

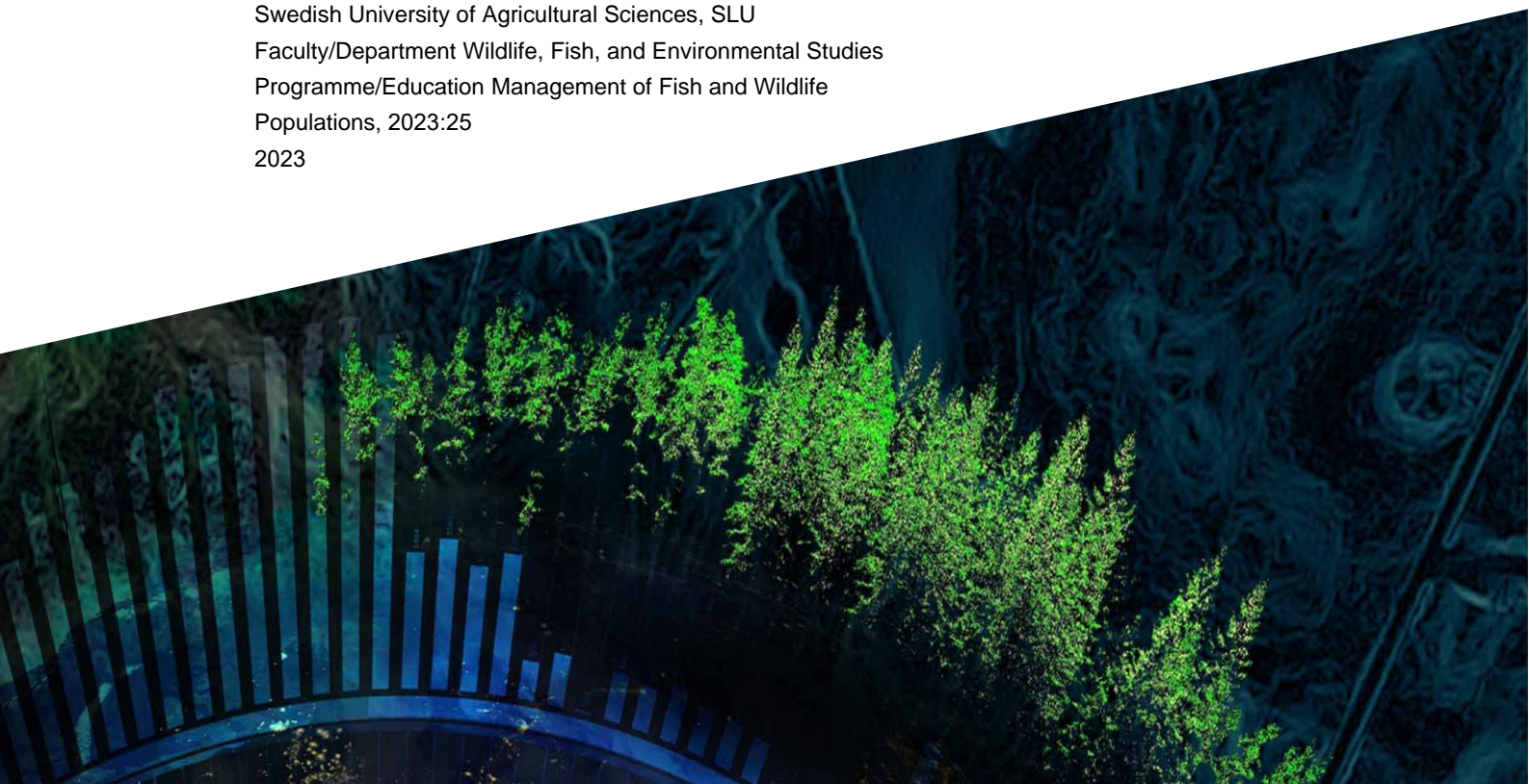


The Potential of Combining Christian Faith and Nature Conservation

Exploring the Potential in a Literature Review and
Developing an Environmental Education Program
for Creation Care with the Aim of
Mitigating Human-Wildlife Conflicts

Svenja Tornow

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Svenja Tornow

Supervisor: Petter Axelsson
Assistant supervisor: Göran Ericsson
Examiner: Anita Norman

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Swedish University of Agricultural Sciences
Faculty

Dedication

To all who have found hope in the Christian God and still struggle to make ends meet caused by human-wildlife conflicts.

