

MSC THESIS

The influence of stakeholder values, attached to charcoal, on forest management

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A qualitative and explorative research that examines the underlying values among the most relevant stakeholders in the charcoal chain in a subregion of Uganda, called Teso, to contribute to the implementation of Sustainable Forest Management. This thesis has come about as a final part of the MSc study in Communication, Health and Life Sciences at Wageningen University, with support from Tear Netherlands and COU-TEDDO.

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Preface

This thesis has been written as a part of the MSc program Communication, Health and Life Sciences at the Wageningen University. Based on my interest in behavioural changes, religion, and climate change, I have chosen this subject to do a research on. Due to my study background in International Development Studies, I wanted to do my research in an international context. Based on the relationship I had developed at Tear during my internship earlier this year, Tear offered me the opportunity to travel to their partner organisation in Uganda, called COU-TEDDO. Tear is a religious development organisation that mainly works through local churches in order to help the poorest people to get out of poverty. Their partner COU-TEDDO is a development organisation that is part of the Anglican Church/Church of Uganda. This concept of development work caught my attention. So, I have integrated my interest in development work in my Master thesis.

The opportunity to travel to Uganda gave me the chance to do data collection all by myself, which helped me to grow on personal and academic level. Because of the outbreak of the Coronavirus and its associating complexities for travelling, the virus left me no choice than returning much earlier than was planned beforehand. Consequently, I was not able to execute the research as I intended to do so, but at the end, I think an interesting thesis is lying in front of you based on the materials that has been collected in a few weeks of visiting the research field.

In this preface, I would like to give a big thanks to my always encouraging supervisors, dr. Bob Mulder and Catharina de Pater. Their critical and constructive feedback have helped me to come at this point. With their knowledge, critical thinking, and their flexible way of working, they had a positive influence on how this thesis has been finalized. They were more or less on the same line, which made it easier for me to improve my thesis time by time.

Beside my supervisors, I would also like to thank the employees of Tear, who have guided me to get the right information for this thesis topic and who gave me the contacts I needed to do a research in Uganda. Especially their support in times of the Corona crisis was very valuable to me. Next to the people of Tear, I would like to speak out my gratitude for employees of COU-TEDDO. They gave me a memorable experience when being in the study area. They helped me to feel at home very soon and to collect the data I needed for this research. I wish I had stayed for a longer period.

Last, but not least, I want to say thank you to my beloved family and friends, who have tried to support me where they could. I have appreciated, in specific, the love and concerns they send me during the stressful situation I was in to return home safely. Their carrying love and support helped me to finish this huge project.

Enjoy reading!

Sophia Visser

Acronyms

SFM	Sustainable Forest management
NFA	National Forest Authority
DFA	District Forest Authority
CFR	Central Forest Reserves
CFM	Collaborative Forest Management

Abstract

The use and production of charcoal in Teso, a sub region in Uganda, leads to worrying trends in forests. Several stakeholders use the concept of Sustainable Forest Management to change this trend. However, charcoal is known for its high economic value for the poor. Several attempts to make the charcoal chain 'greener' have not been successful yet. Since there is less knowledge on how other values, apart from the economic, might influence how forest is managed among stakeholders, this research aims to bridge a part of that knowledge gap. The Value-Norm-Belief theory and the dimension of spiritual values helps to identify several values that are underlying to behavioural charcoal practices of stakeholders in forest management. The overall idea of the developed theoretical model that is central in this research, is that values influence attitudes, beliefs, and norms, and that at their turn they influence behaviour. This qualitative research identifies the values by attaching values that derives from the participant observations, interviews, and the literature study. This study involves the following stakeholders for the analysis of the values: the National Forest Authority & District Forest Authority, religious institutions, NGOs, and Collaborative Forest Management groups. Each stakeholder shows altruistic, biospheric, egoistic and spiritual values. All stakeholders try to reduce on charcoal, mainly by education, collaboration and showing compassion towards people depending on charcoal. However, these values seem to be subordinate to the economic value that stakeholders attach to charcoal. A recommendation is to do further research on the influence of values on forest management.

Key words: stakeholders, values, spiritual values, charcoal, Sustainable Forest Management, values-behaviour analysis regarding forest management

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Introduction

Forestry on global scale

Forests have multiple functions that facilitate life on earth. Forests produce O₂, absorb CO₂, retain water and are a home to several species (WUR, 2019). However, forests are subjected to deforestation and forest degradation (IUCN, 2017). Between 1990 and 2016, the total forest coverage on land areas in the world dropped from 31.6% to 30.6% (Worldbank, 2016). Deforestation or “the direct human-induced conversion of forested land to non-forested land”, according to the UNFCCC (2001), is mainly a consequence of population growth, agricultural expansion, infrastructure, timber and mining (Twongyirwe, Bithell & Richards, 2018; Kissinger, Herold, De Sy, 2012). As a result, deforestation is estimated to be responsible for 20% of the total amount of the anthropogenic greenhouse gas emissions (WUR, 2019). Moreover, deforestation contributes to climate change acceleration (Bennet, 2017).

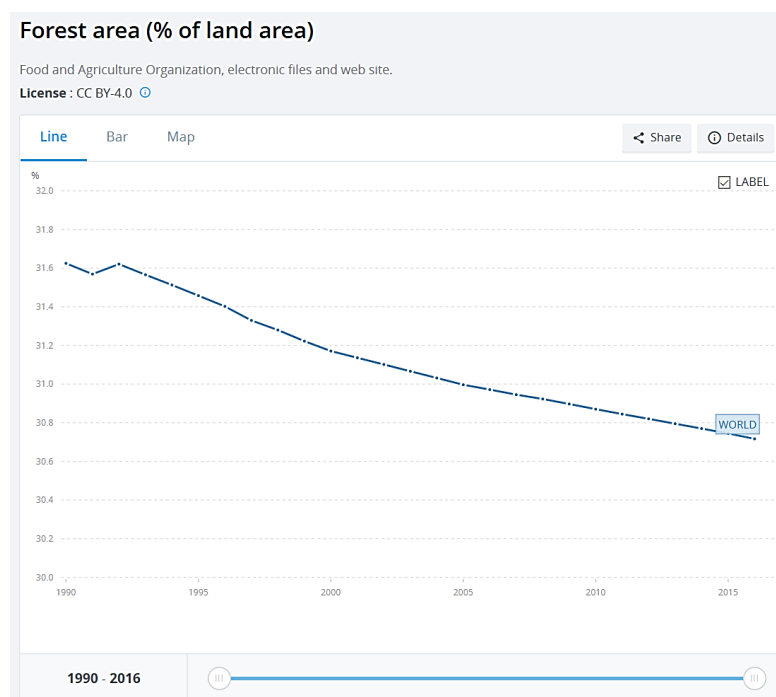


Figure 1: Forest area in the world between 1990-2016 (% of land area). Source: World Bank

Forestry and poverty

Forest degradation means that forests lose their capacity to provide important goods and services to people and nature (IUCN, 2017). And so, the cut of trees can have an impact on the social, ecological, and economic parts of life. In particular, poor people who live in developing countries and depend on forests, deforestation and forest degradation creates challenges (FAO, 2015). It is estimated that about 1,6 million people all over the world, who live in livelihoods that depend on forests, are impacted by deforestation and forest degradation (IUCN, 2017). One billion of those people belong to the poorest people on earth and they are faced with security risks, economic and social disruption (Lempriere et al., 2008; IUCN, 2017). FAO Director-General José Graziano da Silva said when launching a report ‘The Global Forest Resources Assessment 2015’ of the FAO: “Forests play a fundamental role in combating rural poverty, ensuring food security, and providing

people with livelihoods. And they deliver vital environmental services such as clean air and water, the conservation of biodiversity and combating climate change".

Forestry and poverty: charcoal production

When we zoom in on Africa fuel wood collection, charcoal production and grazing in forests are the most important drivers of degradation (Kissinger, Herold and De Sy, 2012). Worldwide, 17% of the total amount of wood production is caused by the demand for charcoal. The charcoal industry is accountable for 2-7% of the global anthropogenic emissions. Almost 50% of the extraction of wood from forests is to enable people to cook and heat (FAO, 2017). Charcoal production is one of the reasons for deforestation and forest degradation (Chidumayo, Davison & Gumbo, 2013).

In general, there is a correlation between charcoal production and households with a low income, less agricultural resources, and poverty levels (Khundi, Jagger, Shively, Ssserenkuuma, 2011). Commercial use of charcoal has its benefits for the poor, as the technology is quite simple, requires small investments and 'free' resources are available to produce charcoal (Schure et al., 2014). On top of that, charcoal provides the poor enough income to survive. Besides, charcoal generates income to do investments in other livelihood activities, also because of the option to store charcoal and sell it in times of a bad economic situation (Schure et al., 2014). However, charcoal rarely helps the poor to overcome poverty or enables them to do investments in sustainable technologies that could help them on the long run to generate income (Zulu & Richardson, 2013; Schure et al., 2014).

Charcoal has the potential to become a source of energy that helps to reduce the rate of greenhouse gas emissions, on the condition that charcoal is produced sustainably (World Bank, 2011; Kammen & Lew, 2005; FAO, 2017). For instance, cookstoves can be useful to create an energy-saving way of using charcoal in Sub-Saharan Africa. But due to the lack of awareness and the investments costs for these devices, these investments may not take place in poor areas (Schure et al., 2014). Another option to reduce the production of charcoal is to ban it. However, as most poor people depend on charcoal, banning charcoal would make their circumstances even worse (Schure et al., 2014).

Background and setting

Forestry in Uganda

In Uganda, charcoal is the main source of energy for private households and it is used both by people from the rural and urban areas (New Vision, 2013). Charcoal production contributes to the worrying trend that can be observed in forests of Uganda. Between 1990 and 2015 the country has lost 122.000 hectares of forests every year. Between 2010 and 2015 this annual average was even higher, with a loss 250.000 hectares of forest each year (NFA, 2016). In total, the last 25 years the total coverage of forested areas has been decreased with 15% (Worldbank, 2015). In 2020, the total coverage of forest that is left is about 1,9 million hectares, which represents approximately 10% of the land area in Uganda. This percentage includes both natural forests and established plantations (NFA, 2020).

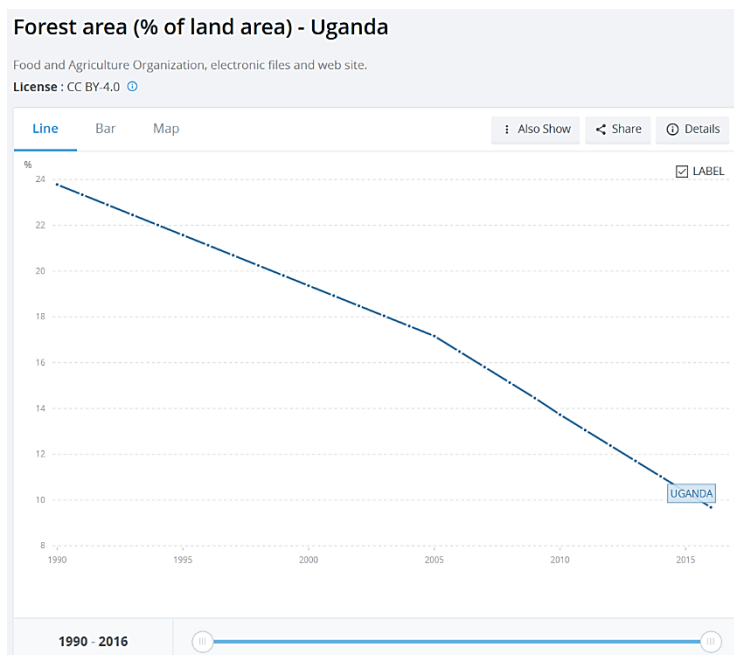


Figure 2: Forest area in Uganda between 1990-2016 (% of land area). Source: World Bank

Nevertheless, Uganda is working on the implementation of Sustainable Forest Management (SFM) in public forests, also when it comes to charcoal production. SFM be explained as “a dynamic and evolving concept that aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations” (UNGA, 2007:4). Several stakeholders are working on this topic, including the Ugandan government, which is helpful since they can come up with laws that can guide the country into a more sustainable use of forests. Stakeholders in this sense are organisations who have influence on forest management. Either by a governmental role or non-governmental role stakeholders are part of the decision-making process when it comes to forest management. Over the last 20 years, the Ugandan government aims to both protect and improve health and diversity in Ugandan forests, while ensuring they continue to provide a range of environmental, social and economic benefits for Uganda’s present and future generations (NFA, 2016: State of Uganda’s Forestry 2015, p. i). The stakeholders follow the international guidelines, developed by the FAO to implement SFM (NFA, 2015).

