer (2002) denotes this problem affiliated with financing, and states that it should not be a question of economics but a question of sustainability. Financing it is a question of priorities, not if it is affordable as “we should pay up in demer and alter our spending priorities accordingly” (Scheer, 2002, p. 232).

One question that could be asked in the context of the rural poor and solar energy, is there a direct connection between deployment of solar energy and poverty? As mentioned before access to energy can be seen as a prerequisite for development, but what about the empowerment of the people? Poverty should also be seen in the context of self-fulfilment and in this sense the focus on solar energy can be seen as a top-down development, in which technology is provided to the rural poor without them contributing to the development of the technology themselves.

3.6.2 The *Jatropha curcas* – bio-energy from within

The *Jatropha curcas* is a small tree that produces seeds containing oil, which can be used in a number of things, including both to generate a renewable energy source as well as fighting poverty. *Jatropha curcas* can grow in quite unfavourable conditions as it does not require much water, so arid/semi arid areas would suit the tree well (Tigere et al 2006, Francis, 2008). This makes it a quite attractive plant for use in SSA, for as Mangoyana (2008) mentions, much of the other bio-energy crops demand good-quality land for their productions, which again would not make them feasible in many areas. In addition to this, the *Jatropha curcas* is a non-food crop, which again would imply that it is not food that is used to generate bio-energy.

Francis (2008), shows that the growing of this plant can contribute to bio-energy as well as generate an income, thus contribute to fighting poverty. For this reason the development of the *Jatropha curcas* can be seen as a bottom-up approach to development, in the sense that the farmer is directly involved in all the phases. Openshaw (2000) highlights the potential of the *Jatropha curcas* when it comes to providing employment and enhancing the quality of rural life. Even though the development of the *Jatropha curcas* as an energy source is in its early stages, and that there currently do not exist any market for the plant, farmers have received an income from selling the plant to research institutes (Francis, 2008).

Achten et al (2008) argue that despite all the promise of the *Jatropha curcas*, there exist some vital knowledge gaps that needs to be filled before large-scale cultivation can be undertaken, both when it comes to description of best crop-practice and potential environmental risk or benefits. Accordingly, Openshaw (2000) also acknowledged the lack of documentation regarding the growing, management and marketing of the *Jatropha curcas*. However, a study by Prueksakorn and Gheewala (2006) show that there is a net energy gain in using bio-diesel from the *Jatropha curcas* as a substitute for diesel. Also GHG emissions from bio-diesel are less than regular diesel, or at least the emissions do not come from the long-term stored

carbon as is the case with fossil fuels. But, despite these findings this study also highlights the need for more comprehensive studies in the subject.

Chapter 4 Methodology

In this chapter, I will focus on methodology and explain how I did operationalize my research, or in other words try to display how I went about conducting my research. The research was conducted in February and March 2009, and I travelled in cooperation with a local NGO called ARC-Aid that runs a Development Centre in the region, called ARO. ARO was the base for my fieldwork. I had before my journey been in contact with ARC-Aid and established contact with some contact-persons that were working at ARO. Different kinds of qualitative interviews were conducted with locals from the surrounding village, including some resource-persons working at ARO and with national and international collaborators involved in renewable energy services.

4.1 Research Methodology

Research methodology can be described as how to go about to gather knowledge about the reality. In correspondence with this, Silverman (2001) states that social science research refers to manners to collect, analyze and interpret data about the phenomenon of study (p. 4). Bryman (2004), in support of this view, argues further that social science research has two key features:

- Social research methods are directly attached to different interpretation of how social reality should be analysed;
- Social research methods are directly attached to different interpretation of the role of theory and research

(p. 4-5)

The above-mentioned points show that there are several ways of incorporating social science research methodology. Traditionally, there have existed two main views on methodology, namely Qualitative and Quantitative research methodology, in which the one methodology in use was based upon what kind of “school” the researcher came from. Quantitative research methods were used by scientists coming from the natural science school, in which the aim was to generate research that was dealing with measurement, causality and generalization. Qualitative researcher methods on the other side were used by scientists coming from the social science school, in which the aim was to generate research dealing with deep understanding, contextualization and how processes occur over time. In short, one can say that quantitative research is about finding out little about much, while qualitative research is about finding out much about little. The main differences between the two disciplines are their relation to theory, how to collect data, what is considered to be an acceptable knowledge (Epistemology) and finally how they see the nature of social entities (Ontology).

I have in this thesis chosen the qualitative research approach, due to the nature of what I am studying. I was interested in finding out how the informants saw themselves and their culture out of their own experiences, meanings and culture. Qualitative research is all about creating this deeper understanding, which implies for the researcher to work sincerely, understand

motives, reasons and action, thus understanding their world rather than create a conception of their world. I therefore see the qualitative approach to be the best suiting for creating a foundation for me to be able to understand the former, and also as the most applicable research method to be able to answer my research objectives in section 1.2.

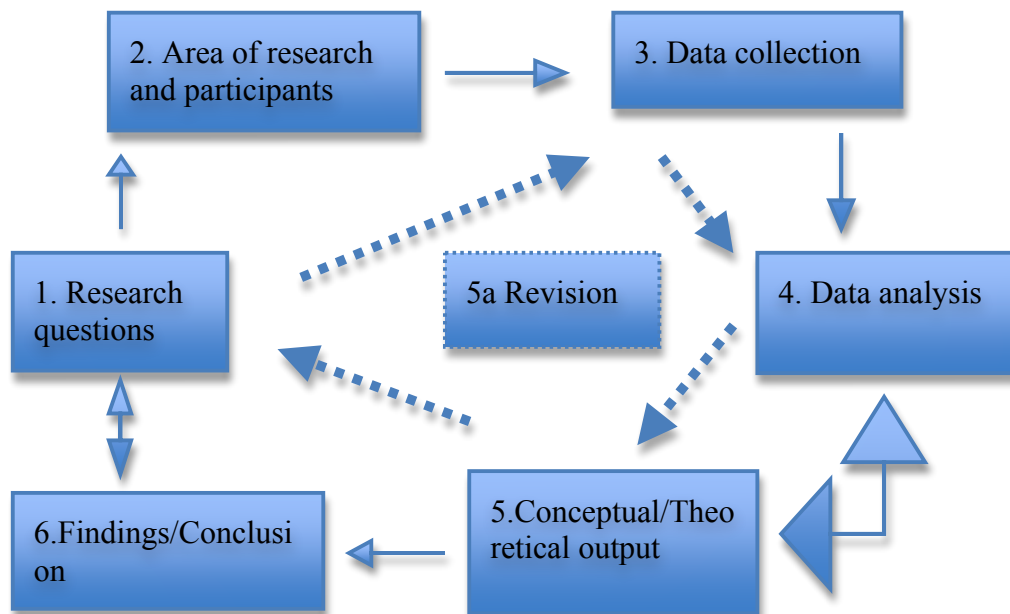
4.2 Qualitative Research Methods

As mentioned in the section over, qualitative research method is all about getting the in-depth knowledge and understanding of what one seeks to explore with the basis inside the context of the object of research. Qualitative research methods tend to use an inductive way of theory approach, which means that observation and findings leads to a theory or is rather “the outcome of research” (Bryman, 2004, p. 9). As a result of this the observation and findings of the researcher is what is used to draw generalizing assumptions and thus generating theory. However, the picture is not that rigid in the sense that the line for observation to theory is fixed. There also exists a position called the iterative position, which implies going back and forward between observation and theory. Grounded theory incorporates this iterative position and is today seen as the main framework used to analyse qualitative data (Bryman, 2004).

Epistemological concerns in qualitative research are mainly based upon a position called interpretivism, which again is linked to generating knowledge about an object inside its own context, or in other words the qualitative epistemology is about creating understanding about the object inside its own subjective reality and society. This is again closely linked to Weber’s *Verstehen* approach, which he used to define Sociology as a science (Weber, 1947 in Bryman, 2004). Based on this view, Bryman (2004) defines interpretivism as an epistemology that “respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action” (p. 13).

Linked to the epistemological stand of Qualitative research are also the ontological considerations, in which constructionism is the main position. This position is linked to the idea that social actors and experiences are closely linked, and in motion. In other words, social actors create their own reality based on their social context, which again is a dynamic and flexible relationship.

Below is a figure of the main steps in qualitative research displayed, in which the two first steps already have been portrayed earlier. This figure will serve as a guide in explaining how I went about during my fieldwork.

Figure 4.1: Steps in Qualitative research

(Figure: Marius Thoresen, 2010, based on Bryman 2004)

4.3 Data collection within a Case study

Silverman (2001), states that qualitative research methods contains four main data collection strategies:

- Observation
- Analysing texts and documents
- Interviews
- Recording and transcribing

(p.11)

I have in my research focussed on collecting data by using mainly interviews, by using both un-structured and open-ended interviews, and observation, by using participatory observation. In addition to this I have also to a lesser degree analyzed text and documents and in some cases combined observation and interview. The main reason for choosing these strategies is that I see them as best suiting in answering my research questions, which again serves as a guide in my research. As this research aims to explain a feature within a certain community and a certain location, it is identified as a case study. Bryman (2004) defines a case study as a study that calls for an intricate and in-depth analysis of a single case, or the comparison of two or three cases. As a result of this all respondents to this research are directly, or more indirectly, involved in the case.

The data has been collected both during my fieldwork in Kenya in February/March 2009, and in Norway during my work with this thesis in 2008-2010.

4.3.1 Open-ended and unstructured interviews

My main source of information during this research comes from interviews conducted with different people from around the research area. I used both open-ended interviews and unstructured interviews. The basis for choosing these interview approaches is due to the nature of my study, which is interested in getting the respondents to give their version of their social reality. Unstructured interviews are interviews in which act more or less as a regular conversation between the respondent and me as the interviewer (Jacobsen, 2000, Kvale, 2001).

Open-ended interviews are interviews where the respondents are allowed to answer freely to a fixed set of questions (Kvale, 2001), which again implies a semi-structured way of doing interviews. The strength of this approach is that it gives room for the respondent to freely communicate the way he/she thinks and thus generate a foundation for the researcher to understand the subjective social reality of the respondents. Another strength is that the research is able to prepare for the interview and be able to ask thought-through follow-up questions, in order to get deeper into a subject. However, as the researcher sets the interview-context, as the interview is done by using a fixed set of questions or an interview-guide, there is a possibility of the respondent to feel somewhat intimidated and thus respond with “easy” answers to the questions.

I used different approaches to my interviews, as I spent more time with my key-informants and interviewed them several times as different aspects of his/hers answer was elaborated on. However, as I also incorporated some unstructured interviews in my research, some respondents were interviewed once. These respondents played however a less important part in the data collection, but it was useful in elaborating themes and for me as the researcher to learn to read the mixed signals the respondents were sending in a interview-setting

4.3.2 Sampling

Before I went on my fieldwork, I had established a contact-group at ARO that helped me in establishing contact with key informers in the surrounding area. As ARO is a centre that holds persons with great knowledge of my topics, I used some of those persons to help me in the beginning to gain a prior knowledge about my research area. After this I used a combination of techniques to get in contact with respondents that I interviewed in order to generate data for this thesis. As a result of my research questions, I applied a non-probability sampling or more specific a combination of convenience sampling and snowball sampling (Bryman, 2004).

Convenience sampling deals with a sample that are assembled due to the suitability of getting obtainable information (Bryman, 2004), or in others words in convenience sampling the researcher chooses respondents based on their prior knowledge in order to obtain an “expert” view on a topic. In dealing with a sensible theme as culture and cultural taboos, it is hard to gather some, or even any, knowledge from a regular person. There was a need for establishing a relationship based on trust before I was able to get any real information about the cultural taboos.

Somewhat to the former is snowball sampling in a way similar to convenience sampling but stands out in the sense that it is the group that researcher initially takes contact with that

suggests more respondents, and in this way it becomes a purposive sampling (Bryman, 2004) in the sense that I as the researcher have a set plan and seek specific respondents, which in this case are Luos living in Majiwa. Below, table 4.1 shows respondents sampled through snowball sampling, showing their coded name, gender, age and occupation.

Table 4.1: Overview of respondents to interviews

Coded name	Gender	Age	Occupation
JC 1	Male	70	Jatropha farmer
JC 2	Male	33	Jatropha farmer
JC 3	Male	30	Leader of micro-credit scheme
JC 4	Male	81	Jatropha farmer
JC 5	Female	58	Jatropha farmer
JC 6	Female	24	Jatropha farmer
JC 7	Male	54	Leader of a farmer-group
NC 1	Male	31	KCA-Teacher
NC 2	Female	56	Housewife
NC 3	Male	35	Farmer
NC 4	Female	44	Nurse
NC 5	Male	85	Retired teacher
NC 6	Female	29	Housewife
NC 7	Male	64	Farmer
PV 1	Male	32	Worker at PV-shop
PV 2	Female	75	Weaver
PV 3	Male	58	Farmer
PV 4	Female	28	Employed at ARO
PV 5	Female	25	Employed at ARO
HM 1	Female	43	Caterer
HM 2	Female	35	Caterer

(Table: Marius Thoresen, 2010)

4.3.2 Participant Observation

Bryman (2004) defines participant observation as “a research in which the researcher immerse himself or herself in a social setting for a period of time, observing behaviour, listening to what is said in conversations both between others and with the fieldworker, and asking questions” (p. 542). I have included this research strategy due to the fact that I am actually seeking to understand some one else’s culture and their own social reality within their culture, and in this sense it is also vital to be able to observe the respondents in their own environment. This will make me as the researcher better equipped to understand and analyse answers given by the respondents as the way they interact can be seen in relation to the social context they find themselves in. In doing this active participant observation and note down what I observed, I feel that I was better equipped to do follow-up questions and review my questions to make them better suited for the respondent to be able to answer. So, in other

words it is possible to say that I used this participant observation strategy to better understand the social setting in which the research was immersed.

4.4 Data analysis

As the data I received during my actual interview process came in an unstructured form, I recorded all my interviews either on paper or on a recording device, which made me able to group aspects of every interview into different groups defined by myself. These groups were defined, organized and thus structured in the way that they gave me information on one or more subjects I was seeking to explore in this research, for instance one group was named “cultural obstacle to development”, while another was labelled “solar power distribution” and so forth. The clue for me here was to quickly structure the answers into my predefined groups, due to the possibility of omitting valuable information and time-consuming if done at a later stage (Bryman, 2004).