Abstract

The global human population is growing and occupies an increasing area of land. Consequently, human and wildlife populations overlap which leads to more and intensified human-wildlife conflicts. To solve those, conservationists increasingly try to understand and change people's attitudes. However, research about the cognitive hierarchy has shown that there are more factors relevant for an individual's behavior. Therefore, scientists develop new innovative mitigation strategies which are often aimed to educate the public without considering other important factors that influence and determine people's daily lives and their worldview. To address those, it might be more effective to work with an already existing belief system that provides a set of values and norms and therefore influences attitudes. Religions are naturally based on such a foundation and offer a way of life that includes a respectful interaction with the natural world. In African countries with an abundance of wildlife, Christianity is the most common religion. Based on that, with this study, I developed an environmental education program that incorporates the Christian idea of creation care into conservation efforts to mitigate human-wildlife conflicts. During a literature review, results from different fields including human-wildlife conflicts, the cognitive hierarchy, awe research, religion and Christianity were combined to establish a scientific foundation and formulate first ideas for the environmental education program. After a study site in Kenya was identified, I conducted an environmental assessment. Additionally, I created a rich picture, a stakeholder analysis and systems maps to get a better understanding of the place and people's struggles and needs. Based on the findings, a desired future situation and a force field analysis could be formulated. I also visited the three main Christian conservation organizations in Kenya to participate in their programs, gather ideas and conduct participant observations. As a result of the literature review and the field work, I developed an environmental education program that will be implemented by church leaders, the most influential people in a community. It aims not only to ease the conflict between humans and wildlife but to empower communities to appreciate the place they are in and see the ability for change within the community without dependency on others. The program includes sermons that address topics like soil, trees, farming, and wildlife and aim to create a holistic understanding of the interconnectedness of everything the Christian God has created. Additionally, to the sermons, practical activities like Game Drives, establishing a tree nursery, learning alternative farming methods, or building a fireless cooker are included to create awe, a feeling that can change the course of life within a short period of time, empower the community, live more sustainably, and create an environment where the community and wildlife can live and thrive.

Keywords: human-wildlife conflicts, wildlife, conservation, religion, christianity, theology, creation care, community development, awe, environmental education, kenya, africa, community development

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All photos are taken by Svenja Tornow.

Glossary

Words	Explanation
A Rocha Kenya	Christian conservation organization based in Watamu
Bible	Holy Scripture in Christianity, including the Old and New Testament
Boda	Motorbike taxi
Charcoal	Dry wood that is partly burnt with limited input of oxygen
Christians	People who know the gospel, believe in Jesus Christ and are “born again”
Church	A building for Christian worship Or The body of Christians
Church Service	Formalized time of worship generally in a church building when congregants gather to a specific time, generally on Sundays
Creation	Everything that is believed to be created by the Christian God including all living beings, nature, the universe, humans
Creation Care	The vocation based on the Bible to conserve nature
Creation Stewards International	Christian conservation organization based in Kijabe
Dakatcha	Rural place in Kilifi County
Devotional	A short bible study, worship or prayer session often guided by a book
Dominion	Understanding of superiority over other beings
Ecosystem Services	Benefits that humans can receive from different processes in the ecosystem
Eden Thriving	Christian conservation organization based in Naivasha
Farming God’s Way	Alternative no-till farming method that is based on scripture and God’s design found in nature
Gatamaiyu	Neighboring village to Nyakinyua