However, there are few implications which makes it hard for stakeholders to have influence on how forest is managed in Uganda. There is an act, the National Forestry and Tree Planting Act No. 8, 2003, that supports stakeholders in establishing SFM. It prohibits dealing on reserved, but illegal activities, such as charcoal burning are still happening (NFA, 2020). Moreover, just a part of the forests in Uganda is affected by this law. About 0,8 out of 1,9 million of total forest area in Uganda is managed by other governmental institutions or is designated as private land. Overall, the government does not have influence on what happens on private land. Private land is submitted to the governance of landowners and they can do what they want (NFA, 2016). On top of that, there is a lack of proper management in the public forests due to the decentralized way the forest is governed. Each district has its own District Forest Authority (DFA) that is accountable for regulating activities in the public forests. The lack of power of the DFA in decision-making processes makes it hard to effectively introduce decentralized forest management in Uganda (Turyahabwe, Geldenhuys, Watts, Obua, 2007). The government seems to have good intentions to establish SFM in Ugandan

forest, however the implementation of SFM seems to be weak, because of inadequate resource allocation and political interference (Obua, Agea and Ogwal, 2010).

Forestry in Teso

When we zoom in on Teso, a subregion in North East Uganda, we can also see issues with respect to forest management, especially when it comes to charcoal. Charcoal production is big business in Teso, which leads to deforestation (New Vision, 2013; CCTV, 2015). The sales market is big because of the common use of charcoal for cooking in Uganda, which means that there is a lot of demand for charcoal (Royal TV Nigeria, 2014; New Vision, 2013). There are multiple explanations for the high amount of charcoal production. One of them is that Teso has a high risk to become food insecure and must deal with several natural disasters (UNDP, 2014). Soroti, a city in Teso, is known for having the poorest people per square kilometre in Uganda. Those people live on less than one dollar a day (Kelly, 2009). In order to make ends meet, the production of charcoal is used as a source of income (New Vision, 2013). Mainly public forests can be found here.

Aim

So, in Uganda charcoal production is causing problems, especially in Teso. Even though Ugandans know that burning wood into charcoal is bad for the environment, the Ugandans continue doing it (New Vision, 2013). Several stakeholders are working on SFM in Uganda and are also working on the reduction of the impact of charcoal on forest. However, even when stakeholders are working on establishing SFM in Uganda, the charcoal chain has not become 'greener' in the last decades, even though multiple alternatives have been introduced.

An explanation for this is the high economic value of charcoal for vulnerable people. Stakeholders take the economic value of charcoal into account in their way of governing forests. However, apart from the economic value, there is less knowledge available on how other values might influence the way charcoal is perceived and managed among stakeholders. In special, the impact of spiritual values on forest management is unknown yet. We know that values are deeply rooted in society and in people's life and that they influence behaviour indirectly in general, so it is plausible that underlying values will influence the way how charcoal is perceived and managed among stakeholders.

When it comes to transforming the charcoal chain into a more sustainable and greener chain, it is important to understand which values are attached to charcoal among stakeholders. By evaluating values attached to charcoal among stakeholders, it might be possible to improve the implementation of SFM in Teso. So, evaluating the values stakeholders attach to forest is essential knowledge that helps us to understand how forest can be managed more sustainable. And so, we come to the objective of this thesis: how do stakeholder values, attached to charcoal, influence forest management in Teso?

Scientific relevance

Examining values among stakeholders in the charcoal chain may result in new knowledge that can be used to improve the implementation of SFM in the forests of Teso. The scientific relevance of this research is that this research might bridge a knowledge gap concerning underlying values in forest management. Especially when it comes to spiritual values in forest management. There is more interest in spiritual values with respect to nature these days, but there is insufficient knowledge about how forest managers include spiritual values in their way of managing forests. So,

this research could be of help to see if spiritual values influence forest management and in which way. If the results are promising, it could be useful to focus more on values for the implementation SFM. The knowledge about values in forest management, can also be used in other context beyond the borders of Uganda, which may help to develop a better understanding how to implement SFM successfully, especially with respect to charcoal.

Research questions

The aim of this research is thus to examine the values attached to charcoal among stakeholders involved in forest management in Teso. Hence, the central research question of this research is: how do stakeholder values, attached to charcoal, influence forest management in Teso?

The first sub question is designed in order to get an idea of how the charcoal chain is constituted in Teso. This overview might help to put the rest of the data into the specific context of Teso. The purpose of the second part of sub question one is to discover how the selected stakeholders work on establishing SFM regarding charcoal in practice. The intention of the second sub question is to determine which values are present among the selected stakeholders. This sub question has a special focus on spiritual values since religion is dominant in the Ugandan society.

1. *How is the charcoal chain constituted and how do stakeholders involved act in forest management with respect to charcoal in Teso?*
2. *Which values attach the stakeholders involved to forest management with respect to charcoal in Teso?*

Theoretical framework

Values

In order to address the research goal, it is necessary to evaluate values attached to the charcoal chain among the most relevant stakeholders. Underlying values influence directly and indirectly certain behavioural practices, but values can also be noticed in rituals, heroes, and symbols, according to Hofstede (1992). Shared values, rituals, heroes, and symbols together establish a culture or belief.

Fulton et al. (1996) have organised behaviour and values in a model (**figure 3**). In their theoretical framework they elaborate on cognitions that exist on a number of levels. These cognitions are interacting with each other. Behaviour is the level, which is sensible for changes, while fundamental values are deeply rooted in a culture and are consequently less changeable. The intention and attitudes are in between the values and the actual behaviour (Fulton et al., 1996). Values are the things that are most important to you and are connected to your emotions and what you want to feel. Values are also the most hidden ones, while beliefs and attitude can be observed more easily in daily life (Fulton et al., 1996).

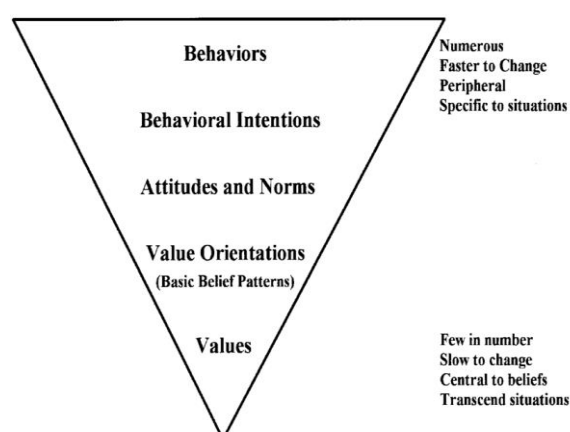


Figure 3: The Cognitive Hierarchy of Fulton et al. (1996)

Fulton et al. explain the overall relationship between values and behaviour. However, for this research we need to dive in theories of values regarding nature. The Value-Belief-Norm theory of Gardner & Stern (**figure 4**) help us to explain the influence of human values on behaviour in an environmental context. This theory divides values regarding nature into four groups: altruistic values, biospheric values and egoistic values. Within the group of the altruistic values, people show that they are motivated to protect the environment because of other people and living species who live in a certain environment. The biospheric value refers the biosphere, the environment, and the ecosystem. Self-interest with respect to society, such as wealth, authority and being influential, belongs to the group of the egoistic values. According to Gardner & Stern (1996) values influence people's belief regarding nature, which includes an ecological worldview, awareness of adverse consequences and taking responsibility. At their turn, beliefs influence pro-environmental norms, which means that people feel the obligation to take pro-environmental actions. The outcome of these norms is behaviour, which can also be divided into four groups: activism, nonactivist public sphere behaviour, private-sphere behaviour, behaviour in organisations.

In the context of this research, behaviour is the way how stakeholders are acting with respect to forest management. The involved stakeholders set up certain strategies and maintain laws concerning forest management based on their attitudes, beliefs, norms, and values. By analysing behavioural practices, it is possible to discover what the underlying values of a stakeholder are that influences this behaviour. However, this research focuses on values, so behaviour will only be analysed as a way to examine values. Beliefs and norms will be described when a value can be attached to it. So, in this research only the division of values will be used, the rest of the theoretical framework of Gardner & Stern will be left behind.

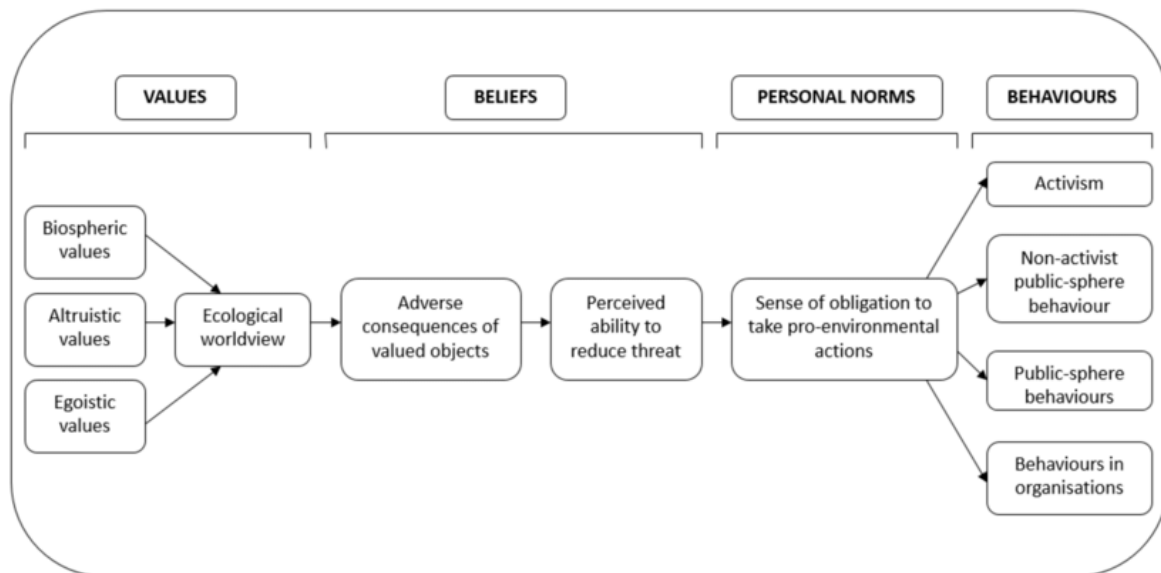


Figure 4: The Value-Belief-Norm Theory of Gardner & Stern (1996)

Spiritual values

Next to more general values regarding nature, this research will also investigate spiritual values. The conceptual framework of spirituality in forest and nature management, designed by De

Pater et al. helps us to grab the underlying spiritual values that can be found in the collected data (De Pater et al., in review).

The conceptual framework of spirituality in forest and nature management consists of seven dimensions which can be used to analyse the most relevant stakeholders involved in the forest management concerning charcoal. The first four dimensions are connected as sub-dimensions to the experiential dimension. These seven dimensions are: the experiential-aesthetic dimension (1.1), experiential-restorative dimension (1.2), experiential-relational dimension (1.3), experiential-‘life force’ dimension (1.4), practical and ritual dimension (2), narrative and mythical dimension (3), philosophical dimension (4), ethical dimension (5), social and institutional dimension (6) and the material dimension (7), which all embody a part of the relationship between forest and spirituality.