In dealing with analysis of qualitative data it is a danger of the researcher to apply his/her own meaning into the analysis, again resulting in a subjective way of transcribing and interpreting the data. However, in trying to answer the topics at hand, namely culture and development, it is almost impossible to not draw in the researchers own sense and understanding of the concepts. I therefore had some problems analysing the group “cultural obstacles to development”, as it can always be put into question what exactly is development and thus a barrier to this development. I therefore clearly state in my findings what I see as an obstacle to development.

The technique used to analyse the data is the narrative analysis with a combination of thematic and structural analysis (Bryman, 2004). A narrative analysis deals with the respondents telling stories that bring to bear their own social reality. Bryman (2004) defines narrative analysis as “an approach to elicitation and analysis of data that is sensitive to the sense of temporal sequence ... that is concerned with the search for and analysis of the stories that people employ to understand their lives and the world around them” (p. 412). Riessman (2004) identifies four different ways of applying narrative analysis, including thematic and structural analysis. Thematic analysis deals with an emphasis on *what* is being said during the interview, while structural analysis puts emphasis on *how* the story or information is portrayed to the interviewer (Riessmann (2004b) in Bryman 2004, p 412).

It is of course necessary to put focus on *what* is being told by the respondent, but it could also be vital to include *how* the information is put forward, especially in a context dealing with cultural taboos. Also I learned to read how the respondents gave me information as the Luo culture is such that an answer is always given, even though the answer is not known.

4.5 Anonymity and sensibility

Due to the sensible features of this research, in which I try to give light to cultural taboos, there was a need for me as the researcher to treat the collected data with a great deal of sensibility towards the respondents and thus make the respondents anonymous. I had a hard time to get anyone to really talk in-depth about cultural taboos. In doing so the respondents may risk setting themselves as talking about cultural taboos. For a Luo this comes with a certain degree of risk. Without making sure that the respondents were made to be anonymous, very few people would accept to answer any questions directed at the cultural taboos

Therefore, I always told the respondents about them being anonymous, and I have given all the respondents a coded name so that the respondents are ensured of this. The list of names is kept separately from the collected data to make sure that anyone wanting to identify the respondents would fail to do so.

4.6 Generalizability, reliability and validity

Kvale (2001) states that reliability is about the quality of measurement, and is in this case much related to the issue of participation observation and interview setting, and suggests that this can be influenced by preparation before and when recording the interview. Validity on the other hand deals with the integrity of the data, whether the research is a result of the researchers own thoughts and opinions or if the research is an objective research where the thoughts of the respondents have been portrayed in a direct, unbiased fashion (Kvale 2001).

The main critique of qualitative research deals with the lack of generalizability of qualitative data, as there is a fear that much of the data collected will be biased by the researcher and his/her views. However, this deals with how one sees the issues of generalization and qualitative research and exactly what is to be measured in order to be able to state the generalizability of a qualitative research. Some argue that qualitative researchers are only able to produce moderate generalizability (see Williams, 2000), while others argue that generalizability deals with the plausibility of the theory drawn out of the qualitative data (Mitchell 1983).

There are different views on how much emphasis reliability and validity should have within a case study. However, according to Bryman (2004), researchers agree on the importance to be able to draw generalizing conclusions out of the actual case study. This implies that case study should be able to tell something about a bigger sample than it directly represent, which means that a case study should be able to draw generalizable conclusions that can be transferred to other cases something that again highlights the importance of external validity or generalizability in a case study. Yin (1984, cited in Bryman 2004) divides the case study into three different types that influence the role of external validity, namely the critical case, the unique case and the revelatory case. In addition to these three types of case studies, Bryman (2004) mentions a fourth group which he calls exemplifying cases, which encompasses cases that give a “suitable context for certain research questions to be answered, and thus allow the researcher to examine key social processes” (p.51).

4.7 Research Challenges

The main challenge in conducting qualitative research is that it is impossible to be completely objective as the nature of qualitative research is that findings are in danger of being the researchers own subjective view (Bryman, 2004). Anyone doing research should acknowledge these features, and keep this in mind when doing research. In addition to this I also expected to meet cultural and language related challenges, as I was doing research in an unfamiliar research-context. However, as I always was prepared for this, my preliminary works helped me in overcoming these challenges and thus produce a fair amount of good quality data.

4.7.1 Research context

The research I conducted was done in a society-context that is all-encompassingly different to my own society. There is no need to go deeper in to the differences but major obstacles as language and culture were a challenge for me as the researcher. Many Luo people who have attended school, speak English very well as English together with Swahili is the two languages taught. However, people who have not attended school may only speak the local Luo language, and therefore I needed to bring a translator in order to be able to speak with them.

4.7.2 Research topic

As my research topic is dealing with some sensitive areas of information, I experienced a really hard time in the beginning to get people to speak to me about these subjects. In order for me to be able to get any real information about cultural taboos and so forth, there was a need for me to establish a relationship with the respondent where the respondent trusted me as a researcher in order to give his/hers views. Therefore it was difficult to get spontaneous interviews about cultural taboos. However, in some cases I think some of the respondents forgot about this and gave me clear-cut answers about some of the taboos. However, there was a need for me to talk about these topics with someone who trusted me. This difficulty of accessing information about these sensitive areas made it impossible for me to use any interview-guide in these settings. When I tried to use a guide, the interview-context became somewhat awkward for the respondents and their answers were short and not to the point. Therefore, I have not used any interview-guide for the interviews conducted on cultural obstacles to development (Part 1 in chapter 5), which again affects the transparency of the research and makes it difficult to replicate. However, for me to be able to get any valid data on the subject, I was forced to conduct my research this way.

4.7.3 Luo culture

One feature of the Luo culture that I got to learn was the politeness to strangers, as it is seen as rude or non-polite not to answer a question from a stranger. This was certainly a challenge for me as the researcher as I always was given an answer, even though the respondents were not very familiar with the answer. This was also shown in another way as some of the respondents gave me answers that they thought I would like to hear. This, however, I overcame by restructuring my questions and ask follow-up questions that gave light to this want to please me as the researcher. The last and not so important feature was the one of time. I quickly learned that many Luo people do not have the same relationship with time as we in the west have. Time is sometimes seen as irrelevant, and two o'clock in the afternoon might mean six o'clock in the evening. Two or three planned interviews had to be cancelled as the respondent failed to show up on the time we had established. This was also something I needed to learn as a foreigner in a research setting, and was quickly solved.

4.6 Generalizability, reliability and validity

As mentioned earlier the main critique of qualitative research deals with the way qualitative research can be portrayed as research that lacks reliability, validity and generalizability. Theory suggests that the best way to deal with this is to acknowledge these challenges and thus prepare accordingly (see Kvale, 2001). I always had the issues of reliability and validity in mind when conducting this research and focussed on asking open-ended questions so that the respondents freely could express his/hers view on the matter. I also made sure I recorded all my interviews so that I could go back and get the direct statement of the respondent without going through my own interpretation of the answers.

When it comes to the issue of generalization, in which the findings should be able to be transferred to other places, objects and situations (Kvale and Brinkmann, 2009, pp. 260), I always intended to be able to use the findings from this research to be able to represent an example of how indigenous people could respond to the issue of renewable energy and the remake of their society.

4.8 Fieldwork reflections

When looking at things in retrospect there are always things one wish to change, as one sees that these changes might give an even better result. This is my first actual fieldwork and therefore some "child diseases" would be expected. Doing fieldwork in a society and culture that is unfamiliar, posed as a challenge due to the differences in manners, customs and beliefs. For example, as mentioned earlier, the Luo culture inherits a politeness custom towards strangers that can act as a challenge in a research setting, due to the politeness in the answers of the respondent. Sometimes there was a suspicion from me as the researcher that the respondent only gave me the answer that he thought I wanted to hear, but this was acknowledged and adjusted by follow up questions.

However, due to good preparations and great assistance from my contact group at ARO, most challenges were subdued. The first thing I did when I arrived at the research area was to take “classes” in Luo manners and customs, to learn how to behave in an unfamiliar setting. I quickly learned some Luo language, which turned out to be very popular among the Luo themselves and acted like an ice-breaker in some instances.

Even though I had prepared well and the fieldwork went well, there are still some aspects of the fieldwork that can be questioned. One highly valid question is whether or not it is possible to learn much about a new culture in such a short period of time, as my fieldwork only lasted for two months. In addition to this I had to cut short my fieldwork by one week, as I had to travel back home due to some family issues.

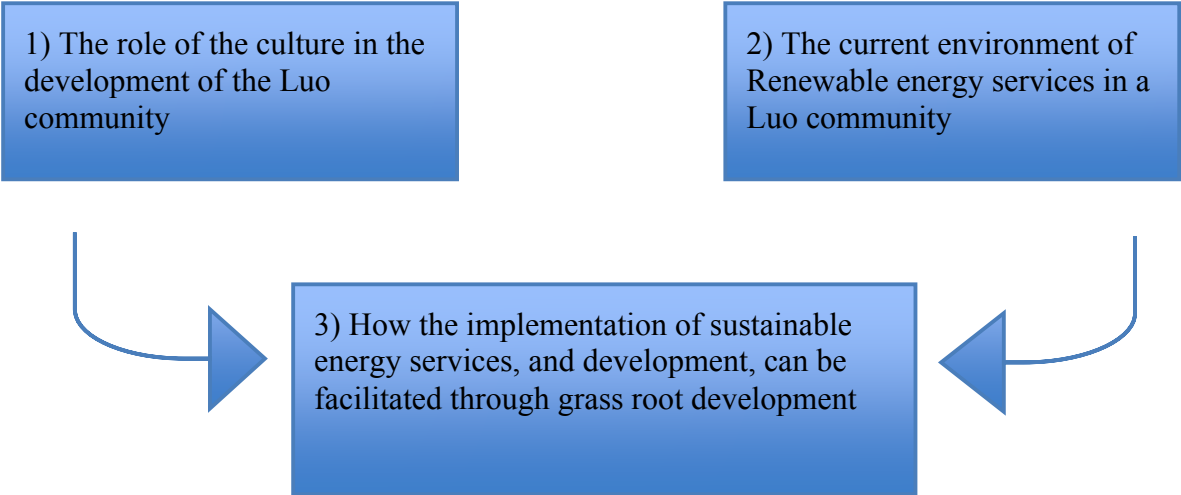
Also, as mentioned earlier, there were challenges in relation to the topic of my research as it dealt with such sensitive topics within the Luo culture. This aspect posed as a challenge in some interview contexts, and it became clear that in dealing with elderly people in relation to sensitive topics was harder than dealing with younger people. This is however easy to understand as it became evident that traditional beliefs have had a stronger position in the society before than it has now, and thus it is more natural for elderly people to be affected by these topics than the younger ones.

Chapter 5: Findings and discussions

This thesis deals with concepts and theories of alternative development, more precisely grass root development, in addition to look into the viability of introducing modern renewable energy services to a traditional community in the rural areas in Nyanza, Kenya. In this chapter I will present my empirical findings based on the fieldwork that I did in the region in February and March 2009, which took place in the village of Majiwa in the Bondo Province, and discuss these findings in relation to how future development efforts can be managed in order to facilitate grass root development.

Based on this, the following chapter is divided into three sections, shown in model 5.1, in which section one and two present their own separate issue, namely the role of culture in the development of the Luo community and the current environment for renewable energy services in a Luo community. Section three is used to draw together section one and two together, and discuss these in relation to the people centred development approach.

Figure 5.1: Outline of chapter 5



(Figure: Marius Thoresen, 2010)

Part 1: The role of culture in the development of the Luo society

- Some aspects of the Luo culture acts as an obstacle to development -

“Culture is the way of life, and without it there will be no living. If you want to destroy a society, you deprive them of their culture and that will be the end of that society. We should change our mind and look into what is good in our culture and keep this, and try to change things that are not that good. Development that neglects the culture is not development, real change come from the inside”. – NC 7

In my research I find some aspects of the traditional Luo culture, or similar in the Luo way of life, that acts as an obstacle to development, both when it comes to the community level (meaning influences coming from the community) and the individual level. However, in making such a statement it is important to acknowledge and highlight what development, and thus an obstacle to development, means in this context. Development is in this thesis seen as grounded in the people' ability to improve their livelihoods, in which focus is put upon the individual responsibility for developing themselves. Based on the former, development is here seen as a sense of ability to gain new knowledge and information, and apply this to improve one's life and livelihood. Obstacles to this development would then be forces outside, in the community, and inside each person, which act against this ability to gain and apply new knowledge and information.

I would argue that some of these traditional beliefs are contributing to maintaining the status quo of the present community and thus are contributing to crippling development efforts and keep many Luo people from attributing themselves in the form of gaining new knowledge and information, which again can lead to empowerment.

It is however, important to acknowledge that this thesis only focuses on some parts of the Luo culture, as it was impossible to gather knowledge about something so vast (the Luo culture) in such a short period of time (Fieldwork lasted for two months). Equally important it is to acknowledge that for every aspect that I see as an obstacle to development in the Luo culture, there exists other features of the same culture that are contributing to empowerment and development. So, I am not directing critique towards the whole culture per se, but I am highlighting some features, rather important features, that I see as acting against empowerment and thus development. As shown in chapter three, and mentioned by Derman (2003), Ahmed (2002), Verheist and Taylor (2002), Øyhus (1989) and Chambers (1983), much relevance is put on the local cultures impact on development, and more importantly the outcome of development, and can in many ways define the development result.