Genesis	First book in the Bible including the creation story
Gospel	Literally – the good news; that the Christian God’s Son Jesus Christ bore the punishment for every wrong-doing of everyone who accepts him (without having to do anything to earn it)
Kikuyu	One tribe and language in Kenya
Kiswahili	Official language in Kenya
Nyakinyua	Study site
Psalms	Poem or song that can be found in the book in the Bible called Psalms
Sermon	Presentation of one or several scriptures by a pastor, including its interpretation and relation to life nowadays
Stewardship	Understanding of responsibility given by God to take care of the earth and all living beings in it
Worship	Expressing praise and adoration towards the Christian God through prayers, songs and actions (mostly used in the context of songs)

Abbreviations

ARK	A Rocha Kenya
B	Behavior
BI	Behavior Intention
CG	County Government
CSI	Creation Stewards International
e.g.	Exempli gratia (for example)
ESD	Education for Sustainable Development
et al.	Et alia (referring to more authors not mentioned)
FGW	Farming God's Way
HWC	Human-Wildlife Conflicts
Ibid.	Ibidem (referring to above mentioned reference)
KWS	Kenya Wildlife Service
MCA	Member of County Assembly
mm	Millimeters
Mon	Monday
NIV	New International Version (Bible translation)
p.	Page
pm	Post meridiem (referring to a time after noon)
Sat	Saturday
SDG	Sustainable Development Goal
SES	Social Ecological Systems
SLU	Swedish University of Agricultural Sciences
St.	Saint
Sun	Sunday
US	United States

1. Introduction

When the sun touches the horizon and its golden light lays peacefully over the savannah, when the lion walks in its majesty through the vast landscape and zebras run synchronized to create a blur with their stripes to avoid being killed, when the termites build up a huge termite mound that has such a complex thermoregulation to keep a fungus inside at the same temperature during day and night, when phenomena like those happen, the observers are filled with awe and wonder which can evoke a belief in a divine being who created everything on earth and in the entire universe. However, communities that live near wildlife inhabited places in Africa are often denied access to those places to ponder about the beauty of nature and instead face conflicts with wildlife daily. For them wildlife encounters cause trauma, anxieties and injuries (Bond and Mkutu 2018) rather than invite to contemplation.

Those human-wildlife conflicts (HWC) arise from increasing human-wildlife interactions due to human population increase, high livestock and wildlife population densities, changing land use and climate change (König et al. 2021; Hodgson et al. 2020; Mukeka et al. 2019; Browne-Nuñez and Jonker 2008). As a consequence, habitat fragmentation takes place which leads to wildlife roaming outside of protected areas and in close proximity to human settlements (Mukeka et al. 2018; Gadd 2005). Though often attempted, HWC's can't be solved by solely addressing problems with wildlife because of its social and political origin (Hodgson et al. 2020) and its roots in human-human or human-state conflicts (Bond and Mkutu 2018).

Consequently, there is an increasing awareness among conservationists to develop innovative and interdisciplinary mitigation strategies that include social, cultural, political and historical factors to enable the coexistence of humans and wildlife (König et al. 2021; Hodgson et al. 2020; Pope Francis 2015; Dickman 2010; Browne-Nuñez and Jonker 2008; Teel et al. 2010). However, the often-voiced call to educate the public is neither as simple nor effective as many conservationists might picture it (Heberlein 2012). More than just education, it requires persuasion which is informed by individual beliefs, attitudes and values (Coleman 2010). This is also emphasized by Dickman (2010) who states that

cultural or spiritual beliefs override scientific knowledge even after implementation of educational programs.

Nevertheless, a change of heart, a new imagination or in other words metanoia is the desired goal that specialists of different disciplines agree upon to eventually change people's behavior (Chryssavgis 2019; Katongole 2011; Horan 2018; Weaver and Hodson M. R. 2007; Pope Francis 2015; Kohák 1984; White 1967; Leopold 1990; Deane-Drummond 2008; Bouma-Prediger 2010; Harris 2008). How this might be achieved often stays uncertain throughout literature which shows a research gap in existing literature and in practice.