The experiential- aesthetic dimension focuses on the awe people can have towards the forest. People can share their spiritual values by showing their wonder about the beauty of nature (Brady 2013; Haberman, 2013; Nugteren, 2005; Roncken, 2018). The experiential-restorative dimension shows the effects nature can have on people’s mindset. The physically and mentally restoring effects of forest come across in this dimension (Buzzell and Chalquist, 2009; Summers and Vivian, 2018). The experiential-relational dimension displays the deep relationship people can have with forests. The concept ‘sense of place’ is used to express the deep connectedness between people and a certain place (Hay, 1998). The experiential-vital force dimension focuses on how people connect with vital forces from nature in order to restore their energy balance (Ivakhiv 2005). The practical and ritual dimension reflects the rituals that people do with and in natural settings. The narrative and mythical dimension covers vital stories, such as myths and histories, which have a connection to holy rituals or stories (Taylor, 2007). The philosophical dimension shows ‘the intellectual underpinning’ of experiences, rituals, and narratives (Taylor, 2007; De Pater et al., in review). The ethical dimension is related to the philosophical dimension and shows the environmental ethics people have with respect to nature (De Pater, 2019). The social and institutional dimension represents the social structures all dimensions are rooted in. Institutions with certain spiritual sense who show environmental compassion, can be of influence on the groups they form an institution for (Taylor, 2007). The material dimension includes all the touchable things related to a spiritual belief (Smart, 2002).

This framework will be used to analyse which spiritual values are present among the selected stakeholders. These spiritual values may indicate which spiritual values are present among stakeholders with respect to charcoal. Although this framework is mainly meant for identifying spiritual values on individual level, this research will attempt to classify the spiritual values of the involved stakeholders. The consequence might be that for example the experiential dimension will be less mentioned in the results.

Relationship between values and behaviour

What can be noticed in theories about values described above, is that values influence beliefs and norms, which at their turn influence behaviour. Theories about behaviour help us to better understand what can be seen as behaviour and how behaviour is influenced by other factors. The Theory of Planned Behaviour

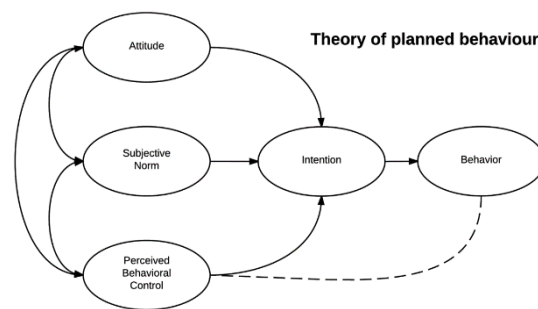


Figure 5: Theory of Planned behaviour of Brug, Lechner & De Vries (1995)

(figure 5) for example explains how behaviour is established. The basic understanding of behaviour is according to Brug, Lechner and De Vries: behaviour depends on attitude, social influences, and self-efficacy. These three factors influence the intention which leads to certain behaviour that can be constrained or stimulated (Brug, Lechner & De Vries, 1995). An attitude is a way a person approaches certain behaviour, which can be both negative and positive (Ajzen, 1991; Britten & Lai, 1998). Social influence is the opinion others have towards certain behaviour (Ajzen, 1991). Self-efficacy is the conviction a person has if a person is able to perform certain behaviour (Ajzen, 1991). However, the Theory of Planned Behaviour lacks in explaining the influence of the environment on behaviour, since this theory mainly focuses on individual behaviour. This gap may be bridged based on the triadic Social Cognitive Theory of Bandura (1986). This theory helps us to understand how our person, behaviour and environment interacts with each other.

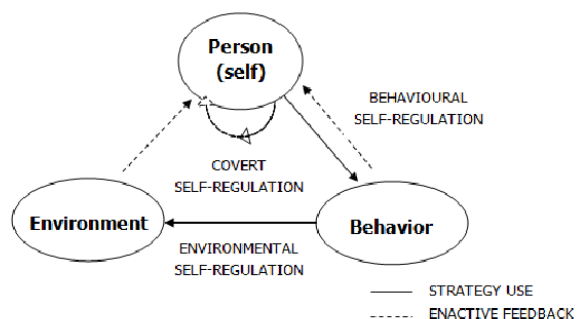


Figure 6: The triadic Social Cognitive Theory of Bandura (1986)

The Theory of Planned Behaviour and the Social Cognitive Theory helps us to consider other factors that influence stakeholder behaviour in forest management. By incorporating these theories when analysing the results, factors that determine behaviour can be noticed. Behavioural practices, such as organising event or promoting technologies for charcoal reduction might be interesting to research, since an underlying value can be attached to that.

Developed behaviour-value model

An adjusted model is developed that includes aspects of all above described theories. See **figure 7**. This model takes the research objective into account, which means that this value-behaviour model focuses on stakeholders as organisations who have influence on SFM in a certain way. On the basis of this model it might be possible to identify for each selected stakeholder the most prominent values with respect to charcoal. The model shows the values and how they relate to behaviour. However, the focus of this research is only on the values.

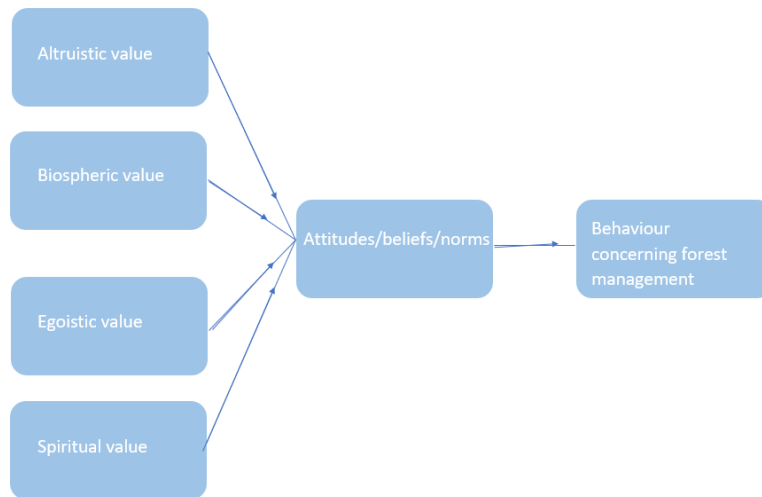


Figure 7: Adjusted behaviour-value model for identifying values among stakeholders in forest management

Values

According to Fulton et al. values are the things that are most important to you and are connected to your emotions and what you want to feel. The model uses the division of the Value-Beliefs-Norms theory and its definitions as a way to group the values that are discovered among the stakeholders. In this research, the spiritual values will be discovered apart from the altruistic, biospheric and egoistic values, as spiritual values are grouped differently. All dimensions of the theoretical framework on spiritual values will be used, but some dimensions might not be mentioned often in the results as this theory focuses on individuals instead of organisations. The model shows that spiritual values have their own group, but the spiritual values will be discussed within the groups of the altruistic, biospheric and egoistic group of values, as spiritual values might have something in common with the other groups. For each group, several values will be mentioned. For example: altruistic values include values such as compassion.

Attitudes/beliefs/norms

An attitude is a way a person approaches certain behaviour, which can be both negative and positive (Azjen, 1991; Britten & Lai, 1998). The attitude of a stakeholder can be the way how a stakeholder sees the use of charcoal as negative or positive. Beliefs are the things that you think is true, even though it cannot be proven that your idea is the truth. It is based on your experiences and what you have learnt in the past (Azjen, 1991; Britten & Lai, 1998). A belief can be the conviction of a stakeholder that the charcoal is needed to let poor people survive. Norms are feelings of moral obligation as society expects certain action. Norms put social pressure on an individual to engage in a specific behaviour (Gardner & Stern, 1996). A norm in this research is perceived as unwritten rules which are maintained with respect to forest management by stakeholders.

Behaviour concerning SFM

How forest is managed by the stakeholders can be seen as behaviour: it portrays how a stakeholder acts in forest management with respect to charcoal and how they contribute to SFM.

Behaviour concerning forest management includes how stakeholders maintain laws and strategies to manage forests, which in fact is an outcome of attitudes, beliefs, and norms.

All in all, the model should be red like this: values influence attitudes, beliefs, and norms of a stakeholder. At their turn, attitudes, beliefs, and norms influence behaviour. However, the main focus of this research is examining values, so this research will primarily focus on the grouped values but takes the other aspects of this model into account. This creates an overview of how the values are discovered, since values can be examined by asking literally which values stakeholders attach to charcoal, but values can also be identified by analysing which values belong to a certain attitude, belief, norm or behaviour of a stakeholder. The identified values will help to distinguish which values are most influential in forest management.

Methodology

Research design

This descriptive research aims to describe which values attached to charcoal are present among stakeholders in forest management, as there is lack of knowledge on values concerning forest management. Since these values are discovered by doing interviews and participants observations, this research can be called a qualitative and explorative research, which means that this research tries to interpret and explain behaviour and experiences of the people involved in this research, without disturbing the natural setting of the study population ('t Hart, Boeije & Hox, 2009). As this research has taken place in Teso, Uganda, this research can also be considered as an ethnographic study.

Study area

Teso, a sub region in the North East of Uganda, was selected as the study area. This sub region was suitable for this research project, as the region has a high rate of poverty and knows many people who are dependent on charcoal as a source of income. Especially, the north east of Uganda knows a high production rate for charcoal. This production is not only meant for people living in Teso, but also for people living beyond the borders of Teso in cities like Kampala.

Next to that, Uganda strives for SFM in the forests, which made it an interesting region to research which values are present among the selected stakeholders who might want to establish SFM. A big share of the forests in Uganda are Central Forest Reserves (CFR), which makes it easier for stakeholders to implement SFM.

In advance of going to the research field, the intention was to research sub regions Teso and Karamoja. Based on the literature study and the contacts with Tear and COU-TEDDO, these sub regions were already a bit explored. However, as a result of the Coronavirus, there was no time left to collect data about charcoal in Karamoja. Therefore, this study only concentrates on Teso as study area.

Study population

Within the study area, choices are made to select a study population that helps to answer the central research question.

Stakeholders

In order to answer the research question, it is necessary that influential stakeholders are studied who may have an impact on forest management in Teso. According to the FAO, stakeholder

involvement in forest management can be defined as: “Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational level” (FRA, 2015). So, in this research, stakeholders are involved who have somehow influence on how forest is managed. This means that also stakeholders can be involved who are just involved in reviewing operation plans of forests. In this research, stakeholders are seen as organisations, not as individuals.

Actors

However, to give this research context of how the charcoal chain is established in Teso, it is also important to look at actors. Actors are seen as persons who are involved social or political processes. In this research, actors are charcoal producers, transporters, and sellers. They are directly involved in the charcoal chain, but they are not the ones who are influential in forest management in Teso, as they do not have a voice in decision-making processes. As the focus of this research is on stakeholders, actors will only be mentioned to give some context in this research.

Research techniques

Multiple research techniques are used to explore this qualitative research: participant observations, in-depth interviews, and a literature study. All techniques have contributed to accomplish this research project.

Participant observations

In general, participant observations are needed to make a researcher familiar with the research field (‘t Hart, Boeije & Hox, 2009). The participant observations, or the ethnographic research, used in this research were of help to put all information collected through the interviews and literature study into context. By seeing and experiencing how society is functioning, information about charcoal was placed in perspective. On top of that, it was possible to have informal conversations about charcoal, which made it possible to make field notes about how the charcoal chain flows in Teso. The most striking observations were reported in a notebook or captured on camera during field trips and in daily life experiences. Going on field trips was possible thanks to the collaboration with COU-TEDDO. During the field trips, special attention was given to objects such as cooking stoves or cooking houses. Frequently asked questions during informal conversation were: Why do you use this type of fuel? Where do you get your charcoal from? However, the participant observations were not sufficient to get to know the underlying values about charcoal.

Interviews

The in-depth interviews helped to ask for specific data about underlying values, but also about beliefs, attitudes and norms and behaviour, which was translated into values afterwards. The interviews were semi-structured interviews, which means that during the interviews the respondent had the chance to deviate from the question that was asked (‘t Hart, Boeije & Hox, 2009). In advance, a topic list was made to structure the interviews. The interviews started with question related to behaviour, subsequently to beliefs, attitudes, and norms and at the end the questions were related to underlying values. This structure was made on the basis of the several theories described in the theoretical model: values influence beliefs, attitudes, and norms, while beliefs, attitudes, and norms influence behaviour. Several topic lists were developed beforehand to make the questions suitable for the person that was interviewed. The interviews helped to better understand a stakeholder’s behaviour in forest management with respect to charcoal. The topic lists of the semi-structured

interviews are attached in appendix I and II. Appendix I is for charcoal suppliers; appendix II is for stakeholders who are actively working on implementing SFM in Teso.