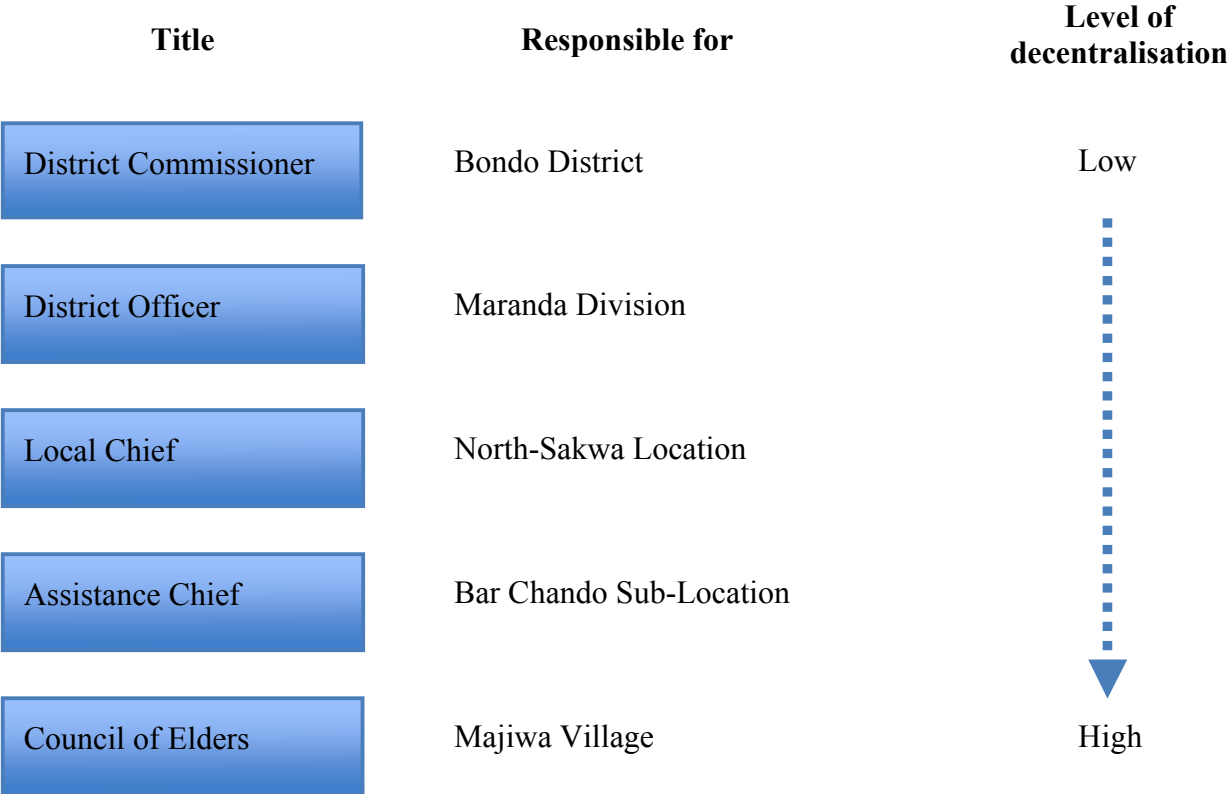
5.1.1 Structural organization as an obstacle

“The role of the elders is to keep the culture” – NC 3

The way that the Luo society is hierarchically structured, with the role of the elders being some of the most important persons in the community, this can in many instances lead to a rigid society in which change is unwelcome.

Ocholla-Ayayo (1980), mentions the strategic role of the elders inside the community, in which the traditional Luo culture have regarded them as the leaders of the community. The system is such that there is one elder from each clan, with a minimum of five elders in a village. Today the role of the elders has very much been included into the local governmental setup, which means that the elders, even in 21st century Kenya, play a major role in outlining local government. The government acknowledge the role of the elders and position them at the first governance level, in which they represent their village. The figure below shows the local governmental set-up in Bondo District and Majiwa village.

Figure 5.2: Overview of present local governance levels in Bondo District



(Figure: Marius Thoresen, 2010, based on interviews conducted during fieldwork)

The figure depicted above, shows the direct impact that the elders can pose on the local community, as they are recognised as a legitimate governance level even by the local government. Therefore it is also viable to conclude that the elders can pose a direct impact on the local development.

NC 1, a person who on a daily basis experiences these issues, explains the role of the elders in local community development in this way:

“One can say that the elders are responsible for the development of the people inside their community. Some are clinging to traditions and see new thinking and development as a threat to their social status as leaders in the community. Let’s take the district of Siaya, the bedrock of poverty in Nyanza, as an example. Here it is the elders who front the negative culture in the sense that they are seen as possessing the power of witchcraft, and anyone going against the saying of the elders will be put a spell upon or be seen as an outcast in the society. So, you can imagine being a caterer for change in these circumstances are very, very difficult, not to say dangerous, as strong forces inside the community are working against change and thus against development”.

NC 5, an elder person inside the Majiwa community, gives his response to the role of the elders in development:

“The role of the elders should be more of influencing the people, not to keep the cultural practices. That should be discouraged, and if the elders could be made to realize that it is their role to influence the younger people, it would be a great help (in development). But this is the thing as they are free to tell people what they think themselves. The elders are not useful in applying change; they are older people interested in continuing their way. As soon as they continue their way, they will influence the younger people to go his way. They will be more successful in doing this than a teacher trying to organize a class. Let me put it simple. If I (being an elder) were interesting in hunting, keeping animals and hunt wild animals, I would influence people, young people, to hunt animals, rather than to go into working for a canal for water sewage”.

NC 3, a local farmer, answers this way to the same question:

“The role of the elders is to keep the culture! They can in many cases be seen as the main obstacle to development coming from inside the community because of their direct influence on the community. However, it all depends on the mentality of the elders inside the community. In some rare cases, the elders have in fact facilitated development. But most of the elders are traditional in their way of thinking, and see new ways of living and what comes with it in form of new influences as a threat to their existence, and are more or less active in crippling new ideas or thoughts, or in other words development”.

So, the elders can act as a barrier to development in the sense that they have the ability to influence people in their line of thought, and also the power to directly interfere into the development of the society. In addition to this, this research shows that how the elders affect

development is in a sense down to the elders feeling towards development and new thinking. However, as the elders are elderly people, who in most cases are more affected by the traditional way of living, the chances for the elderly people to be aiming at upholding these traditions are, fair to say, higher than with the younger part of the population. In many cases the elders see development and new thinking as a threat towards their existence and their current influence in the community, and they are thus in many cases acting as active obstacles to be overcome in order for development to be able to take place.

5.1.2 Traditional beliefs and taboos as an obstacle to development

“Chira odokeny” – The breaking of taboos

The saying above is a Luo expression meaning “Chira will return to you”. Chira is a strong belief inside the Luo community, in which it is seen as some kind of illness that will come back and haunt a person that breaks any cultural taboos. It should however be included here that the exact terminology is a little hard to grasp as there seems that the terminology has changed over the years. Ocholla-Ayayo (1980) includes the notion of Kwer, a higher level of Chira, and also the notion of Nyingi kethore and Kethruok-Nyingi. Nordenstam (1982) and Hauge (1974, cited in Nordenstam 1982) have tried to explain these notions. Nordenstam (1982) tries to explain Nyingi Kethore and Kethruk-Nyingi as some kind of disgrace and Kwer as “the property of actions” (p. 98) and Chira as “a certain type of consequences of actions which are Kwer” (p. 98).

In this thesis however, I will not make this distinction, but use Chira as a common phrase that is defined as something bad that will happen to yourself or your closest family if you break any of the cultural taboos. None of the people I interviewed during my fieldwork talked about these other terms, but were constantly referring to Chira as the evil thing that might happen if you break a taboo.

NC 4, a local nurse, highlights the role that Chira plays in the health of the people:

“Many of my patients come to me with what they believe is caused by Chira, I see all the symptoms of HIV, but they continue to say that it is Chira who is causing this. Chira is very much related to HIV/AIDS because a lot of Chira in this culture has directly or indirectly to do with a families sexual relation, in which one person got married before a older brother or sister, or built a house before an older brother or sister. As a result of this belief that Chira is causing it, they do not respond to treatment. The worst part is, however, that I know that many people who are sick will not come to the clinic because they are afraid of showing people that they are sick, and then cursed by Chira, which in some cases can lead to people treating them as an outcast”.

PV 4, a person that works at ARO, tells me about the combination of Chira and health:

“First, let me give you a practical example: A father has two sons, and he wants to plough. However, if the first or second son start to plough before him and then gets ill, people will say that its Chira, as the son broke a taboo of not ploughing before his father and elder brother. This form of Chira is evident everywhere in the Luo culture and has its roots in the homesteads. A younger brother cannot build a home or even a house inside his father’s compound before his elder brother has built. This is contributing to keeping whole range of families in poverty as some people might have got some troubles that keeps them from being able to build, something that again will affect the younger brother. When it comes to HIV/AIDS, people are confusing it with Chira because in the older days the medicine man or the herbalist had an herb to give that helped overcoming the Chira. So, I think that they use Chira as an excuse to not go test themselves, because they are afraid of what the test result may reveal.

The story of son ploughing before his father shows how the belief in Chira and taboos in general, may lead to crippling development as in many cases the taboos can be seen as directly interfering with new thinking and development. Linked to the belief in Chira is also the belief in magic in the Luo Society.

5.1.3 Magic

Another issue that is somewhat connected to both the role of the elders and the power of Chira is the traditional cultural belief in magic, both in form of herbalists performing their magic with herbs and then witchdoctors, who have the power to put a spell on people. The case below illustrates how magic even today plays a part in the Luo society.

Case 5.1: “Magic in motion”

The quest for the missing phone

During my stay at ARO, there was one unfortunate incident of a cell-phone being stolen from one of the Norwegian visitors. This, unfortunately, became a big issue for the employees, and especially for the catering-team, who was accused of being involved (the phone was stolen from one of the dinner-tables, when the owner left it there).

First, the police became involved, after the Norwegian reported it. The police came to ARO and questioned the people believed to be involved. This, however, resulted in nothing and they were not able to identify the guilty part. One of the ladies working at the centre was however brought to the police station for questioning.

Unfortunately, there were rumours starting to appear, and some of the staff at ARO was accusing each other, with the catering-team being highlighted as the possible guilty part. The caterers therefore took matters into their own hands and visited two herbalists, one in Kisumu and the other in Bondo, paying them a total of 6000 KES (approximately a little short of two monthly wages for one caterer), who again told them that the guilty part would appear with the phone within two-four days (one said two days, and the other said four days). When this again failed to materialise, a third step was orchestrated.

This time the herbalist came to ARO and performed his “magic” there, during a meeting that I attended. The sister of the lady who was taken for questioning at the police station, in order to clear their name, initiated this meeting. All the available staff at ARO, including some that had their day off, attended this meeting. Something that again highlights the psychological effect: If someone failed to turn up without a good excuse, it was highly possible that they would be suspected and in a way incriminated.

The Herbalist process

First the herbalist told everyone why he was here: He was going to use a herbal technique to get the phone back and thus identify the thief. He showed us his certificate, proving he was a certified herbalist, issued by the African Herbalist Society. After this he told us what he was doing, and what the result would be. First, he needed to collect some dirt from the areas, which for certain the thief must have been in the compound (like collecting dirt from all of the entrances to the dining hall). Second, he requested a list of all the names of people not present at the meeting, a list that he again had to duplicate using his own special ink. Third, he mixed the dirt from the compound with some different herbs. When I asked him what kind of herbs he used, he answered vaguely that it was herbs from the area, in addition to saying that: “Everything that grows in the earth has a purpose, and thus a magic effect, but most people do however not know how to use it”. After finishing the list of names, using his own ink, he folded each of the lists into a small package that he used some herbal tread to enclose.

After concluding this process he stated that the thief would now, by him/herself, return the phone within two days. If the thief failed to do this, he or she would be difficult for the herbalist to save. This was because it was up to the herbalist to “release” the thief from this madness the thief was obsessed with. At the end the herbalist also offered to come back, and cleanse the place of future thefts. By him performing his magic, the people who where obsessed with this madness and came to ARO with the purpose of stealing, would only walk around in circles inside the compound in a trance not knowing what to do.

So the interesting part of this case study is what effect did it have? Here it is almost impossible to be objective, because this is so closely connected to a person’s belief. I observed during the actual herbalist session that people acted in very different ways. There were a lot of laughs around the circle of people and most seemed to be in a good mood. However, importantly, no one laughed at the actual process, but the jokes were rather put towards the fact that there were white people present. So my basic conclusion is that most people took this seriously even though they did not believe in the “magic” of the herbalist.

In order to be able to really evaluate and outline the effects of the herbalist process, as I believe that these effects are purely psychological, the best thing would be to have a Psychology degree, something I do not. The herbalist “magicians” has now failed three times, costing the caterers around 10 000 KES, which is a lot of money in this region, something that again has led me to believe that there is no such thing as “herbal magic” when it comes to finding a thief, but that the possible effects it incorporates are purely psychological inside each human being. Perhaps I am being too cynical about it, but as mentioned earlier, it is something that is impossible to be objective about. I would however argue that this psychological effect is rather easy to understand. Let us assume for a while that the guilty part were among the people in the circle. Let us even assume that I were the guilty one and that I

were a Luo all through (if I were a Norwegian, the herbalist process would probably not make a difference as in the Norwegian culture the belief in magic is all but abandoned). First of all, there is the effect of not being present as mentioned earlier. However, the main thing in order to be able to “smoke out” the guilty part is, according to me, the psychological effect the session has. This is however a grey area in human consciousness: Some people believe and some do not, what is not rational for one individual makes completely sense for another and so forth, something that again can even be applied to the different religions around the world. It is almost impossible to explain why some people believe, and why some people do not. The main thing here is what kind of position “magic”, or any other belief has in the society, and as shown earlier, traditionally “magic” has played a big part in Luo culture. In addition, this incident shows that it still plays a part, at least in some fractions of the society (if it had not played any part, no one would for sure waste their money, three times, on it!).

So, when asking two of the caterers involved in hiring the herbalist why they decided to go to the herbalist, HM 1 answered:

“The reason we went to this extent was because we (the caterers) were accused of being the ones who stole the phone, this because the phone was stolen inside the dining hall. We want to clear our name and believed that the herbalists could tell us who stole the phone and as a result clearing our names”.

HM 2, agreed, and told that “I believe that herbalist can perform magic, and that they could help us tell the truth”. So, clearly, the belief is there, at least with some people.

After this I outlined the way I saw it, and told them the reasons for me asking them. I asked them to comment on my views. HM 1 answered: “Perhaps you don’t believe, because you haven’t witnessed it. I have however witnessed it”. Then HM 1 told the story of when three bulls were stolen from a farm, where the herbalist came and did his “magic”. The result was the guilty ones started to behave like cows, eating grass and such, before admitting to being the guilty ones. HM 2 agreed to this, and stated that HM 2 had been a witness to herbalist magic as well.

When asked about what they thought was the reason to the “magic” not working these times, HM 1 answered: “All herbalists are not straightforward, some are just out there to take your money”. HM 2, in addition told that:

“Some of the caterers even did the wrong thing the two first times, there were some candles that were handled wrongly. Also there is a possibility for people to buying themselves out of the problem by paying the herbalist more money than we did or for some it is even possible to protect themselves, using counter-magic”.

HM 1 finished the conversation by acknowledging, a little defensively:

“Maybe it will not turn out the way we want. But if you are eager enough, you are willing to even use the little money you’ve got and go a long way to cleanse your name. That is all we want to achieve, to clean our name and be set free from these accusations of we (the caterers) being the guilty part”.