Human behavior is based on existing belief and value systems (Kosoe et al. 2020) that determine people's attitudes (Decker et al. 2012). Attitudes are defined as a person's positive or negative evaluation of something or someone (Decker et al. 2012) that help in the individual decision-making process (Nyumba et al. 2021) and consist of affective as well as cognitive components (Ajzen 2001; Decker et al. 2012). In recent years attitudes have gained increasing attention by conservationists who call for 'changing people's attitudes' and 'educating the public' (Heberlein 2012). However, using the strategy called cognitive fix to try to change people's behavior by simply giving them information about a certain topic, is mostly unsuccessful (Barrow et al. 2000; Heberlein 2012; Hodgson et al. 2020). This is because apart from the attitude towards a certain behavior, the subjective norm as well as the perceived behavioral control determine a behavior intention which might or might not lead to a change in behavior (Ajzen 1991). Nevertheless, when the different relevant factors are considered, the cognitive fix offers an effective and sustainable possibility for behavioral change that goes beyond possible short-time changes in behavior due to the structural or technological fix (Heberlein 2012).

A strategy to work with attitudes is to work with an already existing underlying belief system that includes basic values, provides social norms for a certain behavior and influences attitudes. Such a belief system is found in religions. Because religions offer a way of life that gives meaning, orientation and a frame of action as well as a worldview (Mikusiński et al. 2014; Olupona 2014; Theuri 2013; Watson and Kochore 2012), they have the ability to determine people's values, moral narratives and behavior (Kosoe et al. 2020). Consequently, the bible and church leaders are well respected in Christian societies (Moyer et al. 2011; Bhagwat et al. 2011). According to Horan (2018) and Katongole (2011) religion speaks the language of imagination and is therefore very suitable for reimagining the future. Because the Christian doctrine teaches about stewardship and care for creation (Chryssavgis 2019; Horan 2018; Pope Francis 2015; Deane-Drummond 2008; Harris 2008; Kohák 1984), the church leaders' guidance can prove powerful for

nature conservation (Mikusiński et al. 2014). Combining Christian faith with conservation might therefore have a high potential to improve the relationship between the natural world and local communities. Scientists like Carson (2000) and Leopold (1990) already promoted a shift away from only natural science approaches to conservation towards making conservation more relatable by creating a sense of awe and wonder for nature. However, this potential is barely used by the churches yet (Katongole 2011).

For the acquired change of heart, it might prove helpful to create a sense of awe and wonder that goes beyond the approach of educating the public. It involves people's affective components that are relevant for creating and shifting attitudes rather than focusing on the cognitive ones only. A sense of awe is often evoked by something vast that is difficult to grasp (Gottlieb et al. 2018) like literature, poetry, paintings or viewing landscapes and natural objects (Keltner and Haidt 2003). It creates humility and amazement (Schneider 2011) and has not only the power to change the course of life profoundly and permanently but might be the most powerful method of personal change and growth (Keltner and Haidt 2003). Awe is therefore a key to a different approach to the environment (Nordlander 2021). According to Bouma-Prediger (2010) experiencing nature as God's creation evokes awe and hence increases the reported religiosity and spirituality (Gottlieb et al. 2018). By seeing God and his love, beauty, providence, and creativity in all of creation, Christianity has the potential to create this kind of awe (Chryssavgis 2019; White 1967; Bouma-Prediger 2010; Pope Francis 2015; Kohák 1984; Horan 2018; Weaver and Hodson M. R. 2007; Harris 2008). The Christian faith can therefore be effective to encourage more positive attitudes towards the natural environment including wildlife.