Literature study

The literature study was partly done before going to the research field. At first, the aim of the literature study was to dive into the research topic and to construct a topic list for the interviews that were adjusted to stakeholders involved in this study. By doing a literature study, it was possible to make a broad selection of the most relevant stakeholders for this research. In the field it was possible to see what the influence of the stakeholders was in reality and so the definite selection of stakeholders was made in Teso. After the field work, the literature study enabled this research to get some formal information about the selected stakeholders, that had not become apparent in the in-depth interviews and participant observations. On the websites of the selected stakeholders and via newspapers, more background information was found. Hence, the literature study complemented information gathered via participant observations and interviews.

Respondents

Selected stakeholders

Several stakeholders have influence on forest management in Teso. Nevertheless, just a few stakeholders in Teso are observed and interviewed and seen as influential, simply due to limited time spend in the research field and due to connections of COU-TEDDO who have assisted in conducting interviews. This research includes the following stakeholders: the National Forest Authority (NFA) & the District Forest Authority (DFA), religious institutions, NGOs, and Collaborative Forest Management (CFM) groups. In this section, the importance of each involved stakeholder in Teso will be demonstrated.

NFA & DFA

At first, the local and national government on forest management had been selected as influential stakeholders. In specific, research is done on the influence of the NFA and DFA. These governmental bodies are in control for managing the CFR. In the CFR, the NFA and DFA have influence by making laws. The NFA wants to establish SFM in the forests and therefore their influence on SFM is quite big. Since the NFA is decentralized, the DFA is responsible body for establishing SFM in local forest reserves. The NFA and DFM collaborate with other stakeholders, such as bodies of the UN, to better implement SFM in Uganda. SFM should enable the government, local communities, and private sector to obtain products from forests in a sustainable way (NFA, 2020), so SFM is important to governmental bodies.

Religious institutions

About 150 years ago, Christianity and Islam have been introduced to Uganda. Missionaries were very successful, which resulted in a country that has the most Christians on the whole African continent. Currently, most Ugandans identify themselves as religious (Tabaire & Okao, 2010). 84% of the people see themselves as Christian, while 14% claims to be Muslim (UGFacts, 2019). Being a non-believer is a taboo in Uganda (Landy, 2018). Religious institutions have a dominant voice in society and have a close relationship with their followers as they also contribute to education and health care (Landy, 2018). In history, religious institutions were partnering with the government which makes them even more influential (Ward, n.d.). Churches and the government are still cooperating,

but this also creates problems in society as churches and government are both seen as patronage oriented (Tabaire & Okao, 2010). When churches overcome the described issues, they seem to be a vital contributor to change society (Ward, n.d.). When it comes to SFM, the church wants to contribute to a sustainable future. Several churches try to address issues in natural resources. For example, churches have set up a training called 'Farming in Gods way' in order to teach people how to use sustainable techniques in the agricultural sector (Shaughnessy, 2017). Taking religious institutions into account in this research is also important to be able to discover spiritual values regarding charcoal, as the assumption is that religious institutions attach spiritual values to nature.

NGOs

The role of NGOs in general is to bridge the gap between political institutions and the grassroots. They attempt to give the voiceless a voice in decision making processes in society (NGO, 2020). NGOs have multiple roles in society in general, but specifically in Uganda, they provide services, they are catalysts of social capital, they raise awareness on several national issues and advocate for vulnerable groups of people. NGOs in Uganda are often small and underfunded (Barr, Fafchamps & Owens, 2005). Most NGOs in Uganda aim to fight poverty. They have different programs for achieving that, which also includes creating food security. In order to address this, NGOs work on programs in the agricultural sector to help the vulnerable ones to develop a sustainable way of farming (Omondi, 2020). In Teso, NGOs are present as this sub region is poor and so attracts NGOs. NGOs are working on several project in Teso, but mainly they work on poverty alleviation and they work on health issues like HIV/aids. Next to church related NGOs, the United Nations (UN) are also active in Teso to support on, among others, climate related issues. The UN try to give an indication how vulnerable Teso is on several aspects and how they can give a response to that vulnerability (UNDP, 2014). The REDD+ programs of the UN try to advocate for a reformation in the carbon industry. However, for NGOs it seems to be complicated to both support a sustainable carbon industry and positive social outcomes (Lyons et al., 2017).

CFM groups

CFM is a form of participatory forest management where both communities and forest management agencies are involved in sustainable management of forests (New Vision, 2017). This co-management between governmental forest institutions and local communities, helps the communities in Uganda to participate in decisions in which they also have an interest (New Vision, 2017). Most of the times, this type of forest management can be found in CFR in Uganda, which means that private land parts are not included. Together with the NFA communities are responsible for maintaining the forest and avoiding criminal actions in the forest. They help with patrolling for example in order to detect illegal activities. The idea of having a shared responsibility as national government and local community, helps to protect the forest better. Not only protection is the common goal of these two collaborating groups, but also sharing the benefits that the forest provides (New Vision, 2017; Turyahabwe et al., 2012). CFM already exists for about 100 years and several stakeholders have joined the community with their influence (Turyahabwe et al., 2012). More than 300 groups of people are included in CFM in Uganda (Kazoora, Irumba, Smith & Campese, 2020). In Teso several CFM groups are actively working on creating a sustainable environment for the communities they live in. Together with NGOs they work on projects to be able to maintain their own communities and to become less dependent on charcoal for example. They have an influence on SFM by the way they are partnering with the government (Turyahabwe et al., 2012). However, the relationship and the power relation between the government and CFM groups is unequal, since the

government still has more power to implement their rules (Turyahabwe et al., 2012). Besides, the power relations in the CFM group is unequal as there are stakeholders present who have more power than a poor farmer for example. CFM groups have the potential to be an stakeholder in the charcoal chain that supports SFM, since they take up responsibilities such as patrolling, reforestation and improving livelihoods, but CFM agreements are often not met, a report of the Ugandan government shows (Kazoora et al., 2020).

Selection criteria

The selection criterion to be interviewed was to be an employee of one of these organisations or institutions that were selected as stakeholder, no matter what kind of function they had. At least, the respondents had to be familiar with the charcoal chain in Teso.

Interviewees

In total, five interviews have been conducted. The intention was to interview all the stakeholders involved. This has been realized apart, except the CFM groups. As there was no interview been held with a member of the CFM groups, this information was gathered via a literature study and participant observations. The participant observations were also used to complement information of the other stakeholders. See the table below for the overview of the conducted interviews.

All interviewees gave their oral consent to record the conversation, on the condition that the data of the interview was anonymized and handled confidentially.

NFA & DFA

In order to gather information about the DFA & NFA on this topic, an interview has been held with a District Forestry officer in Soroti, who worked on the production sectoral committee.

Religious institutions

Due to the limited time in the research field, only an interview has taken place with two reverends of the Anglican Church in Amuria. The data of the interviews with the two reverends is used to examine the underlying values among religious actors. One of the reverends was retired, while the other reverend was just at the beginning of his career.

NGOs

Information about the NGO, is gathered based on an interview with an employee of executive body of the Anglican church, called Teso Diocese Planning and Development Planning, or the abbreviation: COU-TEDDO. This organisation works on poverty relief in Teso and is supported by the Anglican church. They help the most vulnerable ones like orphans and focus on their projects, among others, on gender-based violence, good governance, and climate change adaptation. They try with their programs to help people to overcome poverty in a sustainable way, so that people can generate their own income on the long run. The organisation that has been interviewed, is not the only NGO that is working on those topics, but does represent a group of NGOs working in Teso since they get their support for their programs from NGOs from Europe, such as TearFund and ICCO.

Actor in the charcoal chain

Another interview has been conducted with a charcoal seller, an actor in the charcoal chain in Teso. the aim of this interview was to get an idea of how the charcoal chain walks through Teso and was used to put data of the selected stakeholders in perspective.

Interviewee	Date and place	Stakeholder/actor	Gender
District officer on forestry	March 2020 @ Forest Conservation Department in Soroti	Stakeholder: NFA & DFA	Man
Retired reverend of the Anglican Church	March 2020 @ Amuria District	Stakeholder: Religious institutions	Man
Reverend of the Anglican Church	March 2020 @ Amuria District	Stakeholder: Religious institutions	Man
Employee of COU-TEDDO	February 2020 @ Soroti	Stakeholder: NGOs	Man
Charcoal seller	March 2020@ Soroti Town	Actor in the charcoal chain	Woman

Field work

The field work started with creating an overview of how the charcoal chain is constituted in Teso. The first three weeks have been spent on just looking around, going on field trips together with the employees of COU-TEDDO, having informal conversations with people working for COU-TEDDO and with people hosting the field trips of COU-TEDDO. In addition, an interview was held with a charcoal seller, who could tell something about where the charcoal was produced and how the charcoal chain runs through Teso.

All the information of participant observations was helpful to get a general idea of what is happening in the charcoal chain. From this point onwards, together with information from the literature study that was gathered before the field work began, it was possible to select the most involved stakeholders and to do an interview with people working for these stakeholders. Most of the time was spend in Soroti, as COU-TEDDO was based there. Observations of daily life were most of the times notes of this city. From this city, the rest of the study area was visited by private cars of COU-TEDDO. During field trips we visited CFM groups and farmers, who all use charcoal in their household. The main purpose of the field trips was to show NGO employees from abroad how farmers are working with the programs of COU-TEDDO. Besides, the field trips were meant to check how farmers were doing and if they needed additional help of COU-TEDDO.

For doing the interviews in the field, an employee of COU-TEDDO assisted due to safety reasons. Next to that, a local knows the area better and can talk in the local language to people to ask for an interview for example. This was useful to be easier accepted as a researcher by the interviewees.

Data analysis

With the data gathered from the field in Uganda and by using academic and non-academic literature, the results were written down. The literature study has been placed at the 'introduction' of this research. The findings of the participant observations and interviews can be found at the 'results' section.

After the field work was done, the recorded interviews were transcribed literally. Subsequently, the interviews and participant observations has been coded by open coding, which were invented when wading through the data in ATLAS.ti. The data was structured on the basis of the most striking words, such as 'poverty' and 'economy' that was mentioned very often. Later, the data was analysed by more structural coding. The codes that were attached to the data related to the behavioural theories. Codes such as 'knowledge about the environment', 'values regarding nature' 'behaviour regarding nature' were used. In addition to analyse the data, axial coding has been used to see similarities and differences in the data. So, first inductive coding has been applied to the data, afterwards deductive coding has been used based on the behavioural theories. In Appendix III a coding scheme can be found.

Results

Constitution of the charcoal chain in Teso

The intention of this section is to get an idea of how the charcoal value chain runs through the subregion of Teso and who physically contributes to that supply chain. Along the charcoal chain the charcoal producer, transporter, seller, and consumer can be found, which are actors who do not have a voice in decision-making processes among forest management. This outline, based on participant observations obtained in the research field, will help to better see how SFM should be implemented in the charcoal chain.

As a way to provide an overall view on the charcoal chain that helps to put the rest of the results into perspective, it is necessary to show how and where the charcoal chain is situated in Teso. This section will elaborate on the local small charcoal chain in Teso, based on the participant observations and shows who is directly involved in the charcoal chain in Teso. These players are respectively charcoal producers, transporters, sellers, and consumers.

The map in **figure 8** shows that most cities situated are located in southern Teso. What derived from informal conversations is that the northern parts of the subregion produce charcoal. Specific indigenous trees that can be found over there that are suitable to produce charcoal. These trees, like the tamarin and shea nut, are known to burn very long, which makes these trees attractive as a resource to cook on. The south is known for its big cities, such as Soroti and Serrere, with large sales markets. Subsequently, the transport route starts in northern Teso and ends more in the south of this subregion. The northern parts of Teso do not only fill the needs for charcoal in the southern villages and cities, but they also meet the great demand for charcoal of cities such as Kampala, beyond the borders of Teso.