This issue of Chira is closely connected to the elders in the community, as traditional elders are more connected to upholding the Chira, then new-thinking elders would be. NC 5 tells a story which in a way sums up the relevance of both Chira and magic in the Luo community. Even though this story is some years old, it still grasps the role that traditional cultural elements still hold in the community today:

“Even in our society today, it (magic) still plays a big part, even though it (the role of magic) is dying out faster and faster. What I would say is that it is a way of getting to an easier, broader way, where one can evade some hard work. These magicians, is something I must say are a belief. They can only be powerful if people believe in them and their powers. If you brought a magician to solve a crime in a European country, the magician would have no effect, because people would not believe. However, in our society many people still believe in magic and therefore the magician still holds power and are seen as a wise and important man.

When I built my house, I was not a believer in magic. I was a teacher and had developed from my father a belief that there was no such thing as magic. Some people in the community did not want me to put up my house in this place, so they wanted me to believe that I could not set up my house here. They used magicians, and the local elder telling me that I would suffer and get sick if I continued. Three magicians (Witchdoctors) came to my house and put a spell on me. They did not want me to build the house because it was a new type of house with a corrugated iron roof, the elders did not want me to put of this new type of house, they wanted me to build a smaller house with a grass roof. I, however, still walk the earth today, even though I have some troubles with my legs, and would say that the magic didn't work on me. Magic really is a big hindrance to the community development because people are made believe that if you do that, you are going to get bewitched or die. This magic, or the belief in this magic, are a big hindrance in our development as it contributes to keep people in poverty, and stop them from breaking out and do new things”.

In this section so far, I have presented features in the Luo culture that I see as acting against development, however, the features presented until now have only dealt with what can be called as “community obstacles” as these are features that exist in the community and puts pressure on the individual to submit to them. However, in my research I also find what can be called “individual obstacles” that comes from within the person. These obstacles are however influences by community that the individual is surrounded by, as no one is isolated in their own to just be influenced by themselves. The important issue here, which will be highlighted more in the last part, is to show that any development process directed at contributing to sustainable development needs to incorporate both the community aspect and the individual aspect in order to be able to be successful. The remaining part of Part 1 will look into some individual aspect in the Luo society that acts as obstacles to development.

5.1.4 Dependency thinking and lack of forward planning

Dependency thinking can be defined as a mental state where one is depending on help from others. The term has its root in the Dependency theory paradigm of development, where development is seen as strategic imperialist strategy from the rich countries to exploit the resources of the poor countries. Dependency thinking is in many ways a critique of the way development, and in particular aid, has been carried out in the past, in which it sees that development and aid have created a dependency in the poor countries for aid, which in return has contributed to crippling local initiative due to the access of “easy money” in form of aid.

I experienced this dependency thinking when conducting one of my first interviews with a *Jatropha* farmer, called JC 1. The impressions I got from JC 1, was that there were no help around, no way of obtaining capital, and as a result JC 1 was all on his own. Insects had destroyed much of JC 1’s entire crop-field, but all JC 1 did was to acknowledge that JC 1 had an insect-problem, and that JC 1 could not afford to buy any insecticide. One easy way of solving this problem would have been for JC 1 to seek the local micro-credit scheme, where JC 1 could have borrowed the money at a reasonable interest-rate. The local micro-credit scheme also has insecticide available for farmers to use. However, I later learned from my translator that JC 1’s strategy was that by telling me how bad everything was, I would come up with the money and give it to JC 1. The translator, who followed me, told me that JC 1 had asked if I was a wealthy man coming to help JC 1 with some money. When JC 1 was later told what my purpose was, JC 1 quickly became less interested and soon went inside his house. Before JC 1 left, however, I was able to get the reason for not using either the local micro-credit scheme or the local *Jatropha* Farmer-Group:

“There is no micro-credit available! And the Farmer Groups is not helping either, I am a member and go to some meetings, but no money is given there!”

When I tell him that I just visited the local micro-credit scheme that is located only 200 meters up the road, at ARO, where I talked to the leader, and that I also have been talking to the leader of the Farmer Group, I notice that JC 1 looks surprised and gets a little angry and answers before he leaves:

“I don’t like this micro-credit thing, because I know some people that went to a micro-credit and ending up loosing their home. I don’t want that, so I keep away from those people. When it comes to the Farmer Group, they are not helping. All they do is talk, and no money comes from it”.

After this interview, I went back to talk to both the leader of the micro-credit scheme, from now on called JC 3, and the leader of the local farmer group, called JC 7. JC 3 tells me, when confronted with my experience in relation to the farmer’s view of micro-credit, that:

“The main problem is the society. We are trying to educate people, but the society doesn’t know much about micro-credit. Not because we don’t try to tell them, but the attitude in the society is so negative towards micro-credit that people don’t feel like saving and accessing credit. When you go around, someone will tell you that this is my problem and expect you to help him out of that problem, simply because you will give free money. Here we are trying to discourage that, we are trying to encourage people to save, so that

in the end of the day they will get a small credit to buy for instance insecticide. Even though many persons today are engaged in micro-credits, there are still some persons that will tell you that there is no such thing and the main reason is to get free money from wealthy people, especially 'whites'. But if you give today, you will not see any insecticide bought tomorrow, they will use the money on something else and continue to complain about the same thing to someone else tomorrow."

When confronting JC 7, about the farmer and his view of the farmer group, JC 7 replies:

"The only direct advantage of joining our group, besides cooperation, is that you get access to micro-credit loans from different micro-credit schemes in the area, this is the only thing we do that is directly connected to a farmer getting funds from being member of our farmer-group. We do not give money away that is just contributing to the dependency thinking, the farmers must take up loans and be responsible for their own development. Many people see the group as getting donors for the farmers, so that they can get free money from them, that is not what we are about."

Here it is becoming evident that some people in the community are heavily affected by this dependency thinking. It can be argued however, that this dependency thinking has deep roots that stretch all the way back to colonial times, in which the colonialists in a sense made the people dependent on them. In relation to this, my supervisor, a former secondary school headmaster in the area, told me that the English colonialists used a pedagogy in the Kenyan schools during the colonial period called the "Colonial Pedagogy", in which most part of the people was systematically educated to be dependent on others, learning to take instructions and not ask questions, while a small part of the population was made out to become leaders, and learned to think critically, be creative, ask questions – and give the instructions. Even in the schools today much of the same system is still present, where the teacher is treated like a truth bearer not to be questioned. One can only imagine what effects this pedagogy has on a child, when it comes to self-reliance and empowerment. If generations of people are taught to be dependent on others, thus not be an individual, self-reliant, person, much of the basis for empowerment is far-fetched, and thus development and change will take a long time to be effective.

PV 4 also gives PV 4's opinion on dependency thinking:

"I see it as two sided. First, you have the dependency coming from inside the families or communities. Take me for an example. I have two sisters who depend on me to give them money to help them. In many cases the eldest is seen as the head of the family, and in my case where both our parents are gone, it is seen as my responsibility to take care of my extended family, as I am the oldest. In this way it is seen as a natural phenomenon in the society, and might be something people don't think much over. It then becomes a natural thing for people to depend on others, which again contributes to them not being able to be self-reliant. The second side is the dependency towards donors. Donors also create dependency. They help us develop, but they also create dependency. Some donors give support, without following up on what they give. Donors are different, but some are not taking the responsibility of follow-up very seriously. If donors fail in

following up a project or a financial transaction, the signal they are giving is that of ‘easy’ money. People have to be treated as responsible beings”

Another problematic issue, in getting people to take up micro-credit loans, is the inability of many of the people to plan their economy, something that is pivotal in being able to finance any loans. JC 3 highlights this issue, when telling about the troubles JC 3 is having in getting people to use the micro-credit scheme:

“People in this area are not used to planning their economy, mostly due to poverty, but also due to inability to think in such a way. Most people living in this community are subsistence-farmers, who base their living on what they can grow. People have been living like this in generations and it is therefore a hard and time-consuming thing to change. People are used to use the little money they get on different things they need, like paraffin and so on”.

NC 6, tells me, when asked if NC 6’s family is able to save some money:

“People are not used to thinking ahead and plan for the future. Mostly people think of today, because that is what we are used to. Poverty forces you in many ways to struggle for making the ends meet, in addition to this we have some saying or riddles that are grounded in poverty like: ‘Whatever you have today, eat it, because you will never know what will come tomorrow’. So, if we have food then we eat, because we do not know what will come tomorrow. This is also connected to money, we are not able to save any money, as the little we get from selling some things at the market, or that my husband is able to bring, is usually used to buy some things we need.”

Even though dependency thinking in many instances can be seen as natural, and has it good qualities, one can argue that it in many senses can affect development in the sense that there is no self-development taking place. Self-development can in this sense be seen as similar to empowerment and self-reliance, in which a person who only depends on others, and especially donors, for being able to develop themselves, in a sense is crippling the ability to become self-reliant and will never get any “ownership” to their own development, and thus feel responsible for his/her own development.

5.1.5 Lack of community cooperation – Jealousy and pride

“A Luo, is a person who feels pride when his brother is suffering” – NC 1

One thing I observed during my fieldwork was the complete lack of cooperatives around. When I visited Tanzania, one year earlier, and did some small research there, cooperatives were a common feature in the community and played an important part in the community development there. Here, in Bondo the cooperatives were not playing any part at all, and

people I asked to show me a cooperative said they did not know anything of such. Another issue that concerned me was what seemed as an almost non-present communication between the people in the sense of helping each other out and pass knowledge on to each other. The best example here was the *Jatropha* farmers in Majiwa, who had all but given up on *Jatropha* because of problems with insects, called the red spider mite, eating the leaves. The farmers had planted the *Jatropha* Curcuses in a soil that was too fertile and thus more suited for food crops, making it compete with regular food-plants. Farmers I visited in this area struggled with the same problem, but they all told me that they were on their own struggling to overcome the problems.

When confronting NC 1, about my observations, the response is:

“Well, actually, here you have pointed at something very interesting about our Luo culture. There is a saying that a Luo is a person who feels pride when his brother is suffering. Jealousy and pride is evident everywhere in the Luo community. The jealousy that Luo people have is among themselves and is connected to such thing as positions in the society. Even among family-members and friends, this jealousy can be evident. It is in many ways contributing to keeping us all in poverty because someone might come up with a good idea in my community, but the people around will become jealous and politicize it and maybe destroy the idea. People will try to destroy the prosperity of people to keep them at the same level as themselves, instead of trying to learn from the person’s prosperity. My grandfather told the story that these feelings of enmity between the Luo people came from the forefathers. Once there was a Luo who had three wives and went to work in an urban centre far away. The younger brother came in and took his elder brothers place, and made one of the wives pregnant. The older brother came back and found this situation, and complained to the elders in the community. Some of the elders supported the younger brother and told the older brother that he could not expect the wives to stay put when he had already been away for three years. Some elders supported the elder brother and all hell broke loose, which again was the start of this enmity. That is what my grandfather told me. One politician once said that even if a Luo rise to become the president of Kenya, it would not help the Luo people any better. When it comes to pride, this is something we show friends. People have pride in themselves, but not in what they do. Many people do not want to be connected to people from a lower class, and even family-members are left behind. People go for pride, but when you go deep into themselves, to their origin, their home, people there might be stuck in poverty without them caring a bit”.

NC 5 partly agrees with the saying that a Luo is a person who feels pride when his brother is suffering, but sees jealousy and pride as being more linked to positions in the society:

“We have another saying that is somewhat similar to the one you presented me: Your brother’s poverty doesn’t stop you from sleeping. I would not say it like you presented, because I don’t see it that way. The jealousy is more imminent when it comes to positions in society and you can say that a Luo is somebody who wants to be alone on the top. Our natural set-up is such that we in a way fight each other to be at the top in the society, this is

hindering us from developing, but on the other side you can say that people are not equal, some people are born with better talents than others. However, the mentality has to be changed to stop competing and start cooperating to make both of us better.”

5.1.6 Brief conclusion of Part 1

In Part 1, I have presented the importance that culture has in any development effort, and again how some cultural traditions and beliefs can serve as active obstacles towards development. Perhaps the most evident of this is the role of the elders in the community and belief of Chira, which are active forces in hampering development in the sense of bringing new ideas and influences to the society. The elders can both act as facilitating development and hindering development, this all has to do with how interested the elders themselves are in changing the traditional set-up and open up for new ideas and influences. However, when the elders usually are elder men with a high position within the community, it would be a fair assumption that most of the elders do not want any change that might put their own position inside the community on jeopardy.

Chira can in many ways be seen as a tool in keeping the old ways, and in this sense it can put an effective stop to new thinking in the society. As I have shown earlier, Chira is related to health issues, in which people are not seeking help for their problems, but rather see the sickness or illness in relation to committing a cultural taboo. On the other hand, Chira is also related to keeping traditions rather than opening up for societal change, in which changes in the form of not following the traditional customs are in many cases seen as a taboo. The belief is that people who fail to follow the tradition, and act as agents for change, will inflict himself/herself or his/her family to become exposed to Chira.

In many ways there is a direct link between the role of the elders and Chira, as the elders can influence the role of Chira in the society in supporting the role or distance themselves from it. Magic in the form of herbalists and witchdoctors also possess an important role within the community, and the persons who are seen as capable of performing magic are therefore seen as important and powerful people in the society.

In addition, individual aspects such as dependency thinking, jealousy and pride are also contributing to keep people from empowering themselves and be self-reliant, which in return results in many people not taking responsibility in developing themselves, but keep on waiting for others to do it for them. As a result of this there is overwhelming lack of cooperation in the community, something that again is contributing to the lack of local initiatives taking place.

Part 2: The current environment for Renewable energy services

Part 2 aims to outline the current environment for Renewable energy services in and around Majiwa village, with a focus on Solar PV and the *Jatropha Curcas*. The aim of this thesis is not to question the importance, or rather the potential, of renewable energy services in sustainable development. Neither is it to question the importance of energy in development. These two issues have been thoroughly researched, and it is now more or less an established truism that energy is seen as an integral part of development and that sustainable energy or renewable energy are also seen as an integral part in sustainable development. Gaye (2007) shows that there is a link between energy poverty and level of development, in the sense that regions that is lacking an established energy service that covers most people are in general ending up at the bottom of the “development ladder”.

The promise of solar energy is that it can contribute to create a “development revolution” in the sense that solar energy can be seen as the most viable energy source in the rural areas (Scheer, 2002, Karekezi and Kithyoma, 2002). The hope is that the developing world can be able to go from practically no energy services, to renewable energy services, and in this sense leapfrogging the already developed world like what happened with the successful introduction of the cell-phone.