The charcoal chain is composed by producers, sellers and transporters who all have their own businesses. Producers in northern parts of Teso do not have a large sales market, because most inhabitants of the sparsely populated villages use firewood instead of charcoal for cooking. This creates an urge for charcoal producers to sell the charcoal to transporters, as charcoal producers often do not have their own truck for transportation of charcoal to cities. And so, transporting

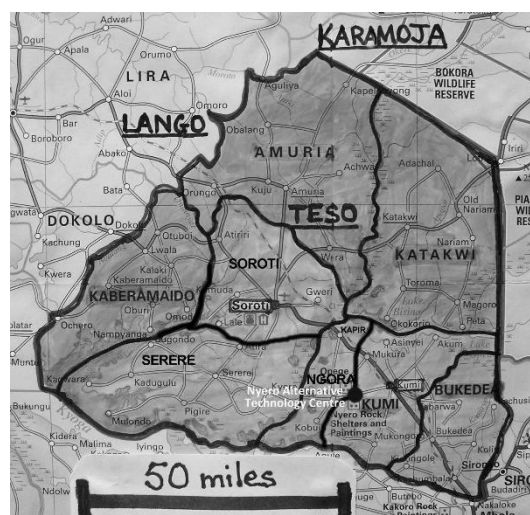


Figure 8: Map of Teso

charcoal is a business apart from selling and producing charcoal. Transporters have access to vehicles that can be used to transport the charcoal from the countryside to more urbanized areas with larger sales markets. Since charcoal producers are most of the times dependent on transporters to get rid of their charcoal, the transporters seem to have a kind of monopoly position, due to the fact that transporters are the only ones in the charcoal chain who possess vehicles. Transporters earn money by putting interest on the price they paid for the charcoal, but when the charcoal is taken to Kampala, the selling price is even higher. People living in Kampala live further away from where charcoal is produced, which means more transport costs are included. Moreover, in Kampala there is less competition, as there are less places in the surroundings of Kampala that produce charcoal. The added value of charcoal can reach up to two or three times the price people pay in cities in Teso.

Charcoal sellers have their own department on the central market where they sell their charcoal, like in Soroti town for example, see **figure 9**. In Teso, charcoal sellers are the people most close to the consumers of charcoal. Charcoal is the main source of energy for private households in Teso. Most people come from within the city to buy charcoal at the market in the city but also people from, for example Kampala, come to cities in Teso to buy charcoal. Charcoal is much cheaper around Teso than in Kampala. This is only possible when people have a vehicle which enables them to travel to other subregions to buy charcoal from.



Figure 9: Charcoal selling point at the market in Soroti town

The use of charcoal is very common especially for the grown-up population in Teso, the district officer on forestry told in an interview. People buy it at the market and transport it on the so called boda boda's (motorcycle taxi's). Consumers of charcoal can be found anywhere in and around cities of Teso. Charcoal is largely used in cities since it is a carbon fuel that creates less flames and smoke, which is needed in small, rented houses in densely populated cities, the respondent of the NGO declared in an interview. Hence, this fuel is used as an effective tool for cooking.

Stakeholders and its values attached to charcoal in Teso

The objective of this research is to get an answer on the question which values among stakeholders are attached to charcoal in Teso. At first, a short introduction will be given on the stakeholders involved in this research, subsequently the values that have been identified in interviews and participant observations will be displayed for each stakeholder. The examined values will be grouped into one of the four groups of the theoretical model of this research: altruistic, biospheric, egoistic and openness to change values. The values that are attached to charcoal derive from several norms, strategies and rules, which can be seen as behaviour, but also as attitudes, beliefs and norms. A description about these factors are needed in order to see where the values are coming from.

NFA & DFA

As been stated in the Methodology, the NFA & DFA are active in the charcoal chain as a part of managing forests sustainably in Teso. An interview with the district officer on forestry gave some insights in how forest is managed by the DFA and what the actual behavioural practices and values of

the NFA & DFA are when it comes to forest management. These practices are primarily maintaining the law, the National Tree Planting Act, regarding forest management.

Altruistic values

In the interview with the district officers, several altruistic values are identified. An example of these values can be seen in the way how the district officer shows compassion and tolerance to the poor in Teso. The government tries to create awareness which can be influenced by the values of altruism: the local government want the poor to survive but they are also working on protecting the forest for the sake of the poor people living in Teso. Behavioural outcomes of these values of altruism is that the government wants to reduce the amount of charcoal that is used in the long-term future, since a reduction of charcoal would be better to protect the people in Teso against backward effects of charcoal. However, the government does not see possibilities to totally get rid of charcoal, even though the government knows that using charcoal has bad effects on the environment. The district officer's belief is: *"We are regulating the allowing the forestation that is a great one. So, we do intervene at certain points. But of course, basically, you cannot ban charcoal burning. That is a fact. You cannot ban charcoal burning"*. The district officer is convinced that there is no way to ban charcoal, which might be constructed by the value of showing compassion towards people depending on charcoal. The government takes the vulnerable people into account in its policy, since they know that banning charcoal would lead to deaths, if charcoal cannot be used for cooking. Poor people use the money they obtain from selling charcoal for paying school fees for example. That is why the government is not putting hard measure on using and producing charcoal. The government looks at the struggle of their citizens and show compassion and tolerance to remain the peace in the country. However, when illegal activities are detected in the charcoal chain, the government hands out fines, which means that justice is also a meaningful value to them.

The government organises interventions that may help people to better take care of their environment, which can also be defined as behavioural action. The government comes up with trainings to teach people how to construct energy saving stoves instead of using much charcoal for cooking which reduces the amount of charcoal that is usually used by multiple households: *"basically, we just have a look at interventions how we can reduce. That is why if you look at, there is a project SPBS. Solar Production Black Skin. That is a government project, but it works in cooperation with farmers"*. The interviewed district officer responded on how they promote alternatives for charcoal: *"Yes, energy saving stoves. We conduct certain trainings. That is a conjunction with our partners. We have trainings and basically tell... Especially now for the people in the villages. We train them on how to construct stoves. That's what we do."*

Another altruistic value is that the government wants to collaborate with other stakeholders on this topic. The interviewee declared that the government wants to have help from other institutions to implement alternatives for charcoal: *"Yes, so, anyway we do promote such technologies. But of course, we need other partners to come. Yes, currently we have other partners supporting us. They contain NGOs, they support us. Specifically, as a government, we need more partners. On that area. We see that we need other partners to come up with alternatives"*. Collaboration can be defined as altruistic value since it shows that the government is concerned about other people and living species and therefore want to collaborate with other institutions.

Biospheric values

Biospheric values can also discovered in the interview with the district officer. These values

can be seen through looking at how the government behaves in forest management, but also through his beliefs. The belief is that forests need to be protected because of what the forests provide people and species living in Teso. Trees are well-known for absorbing CO₂, so burning charcoal is harmful for the atmospheric conditions. His belief is affected by values of finding balance in the ecosystem. The district officer argues that if there would be no trees left, there would be no way to survive. In other words: *"If there are no trees, none of us would survive"*. This quote can also be selected as a spiritual value in the experiential dimension. The district officer values the deep connectedness between people and forest.

Trees play an important role in the ecological cycle and hence need to be protected, according to the district officer. Special attention is given to the protection of the indigenous trees that offer benefits for the local ecosystem. Nudge of trees and the tamarin are one of those trees that protected by the government in Teso, although this depends on the district you live in how strict those laws are maintained. The argument to protect indigenous trees better is because of the nutritious value these trees have. The trees provide fruits for several generations in contrast to charcoal that is only used on the short run. *"So, along the way, it is, you know, providing benefits from one generation to another. So, it's like somebody who's is cutting down a tree and this starts getting bad. That is the end of it. So, we are doing it to protect where, and we are trying to protect the indigenous trees"*. This argument can be seen in the light of the practical and ritual dimension of the spiritual values: it reflects the rituals people have in a natural setting. People are used to get nutrition from the trees for generations, so this needs to be preserved and not be grabbed away by charcoal.

Egoistic values

What can be selected as egoistic values are the values that should be beneficial for society. The district officer answered on the question why they are protecting trees: *"Why are we protecting the forest? There are many reasons. There are many reasons for us protecting the forest. Actually, when we look at the services first provides, especially economic services. The rainfall, the forest actors, judgement areas, so there are a lot of things that forests provide. That's why we struggle having them to protect them. So, so hard"*. The economic value of trees is showed here. Saving trees would, at the end, help to save the government from spending money on climate change effect due to the loss of too many trees.

The district officer admitted that they could come up with subsidies as they know that people might accept alternatives at lower costs. Though this is not happening yet because there is not enough money to provide those alternatives for all people who use charcoal due to the high population Uganda has. The strategy of the government to first boost the economy and so less people become dependent on charcoal as a source of income, which is a behavioural practice with respect to forest management. When people can afford alternatives such as biogas to cook on, the government is encouraging that. Values that derives from this, within the group of the egoistic values, are equality and harmony: the government wants all inhabitants to profit from an economic boost, they say. The government knows that supporting alternatives would lead to inequality as most rich people can already afford alternatives for charcoal.

Another value is efficiency. A quote of the district officer: *"So there are a lot of effects. Especially, the biting one is deforestation. Deforestation that has a lot of consequences. A lot of consequences. But still, charcoal burning in our country is inefficient"*. Inefficiency is according to him

one of the causes for deforestation. The value of efficiency drives him to make the charcoal chain more efficient which should, at the end, result in a reduction of charcoal production.

Religious institutions

In this research, only an interview with reverends of the Anglican Church has taken place, so this chapter will primarily focus on the role of the Anglican Church as religious stakeholder in the charcoal chain for developing SFM. In the subregion of Teso, everywhere churches can be found, and mosques be heard. Religious institutions have a specific way of influencing society. For example, the bishop of the Anglican Church of Soroti is able to set its own rules for a parish, which are being followed by the inhabitants of Soroti. People want to follow the orders of the bishop as the church is revered by society. On top of that, the social control in those communities can be of help to let the followers listen to the church. Church leaders connect with the people through services and informal conversations. Since the church is a respected institute in Teso, the church can have an influence on the behaviour of people concerning charcoal and on creating SFM with other stakeholders. For the rest of this paragraph just 'church' will be mentioned, but actually the Anglican Church is meant with this term.

Altruistic values

Multiple altruistic values can be discovered by analysing the interview with the reverends of the Anglican Church. These values are working through the way the Anglican church is acting in forest management and so these values can be recognized in this way. One of the altruistic values is education. As derived from the interviews is that the Anglican church wants to educate people on how to live sustainably, so that people know how to be resilient. As the church is part of society, people listen to them when the church speaks on important events such as burials and baptism services. By giving their followers insights in how climate has changed over time and how it effects people's life, they try to enable the people to work on resilience. The young reverend told: *"For the future also when this generation goes another generations, should not suffer. This generation should not make the other generation to suffer. Like our forefathers, if they destroyed all the generation then this generation would have the worst situation. The one that would be more worse than the one that we have now"*. Resilience is also important to the church and can be called a value. Creating resilience helps people to overcome issues, such as depending on charcoal.

The church is not only advocating for planting more trees and for keeping trees that already there, but they also try to be an example of how you could plant more trees. As already said, these behavioural practices are the outcome of the value education. In a compound of Anglican church in Amuria, the church has planted trees. Besides, the church tries to identify who can be an example for a community in the way a person has created more biodiversity on his land. These people get support from the church and other people are pointed to those people who actually can survive in a sustainable way: *"So, that's why we have in at least in each parish there are some people called the demo farmers. So, they have planted more than a hundred trees. Different species. There are some who are specialized in this citrus tree, others have specialized in timber trees. So, they are identified given more support to encourage to So, I think that other people surrounding them also try to cope up. By trying to plant many trees. So, by that day they can also be the identified to benefit"*.

When the church educates about the importance of trees for the environment, sometimes the church invites people from above 60 to tell about the effects of climate change. These elderlies have seen the effects of the massive cut of trees in their area over the last decades. They have seen

that the rain pattern has changed and that more mud slides have come over the years that destroyed harvests. The young reverend said this about such events: *"When we are teaching them, we also give comparisons like some time back: how was the environment and the climate then and now? Then we ask them, especially older person who have been there by that time. But how do we compare the other time when you're a bit like 30 years. Now you're 60 years: how do you compare that climate? Then they give a comparison and a difference that the other time at least the climate was fair. But now, the climate has worsened. Cause now, in Teso, the onset for rains used to be February. But now, these times, you'll find like last year, rain came in May. So now they understand that the climate has changed. So now we bring the attention, then we now give the right full information. What has caused the climate to change? Human activities, by cutting down trees for charcoal, brick burning, burning bushes".*

A spiritual value is found in the light of the social and institutional dimension. The church as an institute shows environmental compassion and tries to advocate for this under their followers as well. The church is close to the people since church leaders live all over the place in Teso. The bishop spreads the order to protect the forest better through the whole subregion unto its servants and so many people are reached. The retired reverend told they use every gathering to speak about how the trees can be better protected: *"We get the opportunity of a gathering. We speak to them. When we say: can you please say a prayer for this? That is how its comes".* The reverend combines talking about the environment with his religion. Talking about the environment derives for him from a spiritual value that protecting God's creation is his responsibility.

As a church, church leaders use their power to tell people what the sense is of planting trees. In this way, the reverends show compassion towards the environment, which is an altruistic value that influences the way the church is working in forest management. The retired reverend told that he takes every moment to tell about the value of trees for the environment. By asking people why people are cutting down trees for charcoal, he tries to create awareness among those people. He does that when he has a confidential conversation or when he is leading a baptism service or burial. He said: *"We are encouraging the leadership or our government. You need all structures to make sure that they try all their best in protecting cutting down of the trees. And for now, we speak every now and then. Every Sunday, every burial, because in a burial everybody is coming".* At these moments, he told, people are most interested in what he is telling, since people are kind of emotional. On top of that, a lot of people gather at those services.

To celebrate a new life, the retired reverend introduced an idea of planting trees after baptism. The underlying value with respect to this idea is independence. By planting trees, the child that has been baptized has its own trees for the days the child is old enough to get its pension. By the time the child retires, the trees are mature and ready to be cut. This creates a budget for when the child is retired and not able to work anymore. In this way this person can maintain itself due to upgrown the trees. A quote of the young reverend: *"When they come for baptism we also give them a chance that when you are bringing a child for baptism, you should at least plant two or three, or two or more trees ... seedlings. So, when that child is growing, the child will now grow... Because now, when we give them only the benefits about changing the climate, they might not understand. But we tell them like, that tree can be a bank for your child. When the child grows, it will get when the tree is big. You fell it and sell for the education and treating. So now they are planting trees".* The purpose of this new custom is to make people independent so they can look after their own future.

Looking after people is also an altruistic value. *"Being a church leader, you know, being a pastor, you have to look after the flock in many aspects. Look at their lives, the way they stay*

around". Not only at baptism the church advocates for planting trees, but also when people get close to their retirement. They talk to people how they could plant more trees in order to create a pension for themselves or for their children to stay independent: *"We encourage them when you reach that age prepare for your retirement now when you are still strong. Plant many trees. If you plant 20 by that time when you reach 60 years, you will have these 20 when they are mature enough to be sold. Every year you sell one, you get one million or 800"*. In this way, trees are seen as material. Trees are touchable things that help to sustain a human life, which is a spiritual value in the material dimension.

Biospheric values

The church acknowledges the ecological relevance of the forest, which can be grouped in the biospheric values that influences forest management of the church. Planting trees and protecting them is good for the environment and for combating climate change, both reverends argued. As the interviewee literally said: *"nature is life"*. Nature is God's creation and therefore it needs to be protected. This argument can be marked as a spiritual value in the narrative and mythical dimension. Via stories the retired reverend shows the urge to protect the trees. The indigenous trees provide the cool environment, the shadow people need on hot and dry days. All creations are necessary in order to keep nature in balance. Animals and human beings could not live without trees. These arguments show the deep relationship between people and nature, which can be seen as spiritual values in the experiential-relational dimension. Nature has to be kept in balance. Balance is a value that influences how the reverend is intervening to establish SFM. He keeps on talking during ceremonies or daily life conversations to cut less trees and take care of the environment.

According to the reverend, the economic value of charcoal is limited for the church. The church knows that people hardly have another choice than using charcoal for daily survival, however the reverends see planting trees as an investment, rather than cutting trees for charcoal which only has quick economic value. They believe that when too many trees are cut, it has backward effects on the on the environment and economy.

The reverend answered on the question why church leaders volunteer on working in programs to protect the trees: *"We are doing these being volunteers this time. We are doing this because we have a heart to our parish. God's creation. Because when we say: lets' wait for a pay. How much is it the wages of paying? Then things will all go worse. And then we shall pay. So that's why we are saying: no, where it comes some little, we cannot see, but we continue talking about our environment"*. This can also be marked as ecological compassion. The church does not want Gods creation to be destroyed, so therefore they take up responsibility to talk about the effects of charcoal on the environment. This is a spiritual value in the ethical dimension. God's creation is very important to them, so waiting for them to be paid would not be ethical.

Egoistic values

Egoistic values refer to the way how values lead to behaviour that is mainly based on self-interest of the stakeholder in society. The church does not only advocate for individuals to invest in planting trees, they also advice the government to use their budget to spend on planting trees and giving trainings. Sometimes, the church had noticed that this budget was spend on for example the health sector, which is misuse of funding. The reverends also told that they inform the local government in case of illegal activities in the charcoal chain since the police does not have the possibilities to control the whole charcoal chain. The church helps them to detect who is producing

and transporting charcoal illegally. And if those people do not listen, the church informs the local government to arrest those people stop burning charcoal. In this way, the Anglican church can use its power to influence the way how forest is managed, which can be described as a value. Power might be important to the church which drives the church to keep involved in forest management.

On the other side, collaboration is also an important value to the church. The church collaborates closely with the government and asks its followers to inform them when there are people found producing charcoal illegally. At first, the church advises those people to act differently. When they are found another time using charcoal illegally, the church tells the government, that has the power to arrest them. When this happens, the whole village now knows that using charcoal illegally is not acceptable anymore and they stop doing it. And so, the church can also maintain its power in society, which might be valuable to the church.

Another egoistic value is that the fact that nature provides medicines supports the reverends to protect trees. The medicines the forest gives can also be seen as a spiritual value in the experiential-vital force dimension. Forest restore the energy balance of people.

NGOs

NGOs in Teso can be seen as quite influential. They collaborate and get support from the government and from churches, which strengthens their position in society. NGOs are close to the poor people are attempting to identify who need their help the most. As a person said in an informal conversation: the people are thankful for such organisations for not forgetting them and giving them the training, they need.

The NGO interviewed is a an organisation that is part of the Church of Uganda. The NGO works on several topics, including how to reduce charcoal. Together with other NGOs they are actively working on poverty alleviation.

Altruistic values

Multiple altruistic values can be identified among the interviewed NGO. Education is an important value to NGO. This value can be discovered by the way the organisation tries to make communities resilient by implementing technologies and education on how to deal with climate issues. Since the organisation knows its own environment and knows that most of the people in Teso rely on agriculture, their focus is mainly on giving farmers support to decrease their dependency on agriculture by creating alternative ways of income. A program officer of the involved NGO told in an informal conversation: *“What we try to do as an organisation is to empower communities, educate them skills on climate resilient agriculture. And we are also encouraging them to have other resources of income”*. Empowerment is one of the core values of the NGO.

The organisation knows the impact of the use of charcoal on the environment, but since they see that most of those people working and consuming in the charcoal chain are poor, they try to come up with alternatives that fits the needs of those people. The program officer of the NGO declared: *“We know that people rely on agriculture, so if we have another resource for livelihood, at least, they can be able to minimize the shortages that come along with climate change”*. By just advocating for a ban on charcoal, their target group will not escape from poverty. So, the NGO is showing compassion towards people depending on charcoal. This value leads to certain behaviour concerning forest management. By knowing that the poor needs something to cook on, the organisation tries to implement a more energy saving way of charcoal. The Lorena stove is an example of this: a stove that can be linked to several stoves. In this way, just one bundle of

charcoal must be used to start up the stove but can be used by several households. This diminishes the amount of charcoal that is used on daily basis by these households. Next to this response in order to reduce the use of charcoal, this NGO also tries to promote electric stoves, which excludes the use of charcoal. However, this device is not accessible for the poor since this stove is quite an investment and most poor people do not have access to a proper electricity network.

The economic value of charcoal is important for the NGO. They do not lobby for a ban on charcoal, but they try to give a structural change to people depending on charcoal. The NGO knows that when people do not have charcoal to sell, they cannot pay the studies of their children and cannot afford sufficient food or provide shelter. The NGO argues that charcoal producers know that charcoal is bad for the environment, but they have no other option. The NGO employee told about charcoal producers: *"They know. Actually, we are advocating but of course you know as being source of life, people don't listen. Because someone, you can have some idea but now you also pressed with the issues of feeding my family. Yes, it is true that I know if I cut down trees for the charcoal this is not working"*. The NGO sees that there is knowledge among charcoal producers that producing charcoal is bad for the environment. Among the NGO employees there is an attitude and belief that the economic value is more important to the charcoal producers than showing environmental compassion for example. That is why the NGO does want to help people depending on charcoal. The NGO argued about people depending on charcoal: *"You need to survive. You just ... by doing the same thing. While you even know the dangers. But you are doing it based on your condition. It is very, very hard. Uhh life"*. The NGO shows the value of compassion for the people producing and using charcoal. They see that life is though for the people that they care of with their programs.

Other behavioural actions of the NGO are looks to transform communities as a whole. They pick some key persons who can make the difference in their own environment. They train them how to collaborate with people from your own village and how they can come up with a plan to make their own environment more sustainable. Those trainings are meant to make their target group more food secure, the employee argued: *"So it purposely food security, health and then the environment comes later.... So, they still also lack that knowledge of doing it on a life scale and doing it as a business. Taking agriculture as a business, doing other ..., all those things. Trying to build that capacity. Planning to do this, planning to do that"*. Capacity in order to take care of your own needs, is one of the core values of the NGOs. They want people to become resilient and independent. That their target group can make up their own business and can live independently. The NGO is close to the vulnerable ones and try to give them a voice. Together with local people, the NGO try to design maps on how the future should look like. This makes it possible for people to look further than just surviving day by day and making quick money with charcoal. Giving people a voice and independence is also a value deeply rooted in the behaviour of the NGO.

Biospheric values

The interviewed NGO employee sees the value of trees for the environment, which is part of the group of biospheric values. They see that charcoal production must be reduced, to not further harm the environment. The NGO offers trainings in biodiversity-enhancing and environmentally sound practices to vulnerable farmers. By supporting to plant crops that can live in such a climate, they try to let farmers produce local food. This can both help to create food security for the people involved in the program of the NGO, but also for people living near to which the crops can be sold. This way of taking care of the environment is a spiritual value related to the social and institutional dimensions: the organisation shows environmental compassion and try to influence the people they

form an institution for. Besides, the NGO is trying to create more 'sense of place', by letting people produce local food. People are producing their own honey for instance which creates ownership of their own environment. It helps to develop connection between people and nature, which is a spiritual value in the experiential-relational dimension. In this way, a balanced environment can be developed at which people and species are living together sustainably.

Egoistic values

Boosting the economy is also important to the NGO. It seems that the economic value is more present in the behaviour of the NGO than just saving trees. First people should profit from a better economy and that will have an effect on the climate. However, NGOs will not directly profit from an economic boost, so this can also be noticed as showing compassion towards the people depending on charcoal.

Collaborative Forest Management groups

The influence of CFM is on one hand influential: the idea that the community is needed to improve the sustainable use of the forest is apparent in Uganda. Therefore, the role of communities is taken seriously, and the local government works together with those communities to create a better and safer environment. On the other hand, CFM is only applicable on public land, since on private landowners can do what they would like to do.