The reality, unfortunately, shows that there are still some steps, or obstacles, to be solved, in order for the promise of Solar energy to live up to its promise in the developing world. Karekezi and Kithyoma highlight the high initial cost as one of the biggest barriers to poor people being able to use Solar PV in their home. Likewise, Jacobson (2004) raises questions on the development effect of Solar PV. His findings, based on his research done in Nyanza, show that it seems that it is only the middle class that captures benefits from Solar PV and there seem to be little connection between Solar PV and economically productive- and educational activities, whereas Solar PV is mostly connected to television use, expansion of markets and increased urban-rural connectivity.

In addition to the findings of Jacobsen (2004) and the quite obvious initial-cost obstacle, I find that there exist obstacles inside the community that can be labelled as coming from the difficulty of change in the Luo culture, something that again originates from the cultural obstacles to development mentioned in the earlier section.

The *Jatropha curcas* is a relevant new addition to the group of possible bio-fuel plant. The potential of this plant and the impact it can cause is of great promise, both when it comes to providing an energy source in form of bio-diesel, but also when it comes to poverty and tackling the impacts of climate change. Mangoyana (2008), Tigere et al (2008), Francis (2008), Openshaw (2000) and Achten *et al* (2008) show that what makes this plant so remarkable is that it barely needs any water and that it can grow in really poor soil, something that will not make it compete with food-crops over land. Being a Nitrogen holding plant, it can even re-fertilize the soil and make it fertile enough to use for other crops.

Even though the *Jatropha Curcas* has a lot of potential, there are some challenges that need to be overcome in order for it to be successfully implemented. First, there is as Achten (2008) and Openshaw (2000) show a lack of information and knowledge-gaps that need to be filled in order for the plant to be viable for large-scale cultivation. In addition to this, I find that Luo

culture can be seen as a major obstacle in this plant succeeding, as it is seen as a taboo in the Luo culture to cultivate the *Jatropha curcas*. The taboo connected to the *Jatropha Curcas* is directly tied to the belief of magic and witchcraft, as the *Jatropha Curcas* was cultivated and used by witchdoctors in the Luo community due to the small amount of poison that can be found inside the seeds of the *Jatropha Curcas*.

5.2.1 Current environment for solar energy implementation

The aim in this part is to give a sound assessment of the current environment for using solar energy service as a mean of energy resource. First of all, I went to talk to a local solar PV supplier in the nearby city of Kisumu, in order to establish how much a solar PV system would cost and what kind of people who can afford this.

The seller, called PV 1, tells about what his company can offer:

“We offer different packages to people, depending on their needs, but the most popular package is the 100 W package that can cover a whole house, even including a television, which costs around 100 000 KES in total. In addition, we sell a small package with a total of 28 W divided on two panels, including batteries and 3 pieces of lights, which costs around 35 000 W in total. Lights and television are the main use of the panels, in addition to irrigation and water.”

Based on the information that PV 1 gives me, table 5.1 show an approximately cost of solar PV system that can run a household.

Table 5.1: Approximately cost of a 100 W solar PV system

Solar panel 100 W (500 KES pr 1 W)	50 000 KES
Batteries	12 000 KES
Inverter	7 000 KES
Charge controller	3 000 KES
Lamps	280 KES pr. item
Wiring and Cables	85 KES pr. m
Frame for panel	3 000 KES
Cage for Batteries	2 000 KES
Labour and transport	10 000 KES – 20 000 KES
Total	Ca. 100 000 KES

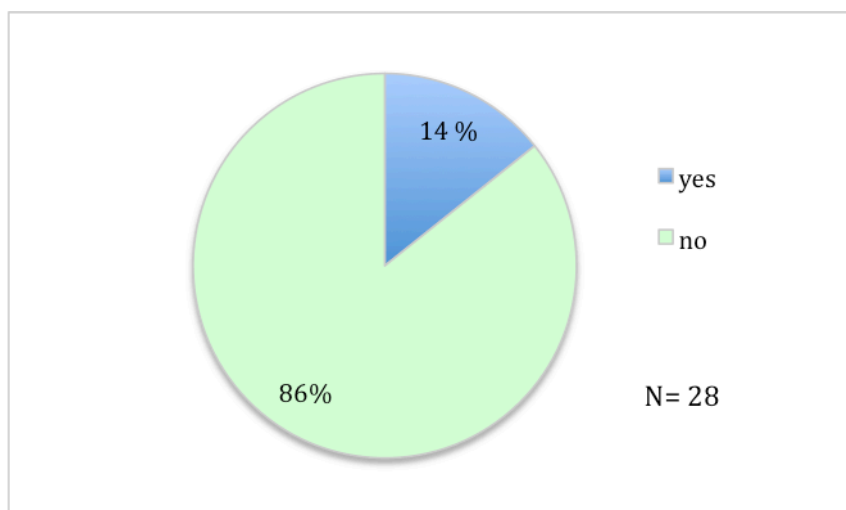
(Table: Marius Thoresen, 2010, base on information from interview)

When PV 1 tells about what kind of customers the company is having, it becomes clear that Jacobson (2004) findings still has relevance:

“The people that buy solar PV systems are middle-class people or above, who work in the town and have an average monthly salary of around 50 000 KES. However, we have started selling some smaller systems, like the one I mentioned to you to people with less income and even in the rural areas. Also there are some few people who buy some at the time, and thus build a solar PV system over time.”

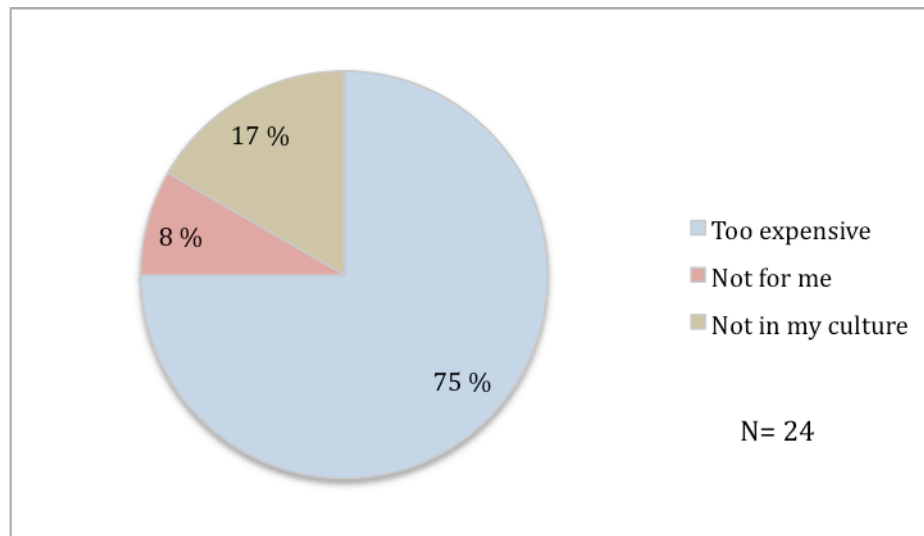
So, the talk with the local solar energy company shows that solar PV systems are not seen as feasible for the common rural people, as the initial cost is so high. Therefore it seems that the research done by Jacobson (2004) still can be seen as holding water in the sense that it is the middle class that is able to draw benefits from solar PV systems. However, in order for being able to talk about the current environment for solar energy there is a need to establish how many people that are actually using solar energy systems in and around Majiwa. The figure below shows the percentage of people using solar energy within my target group.

Figure 5.3: People using solar energy services



(Figure: Marius Thoresen, 2010)

Here we see that there is only 14 % of the respondents that uses ANY sort of solar energy, this includes high-tech solutions like solar PV, and also low-tech solution like solar cooker, solar-lights and so forth. ARO Development Centre has been trying to promote the use of low-tech solar energy services among the local population in Majiwa, in the aim of getting them to use the likes of solar cookers and solar lights. These seem however to not make much difference in the community as only four people, out of 28, talking to me used any form of solar devices as their energy source. Another important thing to find out is why people are not using the solar energy services. The figure below shows the main reason the people I questioned did not use solar energy services.

Figure 5.4: Main reason for not using solar energy

(Figure: Marius Thoresen, 2010)

What strikes me here is not the fact that three out of four persons say that solar energy resources are too expensive, the reason behind this can both be lack of knowledge and perhaps people automatically think about solar PV systems. However, the fact that one out of four people say that solar energy resources is not in my culture or it is not for me, something that I see as two quite similar statements, is however quite interesting. This would mean that one out of four persons do not see solar energy as feasible for them either because of cultural issues or just individual issues.

PV 4 highlights the role of tradition in speaking about the reason why many people do not use solar energy resources more often:

“The use of modern energy sources is not in our culture because we are used to cooking in the traditional way, there are several options available for us to change, but most of us don’t want to. Most of our people are resisting change, because people believe, and are told, that the old way is the best. Our grandfathers used to cook with three stones with a clay pot on top, and we are taught that this is the way Luo people should cook. We have tried here at ARO to get people to use simple solar energy solutions as the solar cooker, and we also tried to introduce the energy saving stoves. However, most people came back and told that they didn’t want to use it because it took too long or the food didn’t taste any good.”

Based on this information, I talked to a local elderly person, called NC 2, and asked about NC 2’s opinion on the solar cooker NC 2 had been given to try it out:

“I really don’t like it, the food didn’t taste any good, it is much better when I use firewood and charcoal. The worst thing, however was that it took so long to finish. First, the solar cooker had to stay out in the sunlight for

almost one hour and afterwards the food needed to be cooked, it takes too long!”

I then asked NC 2 about how long NC 2 used to fetch firewood or make charcoal, and if you put all this things together if the traditional way of cooking took longer to finish. NC 2’s response was:

“Well, you see that fetching firewood is seen as a social happening as the women and girls who go to fetch firewood go together. They have lots of discussion and talks, and they meet their friends and things. So, we don’t see this as something that we are spending much time on.”

PV 5, highlights the availability of firewood and the fact that firewood is seen as a “free energy”, in addition to a lack of knowledge and a resistance to change, as the reason for people not utilising solar energy resources.

“People in the society use firewood because it is free and because they don’t know much about the different means of energy. Firewood and charcoal has been used for generations, and are therefore one type of energy that we know about. When it comes to solar panels, people see them at ARO, but they really don’t know what it is. The only power people know about is the electricity from the grid, but that is too costly so people use firewood and charcoal for cooking and paraffin or kerosene for lighting.”

When it comes to low-tech solar resources, it seems that a lack of knowledge can be seen as a major part in why people do not utilise these resources much. Lack of knowledge can be seen as a major part in the lack of development in much of the area, and as next part will show, a lack of knowledge towards the *Jatropha Curcas* can also be seen as a major obstacle to this plant being fully cultivated.

5.2.2 Current environment for implementation of the *Jatropha curcas*

As mentioned earlier the promise of the *Jatropha Curcas* can make a big impact when it comes to the development level of the rural people. As the people grow them and sell the seeds, which again can be pressed to oil and even refined to bio-diesel, the plant can as such make a direct impact both on poverty levels and as a renewable energy source. However, this research shows that lack of knowledge and cultural beliefs act as obstacles for the implementation of the plant. Growing the *Jatropha Curcas* is seen as a taboo, in the sense that it was traditionally seen as a witchdoctor’s plant.

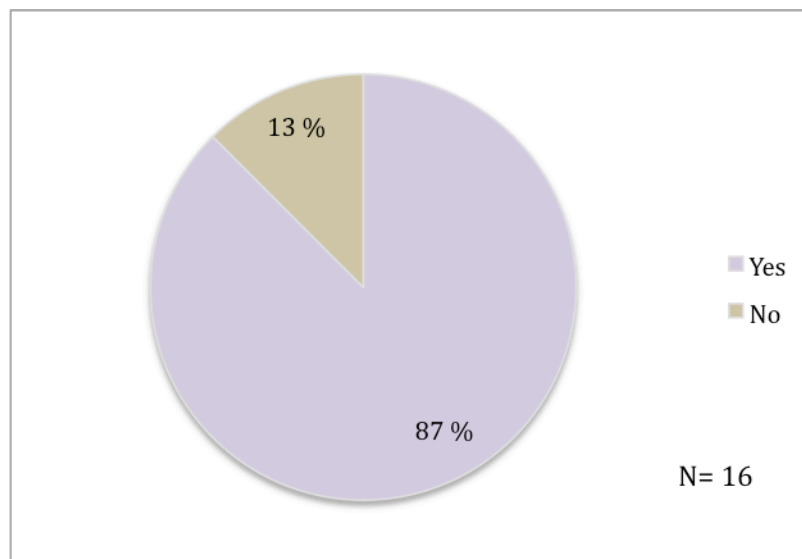
PV 2 tells more about the taboo surrounding the *Jatropha Curcas*:

“People used to say that this is a plant that has never existed here, and witchdoctors used to grow it to harvest it for their witchcrafts. So, people believe that if you grow it, then you are a witchdoctor. So, cultivating it makes people loose faith in you. As witchdoctors traditionally used the plant, it is seen as a taboo to grow and cultivate it. It is not only here that it is seen as a taboo to grow the plant. Even the Maasai people have a taboo

connected to the plant, but there it is grown around the fence in order to keep thieves and burglars out.”

Figure 5.5, below, show how many percent of the local *Jatropha*-farmers interviewed that had been affected by the taboo in any way.

Figure 5.5: Percentage of *Jatropha* farmers affected by the taboo



(Figure: Marius Thoresen, 2010)

This figure shows that almost nine out of ten people who grow *Jatropha* are affected by the taboo in some way. The figure does not say anything about what effect the taboo has, but it would be feasible to conclude that the taboo on *Jatropha* still holds a significant effect on people who grow it.

JC 5 tells more about how the taboo has affected her:

“Actually, I did not know about the taboo before I planted my *Jatropha*. At first there was no trouble connected to the plants, but I guess that was because they were so small. However, when they got bigger, I one day got a visit from one of my neighbours who came with a rather sad look on his face. He said that he thought that I was a Christian, and I said I was. He then asked how a Christian could plant those witchcraft-trees, and asked if I intended to kill us all? Afterwards he went back to his home, and he hasn’t spoken to me since.”

JC 2 also speaks of the taboo as something that has affected the growing of *Jatropha*:

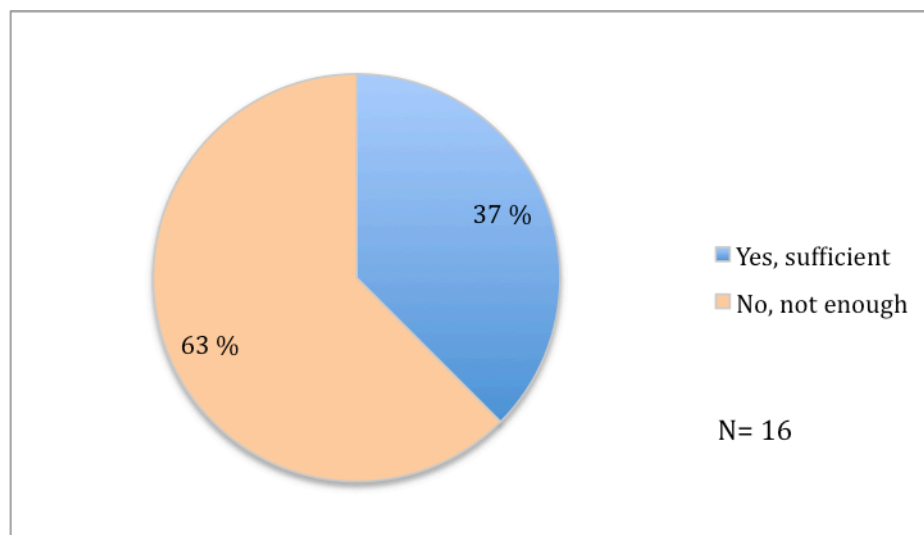
“For me, you can say that the taboo got the overhand. I have now stopped growing *Jatropha*, because some important people in the community did not want to speak to me if I continued growing it. For me all this seems a little

bit strange, as I heard the taboo is only valid if people grow it inside their homes. Two years ago, everything was fine and *Jatropha* was the new thing that everyone wanted to start growing. There was even talk about some factory being built near Ndori (neighbouring market-town), which would buy our seeds and press the oil. Now, however, people are starting to get tired of these promises as nothing happens. There is nobody who buys the seeds anymore.”

Something that strikes me when I am questioning the *Jatropha* farmers is how little knowledge many of the farmers seem to possess when it comes to the growing of the *Jatropha Curcas* and there seemed to be very little cooperation between the farmers as noted earlier. First of all, what is perhaps the greatest promise of the *Jatropha Curcas* is that it can grow in less fertile land, due to its high concentration of nitrogen, which again makes it a bio-fuel plant that does not compete with food crops over land. In and around the Maijwa area, however, most of the farmers were growing the *Jatropha Curcas* in areas with relative rich soil, which again contributes to ousting the food crops from the same area.

During my interviews, I asked all the farmers if they felt that they had received enough information and thus had gathered enough knowledge on the *Jatropha Curcas* when starting to grow the plant. The result turned out to be quite staggering as around six out of ten farmers said that they did not feel that they had received enough information on how to grow *Jatropha* when starting it. This result can be found in Figure 5.6, below, which shows whether or not the farmers I questioned feel that the information they received prior to starting growing *Jatropha* was sufficient.

Figure 5.6: *Jatropha* farmer and information received on the *Jatropha Curcas*



(Figure: Marius Thoresen, 2010)

JC 6 tells about when JC 6 started growing Jatropha:

"I started when Jatropha was the new great thing, about one year ago. We were several people starting and some people offered us some seed. However, after we bought the seeds no one gave us any information on how to do it."

When confronting JC 7, the leader of a local Jatropha farmer group, with my findings and observations, JC 7 answers:

"Many people are using fertile soil to grow Jatropha. However, I do not think it is only because of knowledge, but also because of land scarcity. You see that most of the farmers in this area are smallholder farmers with little land. This is a main drawback because some of the farmers are forced to use food-land to grow Jatropha. When you talk about a lack of knowledge, I agree, but we are currently working on trying to educate Jatropha farmers in how to grow it. However, it should be said that the farmers themselves also have a responsibility in gathering the knowledge and not wait for the knowledge to come to them."

Even though I have so far portrayed a rather dark environment so far for the Jatropha Curcas, I also came across a few success-stories among the Jatropha farmers. JC 4 was here the best example, being an elderly person and able to improve the life as a result from growing Jatropha and selling the seeds. JC 4 tells of his experience:

"I have been a Jatropha farmer for two and a half years and produced a total of 30kg of seed, which I've been able to sell most of. This has again resulted in me being able to buy a cell-phone for me and my wife and a bicycle. Most importantly, however, we have been able to take care of an orphan-boy living in the area. Also, I had an injury last year in which I got some troubles with my hip. The money we received from selling the seeds covered my treatment. We have even been able to open a savings account in which we currently have around 2 000 KES. So, you can say that growing Jatropha has really improved our way of living and contributed to our development."

PV 3 can also be seen as a success-story when it comes to growing Jatropha, as this has affected the life of PV 3 in a positive way:

"Jatropha has done some very good things for me and my family. I have been a Jatropha farmer for around 2 years and I was able to sell much of my seeds to some people coming from Switzerland to check out the area, in search of starting a factory for Jatropha seeds. From the money we got from the sale we were able to fix something on our house and even start to build a water tank."

5.2.3 Brief conclusion of Part 2

The goal in Part 2 of this chapter has been to portray my findings from my fieldwork in relations to the current environment for renewable energy sources in the form of solar energy and bio-diesel from the *Jatropha Curcas*.

This research indicates that the current environment for the implementation of these renewable energy sources cannot be seen as feasible, due to the many obstacles in the local community.

When it comes to solar energy resources, the obstacles can mainly be seen as divided between in two sections, namely economical and cultural or individual. The economical section is mainly related to high-tech solar energy service through solar PV system that are in general too costly for most people in the area to be able to draw the benefits from. The cultural or individual section is more directed to the lack of implementation of low-tech solar energy services, which again is mainly due to a resistance to change, both individually and culturally.

People, who cultivate the *Jatropha Curcas*, suffer from the fact that this is a plant for the future, in which there today is no real market for. A few farmers have been able to sell some seeds to people from Switzerland coming to check out the possibility of opening a factory nearby. However, as there currently is no market for selling seeds people are getting a little disillusioned over the lack of income from the crop. In addition to this economical issue, people growing the plant seem to have little or no knowledge on how to draw the benefits from the plant in the sense of it being a plant that can be cultivated in less-fertile soil.

In sum it can be stated that the current environment for renewable energy resources suffer from the lack of cooperation and the sharing of information, which again can be linked to general lack of cooperation in the area as mentioned in Part 1. However, the main drawback for people to embrace the renewable energy resources in questions seems to be the lack of knowledge that most people in the local community possess about these things. The reason for this lack of knowledge has not been established but this research highlights issues like lack of cooperation, dependency thinking and cultural obstacles that might serve as explanations of this lack of knowledge.

Part 3: How renewable energy services, and development in general, can be facilitated through grass root development

Part 3 of this chapter aims to outline how the development in this area can be managed in order to get the local people to embrace renewable energy services, which again can contribute to positive change in the local people's livelihoods.

In order for rural people to be able to obtain this, it is vital that they step out of the 'oppression' of poverty and thus liberate themselves and take responsibility for their own development, thus rising from the mental state of poverty and open up for their own empowerment, which again could contribute to the ousting of development traps like dependency thinking and so forth.

However, in a deeply traditional society, like the Luo society, in which cultural forces have worked against development in generations, changes cannot be expected to arrive quickly as quick change cannot be seen as a sustainable change in such a context. We in the western part of the world need to acknowledge that we cannot force upon other cultures our way of thinking, in which change is a natural part of our culture. Our task can be to facilitate development in line with the local culture and in this sense facilitate a culture-sensitive development. On the other hand, as this research shows, there is a need for the local society to overcome some deep-rooted cultural obstacles in order to be able to develop and be able to draw benefits of the renewable energy resources.

Another key issue to be implemented in order for the local community to be able to use renewable energy resources is knowledge and information, which seems to be very low in the community at the present time.

Why is it then important for the people to use renewable energy resources? Much of the answer is to be found in the terms of adaptation and vulnerability to climate change. Most researchers today agree that human induced climate change is changing the world of today. Both DFID (2004) and GECHS (2007) pinpoint that it is the poor, due to their high level of vulnerability and low level of adaptation ability towards the effects of climate change, especially in rural areas, who will experience the most direct impacts on their livelihoods as a result from climate change. The reason is the nature of their livelihoods, which is more directly connected to the nature. Most people in the Majiwa area are subsistence-farmers, and thus highly dependent on the yields of their crops. However in the last couple of years the rain-season has become fluctuant, and much of Kenya has experienced famine. I did my fieldwork in what was supposed to be the rainy-season in the area. However, during my stay there was hardly any rain coming. The farmers had planted their precious seeds, but as a result from the lack of rain insects ate the seeds.

As a result from this direct link to nature and thus climate change, it is vital that any development effort directed towards the rural people aims at providing information and knowledge on the former. This is the only way for the rural population to build capacity and

increase their coping capabilities towards climate change, which again would increase their adaptability and decrease their vulnerability towards climate change.

5.3.1 Making development understandable

Perhaps the most important issue in dealing with development that aims to include the local community is to make the people in question able to understand what is being transmitted to them. People may seem to understand what is being told them in order not to be seen as unlearned or unwise in any circumstances. This may especially apply to cultures, like the Luo culture, in which politeness to strangers is seen as a key ingredient. Also, the Luo people have up through history been seen as the most "brainy" people in Kenya, and being a very proud people, the Luo are not likely to tell a stranger if he or she fails to really understand the meaning of a concept.

In relation to facilitate development it is not serving the purpose to "talk over their heads", in order for people to be able to develop themselves the people need to understand what is being said to them.

Case 5.2: The power of language

During one of my last days on my fieldwork, I went for a walk with one of the employees at ARO, and we talked about climate change. After we had talked for a while the ARO employee suddenly stops, stares at me, and asks slightly embarrassed:

"Could you please tell me what the Green House effect is? Everyone is talking about the Green House effect, as a major part of climate change. However, hardly anyone here knows what the Green House effect is, but everyone is talking about it. Every time somebody visits ARO they all talk about this Green House effect, and we all act as we know it, but when we talk among us later, nobody knows what it is."

We then stopped at a place where I could draw and explain why it is called the Green House effect, and how it contributes to climate change.

The ARO employee responds and chuckles:

"Thank you very much, now you have really contributed to my development! But tell me one thing, why is it called the Green house effect? Almost no one in the poor part of the world has any knowledge about Green Houses.""

What Case 5.2 shows, with regards to Freire (1968), is that language is never neutral. This case illustrates that what might be seen as common knowledge in one culture, might not be a

familiar thing in another culture. In this sense it is vital for development facilitators to speak a known language in order to be able to communicate anything in a sustainable fashion.

5.3.2 Facilitate for grass root development with a focus on empowerment and capacity building

Grass root development, here defined as the people in the lower level of the community, is an integral part in any form of sustainable development. Without including the people at the bottom of the ladder, there can certainly be no hope of achieving any development that embraces the people and thus no hope of achieving any form of development that is able to persist over time. Another reason for development facilitators to focus on the grass root can be the harsh development climate in the world today.

All countries have in some way gone through a development of some sort to become what they are today. NC 5 tells the story of when Norway was seen as the backyard of Europe:

“What we currently are going through, it is somewhat similar to what you Norwegians had to go through. I have read some about Norway when it was a poor country some hundred years back, how backwards they were. A British industrialist once described the Norwegians as primitive, stupid, dirty people, in which he complained that all the money we give them they only use for drinking and for bearing more and more children. I told this to some Luo friends, and they all believed that I was talking about the Luo people. When I told them that I was talking about one of the richest people in the world today only a hundred or so years back in time, they believed I was lying!”

This story may serve as a good example of how some countries that today are rich, were perceived before they got this development. Norway is perhaps a special case, as the crude-oil production has in many ways been the foundation of the country's development and prosperity. The development of Norway is not something that will be discussed here, but the ability to develop is. Development is not restricted in any sense, and every person and country has the ability to develop themselves. However, it might be argued that the development arena has become a harder place to attend.

Friedman (2008) highlights how it has become difficult for poor countries today to develop, as most developed countries today got developed in a time where differences were not so great as today, and where the “playing-field” was not that unequal. The argument goes that when you have a planet that is hot, flat and crowded, meaning warmer, more interconnected and more populated than before, the climbing up the development ladder becomes steeper and thus making it more difficult to succeed. These factors of climate change, globalisation and population growth, makes it even more difficult for poor countries today to develop than it has been for the developed countries when they developed.

As a result from this it can be argued that the role of the individual has become more and more important in his/her own development, or in other word, the formerly mentioned development climate has forced the development school to embrace the role of the individual.

However, as Part 1 of this research shows, there is currently not much room for individual thinking. There exist deep-rooted traditions inside the Luo culture that in many ways act as obstacles both to the development of individual thinking and development in general. As a result of the former, the role of knowledge and the promotion of self-reliance and responsibility for ones own development can be seen as an integral part of any development effort to be successful.

As this research shows, the lack of knowledge and information in the local community both when it comes to solar energy services and the *Jatropha Curcas* can be seen as a direct cause of these forms of renewable energy services is barely used. Therefore any development effort attempted in these areas need to transfer knowledge on to the local people in order for them to be able to use it.

Even though I promote change in the local Luo culture, the key to the change is that it must come from within the community in a bottom up approach, rather than coming from the outside and be trickled down on the people. Therefore it is vital to acknowledge differences between the people. One of my revelations about my self and my culture is that time is in my culture seen as a huge cost-factor in the sense that things should be done effectively in a less time-consuming way. However, this is not the case in the Luo culture, as NC 2 tells:

"A woman making chapattis will buy a packet of flour for 120 KES and she'll buy oil for 60 KES, a total of 180 KES. Because she uses firewood to cook, she won't cost the firewood because she went to collect it. So, she spends 60 KES for oil and 120 KES for flour, and then when she sells the chapattis she sells them for 250 KES. She will be very happy to have made a profit of 70 KES, she doesn't cost her time even though she might have spent the whole day on the chapattis. This concept of time-factor is not something that most of see as a cost in any way, it's just something we do."

Some people in the western cultures might be having problems at accepting this form of business, as there are clearly room for improvement in this "business-model". However, the point to be made here is that for any development to be successful and thus sustainable, there is a need to use the local culture or the local "how to do things" as a point of departure in which change has to be implemented at a slow and natural pace.

In relation to the latter, the sustainable livelihood framework could be seen as a way of empowering the grass root people and their livelihoods, which again could serve as the foundation for the local development in the sense that it puts the grass root people at the centre of the development, treating them as rational beings with a responsibility to empower themselves. This again could facilitate for building local resilience that may encourage local activity and thus empowerment. The outcome of this empowerment could encourage local activity and in return discourage local passivity and dependency on external resources, which again could serve as the foundation for sustainable development and sustainable energy implementation.