Altruistic values

The CFM group involved showed some altruistic values. The CFM group knows that communities are vulnerable and need charcoal to survive. However, they also think about the next generations. They have experienced the backward effects of cutting trees and climate change on their own environment. Therefore, they want to be careful with trees, which can be defined as showing environmental compassion, which is a spiritual value.

Communities have seen lots of changes in the landscape over the last decades and got to know from their ancestors that there were more trees a few decades ago. Communities have seen rain patterns changing and hence they want to do something on protecting trees as that might keep them save. There is local knowledge about the environment which can be marked as a value. Their values of responsibility for future generations encourages the people to be conscious about the environment they live in. Safety is a value that is important to CFM groups. They are dependent on it and that is one of the reasons why they protect them. Moreover, sometimes their ancestors have lived in Teso for a long time. Their stories about nature are influencing how CFM groups think about nature nowadays. It is a spiritual value that is related to the narrative and mythical dimension.

Collaboration is needed in order to create food security in communities, which is another value that is important to CFM groups. Together they can have a voice in decision-making processes. They also collaborate with NGOs that help them to create surviving strategies. They are dependent on trees and therefore they want to protect trees for the future. They know that harm towards the ecosystem is creating difficulties for a human life, so they protect the ecosystem at first to be save. Balance between nature and human beings is an important value to CFM groups. CFM groups are connected to NGOs. When CFM groups show environmental compassion, they can influence their community with their ideas, which is a spiritual value in the social and institutional dimension.

Biospheric values

The biospheric values can be seen in how the CFM groups are protecting trees. Looking after people and taking care of the environment are also values that have become apparent in how CFM groups are working. CFM in Teso has led to a protection of some parts the public lands. During a field trip to the northern parts of Teso, communities showed how they worked on the program of the NGO, called COU-TEDDO, to make their environment more sustainable. **Figure 10** shows how the community members created a map which shows how the community wanted to establish SFM in their environment. It became clear that the community, together with to local authority, had decided to reduce the cut of trees for charcoal in their area. Together with the NGO they made a map how their area must look like in the future to make it more beneficial and better to live in. They had noticed the consequences of the extreme cut of trees that caused environmental damage, such as cleared parts of land which caused floods for example. The community and the NGO together choose a sample of people who would be able to take the lead. These people were selected based on their knowledge about agriculture for instance. The group of leaders consisted of a secretary, a manager, members, and other functions. Together they filled in how the landscape should look like in an ideal setting. In order to protect themselves for floods, they tried to reduce the number of trees to cut.



Figure 10: a community presenting a map how they are creating a sustainable environment

Egoistic values

The economic value of trees is that it gives them fruits which can be eaten. Especially in remote villages where it is quite hard to reach a market, it is of importance to grow food in their own compound. So, food security as a value is important to CFM groups. Next to that, CFM groups are the people who have a close relationship with nature, as their lives are basically dependent on what the forest provides. Hence, their sense of place among CFM groups, which is a spiritual value in the experiential-relational dimension. The food CFM groups grow can also be sold at the market which creates a source of income. Working in a CFM group can help to get more profits from producing crops as the tasks can be divided more efficiently. The economic value of trees is important to CFM groups.

Through the courses given by NGOs, communities know how to produce food easily and efficiently, which are behavioural practices that derives from the value collaboration. CFM groups work together in communities and therefore they attach a lot of values on people living together. They acknowledge that they need each other in order to get the best profits and to take care of their shared environment, so collaboration is a value that can be attached. As a community they have to work together to have influence in decision-making processes. CFM groups looks after next generations and want to do their best to come up with solutions that make it possible to save the trees. Often, CFM groups still use charcoal for cooking. However, they try to reduce that by using charcoal for the whole community with the Lorena stoves.

Stakeholder	Values
NFA & DFA	<p><i>Altruistic values:</i> Compassion, tolerance, peace, justice, collaboration</p> <p><i>Biospheric values:</i> balance</p> <p><i>Egoistic values:</i> economy, equality, harmony, efficiency</p> <p><i>Spiritual values:</i> in the experiential dimension and in the practical and ritual dimension</p>
Religious institutions	<p><i>Altruistic values:</i> Education, resilience, independence</p> <p><i>Biospheric values:</i> Balance, investment</p> <p><i>Egoistic values:</i> Investment, power, collaboration</p> <p><i>Spiritual values:</i> the social and institutional dimension, in the material dimension, in the experiential-vital force dimension, in the ethical dimension</p>
NGOs	<p><i>Altruistic values:</i> education, resilience, empowerment, economy, compassion, independence, capacity</p> <p><i>Biospheric values:</i> see spiritual values</p> <p><i>Egoistic values:</i> economy</p> <p><i>Spiritual values:</i> spiritual value in the social and institutional dimensions, in the experiential-relational dimension</p>
CFM groups	<p><i>Altruistic values:</i> responsibility, safety, collaboration, balance</p> <p><i>Biospheric values:</i> taking care</p> <p><i>Egoistic values:</i> economy, food security, efficiency, collaboration</p> <p><i>Spiritual values:</i> in the narrative and mythical dimension, in the social and institutional dimension, in the experiential-relational dimension</p>

Figure 11: Table with the identified values per stakeholder

Discussion

Analysis

Most striking results and resemblance with other literature

The research objective of this thesis was to look at how values attached to charcoal might influence forest management among stakeholders. To answer the central research question, first an overview was made of how the charcoal chain runs through Teso, subsequently for each involved stakeholder the values attached to charcoal were identified.

The charcoal chain starts in the north of Teso and flows to the south that has the most densely populated cities. Producers, transporters, and sellers all have their own business, in which transporters seems to be the most influential since they have to transport the charcoal to the sales markets down to the more urban areas. From producer to consumer, all people directly involved in this chain are vulnerable.

Several values are attached to charcoal by the involved stakeholders. Economic values appeared to be the most common value among all stakeholders. Charcoal is valuable since it provides income for the poor. That charcoal has a big economic value was already evident when doing literature study. Figures and reports of the World Bank and FAO showed that charcoal is a source of income for the poor to survive. This was confirmed by the results of this research at which none of the stakeholders wanted to ban charcoal due to its economic value. Literature study also showed that alternatives are introduced in communities where they depend on charcoal, however this has hardly led to implementation of these alternatives. This outcome was also found in the results. Stakeholders tried to reduce charcoal, but the NGO for example tried to do that with introducing a Lorena stove. This stove still uses charcoal at which charcoal did not have to be replaced by another energy resource, such as an electric cookstoves. So, stakeholders try to reduce the amount of charcoal that is used, but they do not really dare to take hard measures to ban charcoal, which might be better for forests.

Education is also a quite often mentioned value. The NFA & DFA want to create awareness and have set up programs to reduce charcoal production in collaboration with NGOs. Also, the Anglican church tries to influence people's behaviour concerning charcoal by educating them. So, all stakeholders value education as a tool to reduce charcoal production. However, the effectivity of educating people in this context is not demonstrated yet. In literature, education is seen as an effective tool to change behaviour, however, education as the only tool in changing behaviour is not successful.

Other striking results are that compassion, independence and collaboration are important values to most of the stakeholders. The district officer admitted that he first wanted to boost the economy to let all people profit equally and to maintain peace in the country. This is also confirmed in an interview with the NGO who said that benefitting all people from the economy would be better. Compassion is also shown towards people using and producing charcoal, since the stakeholders consider the bad economic position of the people. For NGOs independence is an important value. Making people food secure is influencing the way they manage forests. Collaboration is important to CFM groups. CFM groups depend on others to manage the forests. These values have not been described in literature yet, at which it cannot be confirmed by literature is those values were discovered earlier.

Also, spiritual values were found, such as sense of place. The interviewed church, for example, uses their power as an institute to influence people to show environmental compassion for

God's creation. The interviewed NGO worked on 'sense of place' by encouraging to cultivate local food. CFM groups have experienced climate changes. They want to protect the forest due to safety reasons. Collaboration in communities is for them essential, as they together have to become food secure. CFM groups attach spiritual values as they have heard stories from their ancestors about how climate has changed. Several studies are conducted on sense of place. Also, in these studies, sense of place is considered to be an important value that stimulates pro-environmental behavior.

The results of this research have demonstrated that there is a good coherence between laws made on national level and how these laws are managed on district level. The district officer argued that as a district government they are directed by the National Tree Planting Act (2003). Interviews with the reverends also showed that the local government is managing the forest and acts on illegal activities in the forest. This is contradictory to the results of the literature study. Literature showed that the implementation systemic forest management is hard since Uganda's forest management is decentralized. This would lead to improper forest management.

What derived from this study is that next to the government and NGOs, religious institutions are also very important when it comes to forest management. The role of the Anglican church in civil society has been acknowledged in literature, especially in a religious country such as Uganda, but there is insufficient literature available that describes how churches contribute to create awareness among its followers. CFM groups are already mentioned in literature as being groups that have not a big voice in decision-making processes. This can also be partly concluded from this study: CFM groups can have an influence on how forest is managed in their own area, but not on a higher level.

Critical reflection on the theoretical framework

Piles of studies already showed the influence of values on behaviour. Values are deeply rooted in society as it is a part of how a culture is constructed, Hofstede argued. Several theories are written on behaviour as showed in the theoretical framework. Theory of Planned behaviour of Brug, Lechner & De Vries (1995) for example describes how individual behaviour is constructed. Brug, Lechner & De Vries ignored the underlying values, but they concentrate on beliefs, attitudes, and norms, which in fact are a result of underlying values. Spiritual values were also already recognized in literature. Smart made a framework to distinguish several values from each other. De Pater et al. proposed an even more detailed framework on spiritual values. However, values regarding nature and forest management are scarcely researched. Especially there is less knowledge on how spiritual values are used in establishing SFM (De Pater & Elands, in review). And so, this study worked on the knowledge gap of how values are influencing forest management. But due to the fact there is less knowledge on this topic, made it very hard to distinguish what can be seen as norm and what as value for example. There are definitions on these factors, however, still there is some overlap in some quotes.

Based on the Value-Belief-Norm Theory of Stern et al., values were categorized into several groups. Results that could be directly identified as values were grouped likewise. However, not all data showed obvious values, but also attitudes, norms and beliefs towards charcoal which could be translated into values. For instance, the belief that charcoal cannot fully be banned from society, has certain underlying values. Charcoal is used as a tool for cooking and therefore the norms is that charcoal is necessary for cooking. So, the theories were used to directly discover and distinguish values, but also norms, beliefs, attitudes, and behaviour could be examined to subsequently attach values to it.

Although the theories helped to examine values, it was not always easy to put values into the

groups of Gardner and Stern. Some values were related to other values which made it hard to put in under the right category. Also, finding examples of values attached to nature was hard to find in literature, which made the distinction of values quite a personal choice. A suggestion would be to develop a model that uses more broad concepts at which values can be grouped.

However, the developed model (**figure 7**) helped to explain how SFM and values relate to each other. It helped to understand that certain values influence beliefs, norms, and attitudes, and at the end, influence behaviour concerning forest management. However, this study has not succeeded in giving insights in how SFM can be established anyway. Therefore, other factors should have been included as well to explain behavioural practices in forest management.

Recommendations

Multiple recommendations have been formulated to support further research on this topic. Some results were striking, so further research would be interesting to develop more knowledge about this topic. This section starts with practical recommendations.

Practical recommendations

As can be read in the results, implementing alternatives hardly help to change the charcoal chain. Multiple reasons are found why implementing alternatives for charcoal is failing. Poverty is one of the obvious reasons. What would be advisable is to help the vulnerable ones in Teso with financial aid. The district officer said in an interview that maybe financial support would give an incentive to use other energy resources than charcoal. A micro-finance project could make it possible for poor to invest in more environmentally friendly devices. When people invest in such devices, the assumption is that they would also be more interested in getting rid of charcoal. However, still producers of charcoal are dependent on selling charcoal. This could be solved by creating other resources of income, like the NGO already introduced. The NGO gave seedlings to let people grow their own crops that they can sell.