Section 5.3.3 shows how there are elements already in place inside the community that can be used as stepping-stones for future development efforts.

5.3.3 Evidence of grass root development

Even though this research highlights several weaknesses of the development in the local community, there is also some good work being done in the area. The evidence of the focus of grass root development is already present in the area as much of the work done at ARO is having the grass root level in mind. Perhaps the best example here, and the one that might make the biggest impact when it comes to contribute to development in the area is the programme called the Kenya Change Agent (KCA)

KCA can be seen as an education program, run at ARO, which targets to train what is called "change-agents", in order to make change from within the community. NC 1 tells more about the KCA:

"KCA is a training program for people, aged 25-45, in the surrounding areas. You can say that it is a training course that lasts for around 20 weeks, in which they spend one week here at ARO getting education and then goes on fieldwork in their home community for three weeks. After the fieldwork they come back to ARO for one week to get more education and reflect on their fieldworks before they go off to fieldwork again. In total they have five weeks at ARO and 15 weeks doing fieldwork. During the weeks at ARO they get knowledge about negative cultural aspects, modern energy services and development in general. The goal of this project is to change the community from within, and train self-reliant people who can contribute to change people from clinging to culture and in this sense change their attitudes. To put it short you can say that we train people to take responsibility for their own life and open up their eyes for negative cultural influences that exist inside our culture."

Perhaps the best thing about the KCA is that the facilitators or teachers who are responsible for the courses are also local community members, which have gone through the KCA training and are now acting as KCA-agents. The result is that people who understand the context of the pupils, which in return will give a better result, teach the KCA program.

KCA has successfully been running since 2004 and over 500 Change Agents has so far been trained, something that again would serve as an example of the change taking place in the Majiwa community. However, the main problem for the KCA program is the dependency it has towards external resources and funding. During my stay at ARO, one of the courses had to be cancelled due to lack of funds, thus affecting several upcoming agents of change. In adopting a sustainable livelihood approach, which again could facilitate local resilience, local activity could be encouraged and dependency towards external resources discouraged.

What is also worth noting is that it is not only at ARO there is evidence of grass root development. There are people in the area of Majiwa that have built their capacity and have become empowered through this capacity building. Case 5.3 tells the remarkable story of Steven Odour, who became blind at the age of 24 after suffering from Glaucoma. Still he has managed to overcome the stigmatisation suffered from the traditional Luo culture, and acquired much knowledge about different aspects of farming and crops, that again has led him to collaborate with big institutions like FAO, KFRI, NEMA and AMREF.

Case 5.3: Steven Odour – The blind “professor”

Steven Odour, 33, became totally blind at the age 24, one year after finishing secondary school. The blindness comes from the Glaucoma disease, inherited from his father, and something that is really affecting his other family. Glaucoma is a disease that affects the blood pressure in the eyeball, and eventually blocks the blood from flowing to the eye, something that again leads to gradual loss of eyesight and eventually creates blindness if not treated. Both his mother and father have passed away and, as the oldest brother he is now the head in his family, supporting four brothers, one sister, two sisters-in-law and four small children. All his brothers and sister are affected by the same disease, with two brothers and the sister and one sister-in-law being blind as Steven, one brother with continually decreasing eyesight (he will also eventually become blind), and one brother being blind on one eye. One of the children is HIV-positive, and thus requesting special attention and medical care.

Many people in the local community see Steven and his family as being cursed, due to the high amount of blind people in the family. This view has affected his family in the way that many people do not want to live nearby and have little to do with them. Steven told that this belief is due to the traditional Luo culture in the sense that “when more than three people in the family are blind, this is unique, so people say that the family must have done something wrong and are now being punished for these wrongdoings”.

This case study, however, is not a study of Steven’s or his family’s inability. Rather this is a study of the fantastic ability Steven incorporates, despite his disability of being blind. As Steven told me himself:

“The eye is just an organ, which not everything depend on. The eye is just directive, you can live well without it, as you still have a very important organ, the brain, so it is upon you on how to use it and how to live with it. You can overcome your disability, it just is a matter on how you use the brain”.

Many people would crumble under this disability, perhaps especially in a poor society where there is no safety nets. Steven, on the other hand, decided differently and told:

“When you become blind and disabled, you start to think differently about a lot of things because you now have a limitation. So, you can either go down or you go up. You choose if you see the disability as a barrier or even as strength. If you go down, you look for other people to help you, you beg and you don’t see yourself as a total human being. If you choose to go up then you can become a resourceful person. I had seen a lot of people who are blind becoming beggars, they saw themselves as people who didn’t owe something to the community, but myself I wanted to be a difference, I wanted to show that it is a disability, not inability. Even me, I could be a factor in the community, I could be consulted, I could be dependent on”.

However, for being able to use the disability as strength, and thus “go up” as Steven puts it. There is a need to focus on something that you can combine with your disability, and thus use this as a strength that overpowers your disability and in some senses evades it. Steven did this by acquiring a deep knowledge in several different subjects as the environment, agriculture, health and forestry, after he became blind. But to acquire this knowledge, people usually read.

As Steven is blind, he is not able to read, so when asked about how he obtained all this knowledge, he answers:

“It was not easy, I listen a lot to the radio and I found some people to read to me. Some of the materials are bought, and are quite expensive, so that I can’t afford to buy them regularly. I became close to the radio, and was fond of programs dealing with the environment. I also sometimes visit places where I can access the Internet and acquire downloaded information, so that someone can read it for me”.

Even though it is not easy, he achieves it and keeps learning and increasing his knowledge. As a result of obtaining all this knowledge he has worked for, and collaborated with, large international organisations like FAO on food security, KFRI on forestry, NEMA on environment and with AMREF on health. Perhaps even more important, he has become a leading expert on environment and agriculture in his community, helping other farmers improving their ways of farming and their knowledge through discussions and talks and is involved in collaborative community farming-group with other disabled farmers. He currently grows a wide array of crops: Vegetables, like tomato and onions, and fruits, like grafted mango, which he and his family sell at the different markets nearby, and thus providing for themselves in this manner. The reason that I call him a “professor” is not because he holds a degree, but because he and his friend, Tor Steinar Rafoss, started the ARO – Agolla University (Agolla is Luo for porch), where they sat and discussed different topics mainly concerning environment, agriculture and development together with people from the local community, and thus exchanging knowledge. Two days before I met Steven to do the interview, he had been in Kisumu to hold talks at an AMREF meeting there. He gave a talk on the importance of preserving food like vegetables and about people living with HIV/AIDS to have a balanced diet, connected to important crops like Amaranth and Moringa, which incorporates important substances like carbon hydrate, protein and vitamins. So, when asked about where he gathers all this strength to keep empowering himself, and continually increasing his knowledge, Steven answers:

“I do this because my main goal is that I want to become one of those people who has participated in changing the planet positively, and who’s input was considered to make a positive impact. I was looking at it from the perspective that the world is only a stage in life, through which we much all pass, and the quest of our lives should be to make it a better place than when we found it, so that those who are coming later, after us, find it even much better. By this we much work towards the improvement of this world. I want to show the world that being blind is not about being unable, but being able despite having a disability”.

What Case 5.3 show, is that it is possible for everyone to be responsible for his or her own development and thus become self- reliant and empowered, even if one is suffering from a disability. Steven's history is not only a moving history, but this can serve as a guideline and inspiration for people in the local community to empower themselves and thus develop themselves.

Chapter 6: Concluding remarks

6.1 Introduction

Energy and development are seen as intertwined in the sense that energy can be seen as a prerequisite for development (Post, 2004, Davidson et al, 2007 and UN, no date). Some researchers even go as far as to call energy “the pivot of economical and social development of all countries around the world” (Davidson et al, 2007, pp. 2).

However, concerns have aroused in the sense that future energy consumption predictions see that the developing world (excluding China) will be responsible for 40 % of the increase in energy demand to 2015, and thus be responsible for 36 % of the increase in CO₂ emissions (IEA, 2006). Major international organisations like the IPCC, the UNFCCC, UNEP and others have been promoting renewable energy services as solutions to meet much of the developing countries energy demand.

The effects of climate change resulting from human activities are already inflicting the environment in the sense of increased global temperatures and more erratic rainfall (IPCC, 2007), something that again is believed to make most impact on the poor as the poor are the ones with the highest level of vulnerability towards environmental change and with the lowest adaptability towards environmental change

As a result from this focus on renewable energy services, much effort and research has been aimed at showing how renewable energy services can contribute to the development of the developing world. However, little, or at least, less effort and research has been aimed at the local communities and how they will meet this change.

This research is aimed at how a local rural community, steeped in tradition, is welcoming this change in the society that the implementation of renewable energy services provides. Here the focus is based on two forms of renewable energy, namely solar energy services and bio-diesel from the *Jatropha Curcas*.

6.2 Main Findings

This research sat out to analyse the current environment for development and the implementation of renewable energy resources in the form of solar energy services and bio-diesel from the *Jatropha Curcas*. The main conclusion that can be drawn from this research is that renewable energy services is not utilised in this area due to several issues, both culturally and individually. In addition this thesis makes recommendations for how both current and future development efforts can be managed in order for the implementation can be made successful and in relation to the current cultural set-up. The main findings are presented in the sections below:

6.2.1 Cultural obstacles

Cultural obstacles like the role of the elders inside the community, traditional beliefs, the role of taboos and magic are key elements that contribute to keeping the community in a form of status quo as these cultural elements are effectively acting as barriers to the implementation of changes and new thinking in the community.

6.2.2 Individual obstacles

Similar to the cultural obstacles there are individual obstacles, like dependency thinking, jealousy and pride and a lack of forward planning. These factors act as barriers for many people to embrace and take advantage of the potential that exist both in development efforts being introduced and the impact that renewable energy services can make on the local community.

6.2.3 Lack of knowledge

This thesis highlight what seems to be a general lack of knowledge in most people with regards to how to draw the benefits from the implementation of renewable energy services. The lack of knowledge is most evident with many of the *Jatropha* farmers who seem to know little about the potential of the plant, which in return are contributing to the farmers growing the *Jatropha* in un-suited soil that again makes the plant compete with food-crops over land, making it a major threat when it come to food-security in the community.

6.2.4 Findings related to the management of development efforts

This research has focussed on building local capabilities in order for grass root development to be able to take place, something that again is seen in this thesis as fundamental in order to contribute to sustainable development. There is a pressing need for people to take responsibility for their own development, and thus be active in their own development, rather than be passive recipients of development efforts and aid that again only contributes to increase the dependency thinking in the area.

In order for this to be able to take place, there is a need for development efforts to acknowledge the role of the individual and contribute to capacity building in the sense of knowledge building and information and be able to use the current set-up as a point of departure. One of way of highlighting the role of the individual in a development setting is through the sustainable livelihood approach, which this research sees as a way of strengthening the grass root people and their livelihoods.

6.3 Prospects for further research

Research aimed at showing what kind of an impact a specific grass root development initiative has had on the development in the area and the implementation of renewable energy services in the area had been an interesting way of following up this research in the sense that this research contributes to lay the foundation of grass root development in the relation to

development in general and the implementation of renewable energy services. Also it would have been interesting conducting an action research on how to change a traditional rural community into opening up for change and development. Finally, a research that aims to show evidence of a sustainable livelihoods framework into a rural setting or aims to contribute to the implementation of a sustainable livelihoods framework would be an interesting way of continuing the findings in this research.

References

- Ahmed, A. G. M. (2002) "Can Indigenous Knowledge be of Relevance in the Twenty-First Century (Cases from Africa)", Organization for Social Science Research in Eastern and Southern Africa (OSSREA), paper presented to 40th Anniversary Conference at NAI, September 1-3, 2002, Uppsala, Sweden
- Achten, W. M. J et al (2008): "Jatropha bio-diesel production and use", *Biomass and Energy*, 2008
- BBC (British Broadcasting Corporation) (2010): "Kenya Country Profile"
http://news.bbc.co.uk/2/hi/africa/country_profiles/1024563.stm (Accessed on 09/01-10)
- Bjørke, S. Å. (2010): "Climate Change: Science versus Sceptics - Can people make mega-profits on delaying action against global warming and climate change? What, why, who and the possible paradigm shift" Lecture notes & Argument list, University of Agder, May, 2010
- Blount, B. G. (1973): "The Luo of South Nyanza, Western Kenya." In *Cultural Source Materials for Population Planning in East Africa*, ed. A. Molnos, Vol. 3:318-329. Nairobi: East African Publishing House.
- Bryman, A. (2004): *Social Research Methods – Second Edition*, Oxford University Press, Oxford, UK
- Bucknall, J. (2000): "Poverty/Environment Background Paper", World Bank, Washington D.C.
- Chambers, R. (1983): *Rural Development – Putting the Last First*, Pearson Educated Limited, Essex, England
- Cohen, D. W. and E.S. Atieno Odhiambo. (1989): *Siaya: The Historical Anthropology of an African Landscape*. London: James Currey.
- CIA (Central Intelligence Agency) (2010): "The World Factbook – Kenya"
<https://www.cia.gov/library/publications/the-world-factbook/geos/ke.html> (Accessed on 20/2-10)
- CDC (Centers for Disease Control and Prevention) (2006): "Safe Water System (SWS) – Where Has the SWS Been Used? – Nyanza Healthy Water Project"
http://www.cdc.gov/safewater/where_pages/kenya_project.htm (Accessed on 22/10-08)
- Crabtree, G. W. and N. S. Lewis (2007): "Solar Energy Conversion", *Physics Today*, March, 2007
- Davidson, O. et al (2007): "Sustainable Energy in sub-Saharan Africa", International Council for Science

http://www.icsu-africa.org/sustainable_energy_rep_2007.pdf (Accessed on 20/10-08)

Derman, B. (2003): “Cultures of Development and Indigenous Knowledge: The Erosion of Traditional Boundaries”, in *Africa Today*, pp. 67-85

DFID (United Kingdom Department for International Development) (2004): “The Impacts of Climate Change on the Vulnerability of the Poor”, Key Sheet no. 3.

<http://www.dfid.gov.uk/pubs/files/climatechange/3vulnerability.pdf> (Accessed on 01/05-08)

DFID (United Kingdom Department for International Development) (2002): “Poverty and the Environment: Measuring the links – A study of Poverty indicators with case study from Nepal, Nicaragua and Uganda”, Issue Paper No. 2, February 2002, Environment Policy Department

DFID (United Kingdom Department for International Development) (2001): “Poverty and the Environment: What the Poor say – An assessment of Poverty-Environment Linkages in Participatory Poverty Assessments”

DFID (1999): “Sustainable development Guidance Sheet”

<http://www.nssd.net/pdf/sectiont.pdf> (Accessed 30/4-08)

Duraiappah, A. K. (1998): “Poverty and environmental degradation: A review and analysis of the Nexus”, in *World Development*, vol. 26, No. 12, pp. 2169-2179, 1998.

Escobar, A (1995): *Encountering Development: The Making and the Unmaking of the Third World*, Princeton University Press,

Frank, A. G. (1967): *Capitalism and Underdevelopment in Latin America*, Monthly Review, London

Francis, V. (2008): “Fighting poverty and producing environment-friendly energy”, *Environmental Times*, no. 5, 2008, UNEP/GRID Arendal

Freire, P. (1968): *The Pedagogy of the Oppressed*, The Seabury Press, New York

Friedman, T. L. (2008): *Hot, Flat and Crowded: Why the World Needs a Green Revolution – And How We Can Renew Our Global Future*, Penguin Books Ltd., London, UK

Friedman, J. (1992): *Empowerment: The Politics of Alternative Development*, Blackwell Press, Oxford, UK

Gallopín, G. C., P. Gutman and H. Maletta (1989): “Global impoverishment, sustainable development and the environment: a conceptual approach”, in *International Social Science Journal*, vol. 41, no. 3, 1989, pp. 375-397

Gardner, K. and D. Lewis (1996): *Anthropology, Development and the Post-modern Challenge*, Pluto Press, London, UK

- Gaye, A. (2007): "Access to Energy and Human Development"
http://hdr.undp.org/en/reports/global/hdr2007-2008/papers/gaye_amie.pdf (Accessed on 18/10-08)
- GECHS (Global Environmental Change and Human Security) (2007): "Climate Change Adaptation and Poverty Reduction: Key interactions and critical measures", Report prepared for Norwegian Agency for Development Cooperation (Norad), Rapport no. 1, 2007, University of Oslo
- Hardin, G. (1968): "The Tragedy of Commons", in *Science*, vol. 162, 1968, pp. 1243-1248
- Hylland-Eriksen, T. (1998): *Små steder – Store Spørsmål, Innføring i Sosialantropologi*, 2. issue, 2. ed., 2001, Universitetsforlaget AS, Oslo, Norway
- IFAD (International Fund for Agricultural Development) (2007): "Kenya statistics"
<http://www.ruralpovertyportal.org/english/regions/africa/ken/statistics.htm> (Accessed on 18/10-08)
- IEA (International Energy Agency) (2006): "World Energy Outlook 2006"
<http://www.iea.org/textbase/nppdf/free/2006/weo2006.pdf> (Accessed on 21/10-08)
- IPCC (International Panel on Climate Change) (2007): "Summary for Policymakers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability". Contribution of Working Group II to the *Fourth Assessment Report* of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 7-22.
- IPCC (International Panel on Climate Change) (2001): "Climate Change 2001: Impacts, Adaptation and Vulnerability". Contribution of Working Group II to the *Third Assessment Report* of the Intergovernmental Panel on Climate Change, J.M. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken and K.S. White, Eds., Cambridge University Press, UK, 2001
- Jacobsen, D. I. (2000): *Hvordan gjennomføre undersøkelser? Innføring i samfunnsvitenskaplig metode*, Høgskoleforlaget, Kristiansand, Norway
- Jacobson, A. (2006): "Connective Power: Solar Electrification and Social Change in Kenya", in *World Development*, Vol. 35., No. 1, 2007, pp. 144-162
- Jacobson, A. (2004): *Connective Power: Solar Electrification and Social Change in Kenya*. Ph.D. Dissertation, Energy and Resource Group, University of California, Berkeley, USA
- Karekezi S. and W. Kithyoma (2002): "Renewable energy strategies for rural Africa: is a PV-led renewable energy strategy the right approach for providing modern energy to the rural poor of sub-Saharan Africa?", *Energy Policy*, no. 30, 2002, pp. 1071-1086
- Kenya-advisor.com (2010): "Maps over Kenya"
<http://www.kenya-advisor.com/kenya-map.html> (Accessed on 06/01-10)
- Kimalu, P. et al (2002): "A Situational Analysis of Poverty in Kenya", *Working Paper Series*, No. 6, 2002, The Kenya Institute for Public Policy Research and Analysis (KIPPRA)

- Korten, David C. (1990): *Getting to the 21st Century: Voluntary Action and the Global Agenda*, Kumarian Press, Hartford, Conn., USA
- Kvale, S (2001): *Det kvalitative forskningsintervjuet*, Gyldendal Akademisk Forlag, Oslo, Norway
- Kvale, S and S. Brinkman (2009): *Interviews – Learning the Craft of Qualitative Research Interviewing*, 2nd edition. Sage Publications Inc., Thousand Oaks, USA
- Leerand, D. (2005): “Næringsliv og økonomisk utvikling i Kenya”, i *Aschehoug og Gyldendals Store Norske Leksikon – Jag-Konn*, 4. Utgave, 2005, Kunnskapsforlaget, Oslo
- Luke, N. (2002): “The Cultural Significance of Widowhood: Widow Inheritance and the Position of Luo Widows in the 1989 Kenya Census”, Centre for Population and Development Studies, Harvard University, Cambridge, MA, USA
- Malthus, T. (1798): *An essay on the principle of population*, Penguin Classic (reprinted, 1985)
- Mangoyana, R. B. (2008): “Bioenergy for sustainable development: An African context”, *Physics and Chemistry of the Earth*, 2008
- Meikle, S., T. Ramasut and J. Walker (2001): “Sustainable urban livelihoods: Concepts and implications for policy”, *Working Paper No. 112*, DFID, January 2001,
- MIC (Ministry of Information and Communication) (2007): “About Kenya/Nyanza” <http://www.information.go.ke/indexc.php?c2=129> (Accessed on 20/10-08)
- Mitchell, J. C (1983): “Case and Situation Analysis”, in *Sociological Review*, no. 31, 1983, pp. 186-211
- NCAPD (National Coordinating Agency for Population and Development) (2005): “Bondo District Strategic Plan 2005-2010 for Implementation of the National Population Policy for Sustainable Development”, Ministry of Planning and National Development, Nairobi, Kenya
- Ndisi, J. W. (1974): *A Study in the Economic and Social Life of the Luo of Kenya*. Lund, Berlingska Boktryckeriet.
- Nordenstam, T. (1982): “Review article”, a review of Ocholla-Ayaho: Traditional Ideology and Ethics among the Southern Luo, Scandinavian Institute of Africa Studies, Uppsala 1976, p. 248., in *Africa Thought and Practice – The Journal of the Philosophical Association of Kenya*, edited by Odera Oruka, H., Vol. 4, No. 2, 1982, pp. 91-99
- Ochieng, W. R. (1985): *People Round the Lake – Luo*, part of the series “Kenya’s People”, edited by Margaret Sharman, 2nd edition 1985, Evans Brothers Limited, London
- Ocholla-Ayayo, A.B.C (1980): *The Luo Culture: A Reconstruction of a Traditional African Society*, Franz Steiner Verlag, Wiesbaden, Germany
- Ocholla-Ayayo, A.B.C. (1976): *Traditional Ideology and Ethics among the Southern Luo*. Uppsala: Scandinavian Institute of African Studies.

- Ogot, B. A. (1967): *History of the Southern Luo*. Vol. 1. Nairobi: East African Publishing House.
- Okeyo Pala, A. (1980): "Daughters of the Lakes and Rivers: Colonization and the Land Rights of Luo Women." In *Women and Colonization*, eds. M. Etienne and E. Leacock, 186-213. Praeger Press, New York, USA
- Openshaw, K. (2000): "A review of *Jatropha Curcas*: an oil plant of unfulfilled promise", *Biomass and Bioenergy*, no. 19, pp. 1-15, 2000
- POST (Parliamentary Office of Science and Technology) (2002): "Access to energy in Developing Countries", *Postnote*, number 191, December 2002
- Pieterse, J. N. (1996): "My Paradigm or Yours? Alternative Development, Post-Development and Reflective Development", Working Paper Series No. 229, Institute for Social Sciences, Hague, Netherland
- Prakash, S (1997): "Poverty and Environment Linkages in Mountains and Uplands: reflections on the 'Poverty Trap' Thesis", *Creed Working Paper No. 12*, International Institute for Environment and Development, London.
- Prueksakorn, K. and S. H. Gheewala (2006): "Energy and Greenhouse Gas Implications of Biodiesel Production from *Jatropha curcas* L.", paper presented at *The 2nd Joint International Conference on "Sustainable Energy and Environment (SEE 2006)"*, 21-23 November 2006, Bangkok, Thailand
- Robertson, A.F. (1984): *The People and the State: An Anthropology of Planned Development*, Cambridge University Press, Cambridge, UK
- Rostow, W. W. (1960): *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge University Press, Cambridge, UK
- Schafer, J. (2002): "Supporting Livelihoods in a Situation of Chronic Conflict and Political Instability: Overview of Conceptual Issues", *Working Paper 183*, December 2002, Overseas Development Institute, London
- Silverman, D. (2001): *Interpreting Qualitative Data*, 2nd edition, Teacher College Press, Columbia University, New York, USA
- Simensen, J. (2004): *Africas Historie*, Cappelen Akademiske Forlag AS, Oslo
- Smit, B. and J. Wandel (2006): "Adaptation, adaptive capacity and vulnerability", in *Global Environmental Change*, vol. 16, issue 3, August 2006, p. 282-292,
- Scheer, H. (2002): *The Solar Economy – Renewable Energy for a Sustainable Global Future*, Earthscan, London
- Scott, L. (2006): "Chronic Poverty and the Environment: A Vulnerability Perspective", Chronic Poverty Research Centre, Working Paper No. 62, August 2006

Shiva, Vandana (1988): *Staying Alive: Women, Ecology, and Development*, London and Atlantic Highlands, Zed Books, N.J., USA

Stern review (2006): “The Economics of Climate Change – Executive Summary”
http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/30_10_06_exec_sum.pdf (Accessed on 17/12-07)

Tigere, T. A. et al (2006): “Potential of *Jatropha Curcas* in Improving Smallholder Farmers’ Livelihoods in Zimbabwe: An Exploratory Study of Makosa Ward, Mutoko District”, *Journal of Sustainable Development in Africa*, vol. 8, no. 3, 2006

UN (2004): “Promoting sustainable human settlement development”, chapter 7 in Agenda 21 <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter7.htm> (Accessed on 02.05.08)

UN (United Nations) (1987): “Report of the World Commission on Environment and Development”, General Assembly Resolution No. 42, December 1987
<http://www.un.org/documents/ga/res/42/ares42-187.htm> (Accessed on 29/04-08)

UNDP (United Nations Development Programme) (2009): “Human Development Report 2009 – Kenya – Human Development Index”
http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_KEN.html (Accessed on 20/2-10)

UNDP (1997a): “Productive Employment And Poverty Eradication. How Can Livelihoods be More Sustainable” UNDP.
<http://www.sustainable-livelihoods.com/pdf/productiveemployment.pdf> (Accessed 2/5-08)

UNDP (1997b): *Human Development Report*, Oxford University Press, New York.

UNEP (United Nations Environment Programme) (2002): *Global Environmental Outlook 3 – Past, Present and Future Perspectives*, Earthscan Publications Ltd., London, UK

UNFCCC (United Nations Framework Convention on Climate Change) (2007): *Climate change: Impacts, vulnerabilities and adaptation in developing countries*, United Nations Framework Convention on Climate Change, Bonn, Germany.

UNSEW (United Nations System-wide Earth Watch) (n.d.): “Reduction Consumption”
<http://earthwatch.unep.net/emergingissues/consumption/reduconsump.php> (Accessed on 01/10-08)

Verhelst, T. and W. Tyndale (2002): “Cultures, Spirituality and Development”, in *Development and Culture – Selected essays from Development in Practice*, 2002, edited by

Debroah Eade, pp. 1-24, A Development in Practice Reader, Oxfam GB in association with World Faiths Development Dialogue, London, UK

Wallerstein, I (1974): *The Modern World System: Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century*, Academic Press, New York

World Bank (1998): "Climate Change and Sub-Saharan Africa: issues and opportunities"
<http://www.worldbank.org/afr/findings/english/find120.htm> (Accessed on 20/10-08)

Williams, M. (2000): "Interpretivism and Generalisation", in *Sociology*, no. 34, 2000, pp. 209-224

Øyhus, A. O. (1989): "Biståeren og det gåtefulle folket", i T. Hylland Eriksen *Hvor mange hvite elefanter? Kulturdimensjonen i bistandsarbeidet*, pp. 117-127, Ad Notam Forlag, Oslo

Appendix 1: Interview guide to solar energy respondents

- 1) What is your current main energy source?
 - What do you use it for?

- 2) Do you currently use any form of solar energy resources? What types? Inform the respondents on low-tech solar energy resources like solar cooker and so forth.
 - If not, what is the main reason for you not using it and what needs to change for you to use it?

- 3) Have you tried any solar energy resources in the past? What types?
 - If so, why are you not using any now?

- 4) How do you feel that the solar energy resources have contributed to your life?
 - Made life easier?
 - Development?
 - Main advantages?

- 5) What is your main use of the solar energy resource?
 - Does it cover your needs?

- 6) What do you see as the main reason for people not using solar energy resources?

- 7) How do you see solar energy resources in the future in Majiwa?
 - What needs to be in place for solar energy resources to be used?

- 8) What do you see as option to gather money in order to buy solar energy resources?
 - Does the respondent use any form of Micro-Credit?
 - If so, what is your experience?
 - If not, why?

Appendix 2: Interview guide for Jatropha respondents

- 1) How long have you been planting Jatropha?
 - How many plants and how much do they produce?
- 2) What are your main reasons for turning to Jatropha?
- 3) How would you say Jatropha has affected your life?
- 4) Are you organized in any Farmer-group?
 - If so, which and how has this helped you?
- 5) Have you been able to sell any seeds?
 - If so, get information on buyer, how much and how much the farmer got from it
- 6) Have you in any way been affected by the taboo on Jatropha?
 - If so, get the respondent to elaborate
- 7) Have you received any information on Jatropha?
 - If so, was the information sufficient? Get the respondent to talk about his or hers knowledge level and what he or she does to gather knowledge.
- 8) Where do you grow the Jatropha, and what did you use to cultivate there before?
- 9) Do you grow less food crops as a result of growing Jatropha?
- 10) Are you using any form of micro-credit?
 - If so, what is your experience?
 - If not, why?
- 11) How do you see Jatropha in the future? Making more or less impact than today?