Besides, all stakeholders included in this research are working on reducing the amount of charcoal that is produced and used in Teso. Nevertheless, if the stakeholders would use their joint power, their programs would become more effective. This research already showed a relationship between the government and the religious institutions, NGOs, and CFM groups, but this relationship can become more deeply rooted in society. Therefore, multi-stakeholder projects on charcoal would be suggested at which every stakeholder contributes with its own expertise. This study showed how important non-governmental stakeholders are in how forest is managed.

Recommendations for further research

This research has showed that it is really complicated to introduce SFM due to values stakeholders attach to things such as charcoal. Further research on this topic should also take into consideration other components that establish behaviour. This would make a research more valuable to really understand what the influence of values is, and which other factors determine certain behaviour in forest management.

Cultures partly contribute to which values are present in society. So, another recommendation is to set up a cross-cultural study. As this study was done in Uganda, a distorted picture could have been showed. Countries differ in dominant religions and culture they have. By doing a cross-cultural study, the influence of certain stakeholders could become more or less valuable on global level. This could help with constructing international policies concerning charcoal, that considers the multiple cultures all over the world.

Another recommendation is to include spiritual values more in research. There is a lack of knowledge, but the knowledge might be really useful to implement better SFM. As this research showed, the Anglican Church played an influential role when it comes to create awareness among its followers. Religious institutions are close to their followers and can be very influential in society as a whole, especially in very religious countries. By including religious institutions in policy-making processes for establishing SFM in a certain area, the religious institutions might take up their responsibility to sensitize its followers to respect forest policies.

Strengths and limitations

This section of the discussion is meant for evaluating how reliable and valid this research is. Based on mentioning the most striking strengths and weaknesses of this research, a conclusion can be made on the reliability and validity of this research. The outcome has influence on how this research might be used for further research.

At first, a limitation is that there is less time spend in the research field than was intended. Therefore, less observations were captured and less interviews could be conducted. This has affected the quality of this thesis. But, despite this setback it was possible to make something out of the collected data in Teso.

Reliability

A research is reliable if there were no accidental mistakes in the research techniques that influenced the results of a research. If this research would be done another time by another researcher, kind of the same results should appear to mark this research as reliable ('t Hart, Boeije & Hox, 2009). To make this study reliable, several research techniques have been used. By using both research interpretations via participant observations and interviews and by doing a literature study, it was possible to see if the data from the research field had something in common with the academic literature. With a few exceptions, the participant observations, interviews, and literature study complemented each other. The literature study lacked in giving information about the religious institutions in Uganda, so being in the field was valuable for this research in order to get information from this stakeholder as well. Though, the collected data from the research field mostly had the same outcomes as what derived from the literature study. Hence, there was consistency in the data which improved the reliability of this research.

However, still the role of the researcher and the researcher's interpretations have influenced this research. The data has not been coded by another person, which could have created inter-rater reliability. On top of that, being a researcher in another country with another culture and different habits, may have influenced the researcher's observations. Especially due to the different cultural background, different power positions and skin colour, there could be some misunderstandings in the observations if people behaved differently when the researcher was around. Also, there might have occurred some translation issues. The interview with the charcoal seller for example, was translated by somebody from COU-TEDDO from Ateso, the local language, to English. The participant observations might also include interpretation mistakes, because informal conversation where translated from local languages to English as well. On the other hand, living in the research field have helped to better understand the research topic and the study area and was useful to put the data in context. On top of that, there is transparency in how this research has been accomplished. In the appendices the topic lists have been attached, which makes it easier to replicate this research. Besides, all interviews are transcribed word by word, so all data can be checked on reliability.

Validity

The validity of a research can be measured by the checking if the research techniques measured what they intended to measure and if the results of the research match with reality. A valid research excludes systemic errors in the research techniques ('t Hart, Boeije & Hox, 2009). The semi-structured interviews were well designed based on theories of behaviour. The topic list was checked in advance by the supervisors in order to check if the questions would measure what was planned to be measured in the research field. Even though it is hard to measure 'values', it was possible to select a few outstanding ones, also due to the value and behavioural theories written down in the theoretical framework. The multiple theories taken together were helpful to interpret the results in different lights, which also helped to establish the validity of this research.

Nevertheless, the dependency of the researcher on the organisation COU-TEDDO have affected this research. Due to safety reasons, COU-TEDDO helped to go on field trips and assisted in doing interviews. Their help was very useful to operationalize this research; however, this research mainly includes data of people the organisation COU-TEDDO already knew. This had positive and negative effects on the research: the researcher was easier accepted by the respondents as trustworthy, but the outcomes out this research might also be biased.

A limitation of this research is that not all stakeholders discussed are interviewed. Although this a result of the Corona crisis, this must be admitted in case of using this research. Some data relies more on only participant observations, like the CFM groups, while the results of the other stakeholders rely more on data of the interviews. This influences the consistency and validity of the data. Another time doing the same research, the research could have different outcomes when all stakeholders are interviewed. Another limitation is that with the DFA and NGOs only one interview per stakeholder has taken place. Hence, the already collected data could not be checked on how trustworthy it was based on interviews with other respondents of the same stakeholders. This could have helped to improve the external validity, at which the results can be extended to the study population ('t Hart, Boeije & Hox, 2009).

In conclusion, the research has worked on enhancing reliability and validity by using multiple research techniques, which could filter wrong interpretations of the researcher. However, to make this research even more reliable and valid, further research on this topic should be improved by doing more interviews per stakeholder and data should be checked independently by another researcher. Still this research might be valuable to get a first impression of how values affect behaviour concerning forest management.

Conclusion

To conclude this study, an answer will be given on the central research question: how do stakeholder values, attached to charcoal, influence forest management in Teso? How values contribute to forest management depends on the involved stakeholder. The NFA & DFA attach values that are mostly related to support the economy. The governmental institutions show compassion with the charcoal producers and users and therefore they try to come up with suitable programs to reduce charcoal to establish SFM. Religious institutions attach primarily several spiritual values as they see protecting trees as their duty since it is God's creation. This stakeholder sees trees as an investment in the future and therefore the church is advocating for planting more trees among its followers. These values lead to certain behaviour in establishing SFM. The core values of NGOs are basically developing food security and independency. NGOs want people to become self-sustaining. NGOs include vulnerable people in their programs to create other sources of income in the

agricultural sector to become less dependent on charcoal in order to contribute to SFM. CFM groups have learned from their ancestors that protecting trees is necessary for their safety. Thinking about a sustainable forest for the future is important to them. These communities make plans together in order to establish SFM. And so, values are extremely influential when it comes to the behavioural outcomes in forest management. The way how trees, and in specific, charcoal is perceived determines how an stakeholder acts in forest management. SFM is very important to all stakeholders, however all stakeholders see predominantly the economic value of charcoal. Values lead to forest management that works on the reduction of charcoal. But, charcoal will not be banned since most identified values are subordinated to economic values.

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Appendices

Appendix I: Semi-structured interview suppliers of charcoal

Name:

Age:

Gender:

Religious background:

Place and date of the interview:

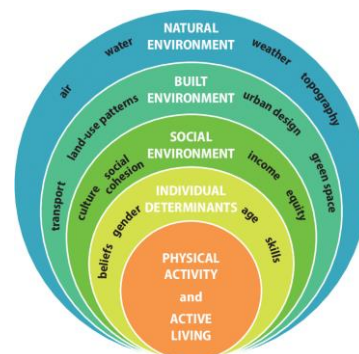
Introduction:

1. Where do you live?
2. What do you do for living? How do you generate income?
3. How does a regular day in your life look like?
4. What are your (main) tasks in the household?
5. How is land used in your area?
6. How did the land in your area look like twenty years ago?



Behaviour/motivations:

7. What is the main fuel you use for your daily activities, e.g. cooking? Why?
8. For how long do you use this type of fuel? Why?
9. For which daily activities do you use charcoal? Why? What motivates you to use charcoal/another fuel?
10. How do you get the fuel for your daily activities? Where do you buy it? Who provides you the fuel?
11. If you visit the forest: for what purpose do you go there and for how many times a week? How do you get there?
12. With whom do you produce charcoal?
13. Which type of fuel do you use in your household?
14. How is the forest managed in your area?



15. How do you produce the charcoal?
16. What is the distance between your house and the forest you produce charcoal?
17. For what purpose do you produce charcoal?
18. For how long do you produce charcoal?
19. Where and to whom do you sell charcoal?
20. How many time do you spend in the forest in a usual week?
21. Which area do you use for producing charcoal? Which area is suitable for your charcoal production?

Beliefs/attitudes:

22. How do you see the relationship between the forest and human beings?
23. What is the function of a forest according to you?
24. How is the forest managed in your area? How should the forest be managed according to you?

Values/perceptions:

25. What does the forest mean to you?
26. What does the forest provide you?
27. If you had to organize the ecological, social, and economic values the forest provides. Which value is the most important to you and which the least?
28. What does the use of charcoal/fuels mean for you/your household? How could you express the importance of charcoal/another fuel?
29. What do you know about the effects of producing charcoal?

Appendix II: Semi-structured interview with stakeholders involved in the charcoal chain

Name:

Age:

Gender:

Religious background:

Organisation:

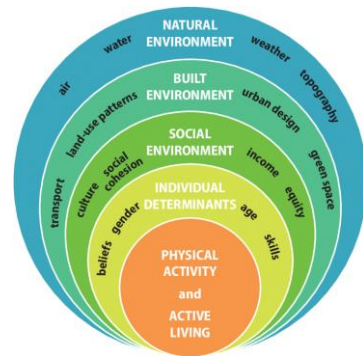
Place and date of the interview:

Introduction:

1. Where do you live?
2. What do you do for the living?
3. How does a regular day in your life look like?
4. What is your function in this organisation?

Behaviour/motivations:

5. What is the main fuel you use for your daily activities, e.g. cooking? Why?
6. For how long do you use this type of fuel? Why?
7. For which daily activities do you use charcoal? Why? What motivates you to use charcoal/another fuel?
8. How do you get the fuel for your daily activities? Where do you buy it? Who provides you the fuel?
9. If you visit the forest: for what purpose do you go there and for how many times a week? How do you get there?
10. How is the forest managed in your area?
11. How is your organisation involved in the forest management?
12. Which other actors are involved in forest management?
13. What type of fuel do you use in your own household?
14. Why do you or why do you think people use charcoal?
15. According to your observations: how does the charcoal chain look like? Where is it produced and sold and to whom?



Beliefs/attitudes:

16. How do you see the relationship between the forest and human beings?
17. What is the function of a forest according to you?
18. How is the forest managed in your area? How should the forest be managed according to you?

Values/perceptions:

19. What does the forest mean to you?
20. What does the forest provide you?
21. If you had to organize the ecological, social, and economic values the forest provides. Which value is the most important to you and which the least?
22. What does the use of charcoal/fuels mean for you/your household? How could you express the importance of charcoal/another fuel?
23. What do you know about the effects of producing charcoal?
24. How do you understand sustainable forest management?

Appendix III: Inductive and deductive coding scheme

The headlines show the deductive codes, the codes in between the brackets are examples of inductive coding.

Behavioural practices

Giving education (church education, trainings of NGOs, trainings of the government, creating independence)

Collaboration between institutions (collaboration between the church and government, detecting illegal activities)

Promoting sustainability (being an example, identifying examples)

Poverty alleviation practices (providing seed lines, coming up with alternatives for charcoal)

Attitudes/beliefs/norms

Charcoal-related policies (policies on charcoal transportation, side effects of policies, subsidies, laws)

Charcoal-related strategies (charcoal as economic business, charcoal trade regulation)

Charcoal-related beliefs (charcoal cannot be banned, charcoal reduction is needed)

Charcoal-related habits (food habits, firewood in remote villages, charcoal in big cities)

Knowledge about the environment (knowledge about backward effects of charcoal)

Values

Social values (collaboration for food security, education about charcoal)

Ecological values (local knowledge, values regarding nature)

Economic values (economy above environment, charcoal helps the poor, avoiding a ban on charcoal)

Spiritual values (forests are God's creation, ancestor stories)

Other

Poverty (poor people need charcoal, charcoal production as a surviving strategy)

Climate change effects (climate has changed over time, climate change education)

Influence of stakeholders in society (the church in society, interaction between the church and people)