To reduce human-wildlife conflicts by combining Christian faith and nature conservation, it requires a place where Christianity dominates the religious landscape and where wildlife roams in abundance which causes human-wildlife conflicts. One country where those requirements are met is Kenya. Located in East Africa, Kenya has a human population of around 49 million inhabitants (Mukeka et al. 2019) of which 88% live in rural areas (Bureau of Democracy, Human Rights, and Labor 2006). Because 65% of wildlife in Kenya live outside protected areas (Mukeka et al. 2019; Gadd 2005; Barrow et al. 2000) there is an increasing overlap of human and wildlife inhabited areas and therefore a high risk for human-wildlife conflicts (Gadd 2005). Having 80% of the population being Christian, Kenya shows a potential for implementation of such a program.

The aim of the thesis is therefore to develop a holistic environmental education program for creation care to mitigate human-wildlife conflicts. It will provide

teaching material for a chosen suitable target group as well as practical guidelines. A literature review will assist the development process for which scientific literature of different disciplines including wildlife management, social psychology and theology will be considered to create a holistic picture of the situation on the ground and develop possible strategies for change. The results of the literature review will be combined and used to create an environmental education program for creation care. To accomplish this, I will review current literature on human-wildlife conflicts and human behavior in that regard. For that, the cognitive hierarchy as part of social psychology will be considered. Following, I will discuss findings about the Christian faith which will help to identify key aspects of the intersection of HWC, human behavior and Christian faith. Combined, the information will be used to develop an environmental education program for creation care which consists of various recommendations for an effective implementation in HWC dominated areas specifically in Kenya.

2. Methodology

The thesis is based on a literature review considering human dimensions in wildlife management, psychology, conservation, environmental education, and theology. During the process of the literature review, I used Google Scholar, ResearchGate and Web of Science to find relevant literature. In Web of Science, a keyword search with the following keywords was conducted:

- Conservation AND Christianity
- Conservation AND Religion
- Conservation AND Theology
- Wildlife Management AND Christianity
- Wildlife Management AND Religion
- Wildlife Management AND Theology
- Kenya AND Christianity
- Kenya AND Religion
- Kenya AND Theology
- Africa AND Christianity
- Africa AND Religion
- Africa AND Theology
- Wildlife Management AND Attitudes AND Africa
- Conservation AND Attitudes AND Africa
- Wildlife Management AND Attitudes AND Kenya
- Wildlife Management AND Africa AND Christianity
- Wildlife Management AND Africa AND Religion
- Wildlife Management AND Africa AND Theology
- Wildlife Management AND Kenya AND Christianity
- Wildlife Management AND Kenya AND Religion
- Wildlife Management AND Kenya AND Theology
- Conservation AND Africa AND Christianity
- Conservation AND Africa AND Religion
- Conservation AND Africa AND Theology
- Conservation AND Kenya AND Christianity
- Conservation AND Kenya AND Religion
- Conservation AND Kenya AND Theology

The found literature was scanned for relevant information and important papers read more thoroughly. For that, bullet points of the relevant papers were taken and structured according to the different topics that are listed in the results of the literature review including human-wildlife conflicts, the cognitive hierarchy, religion, Christianity, the idea of stewardship and a vision of change which was emphasized in the different literature. After formulating the results of the literature review, I went through the written text again to emphasize passages in the footnotes that include suggestions for the development of the education program. At the same time, I visited the three main Christian conservation organizations in Kenya; A Rocha Kenya in Watamu, Creation Stewards International in Kijabe and Eden Thriving in Naivasha. There, I participated in their programs for creation care, conducted participant observations, had face-to-face conversations with participants and organizers and evaluated their curriculum/program.

In the meanwhile, I looked for a suitable location for the field work where there is a Christian community that faces HWC. Once the location was found, I spent one month there to apply different methods. Firstly, an environmental assessment based on *Educating for Life: Guidelines for Biodiversity Education* (McLeish 1997) was conducted. It serves to become familiar with the place as well as issues and concerns of the community. For that there were regular visits to the community to assess the environment and initiate simple conversations with locals. Factors that I looked at are:

- Biodiversity
- Climatic Conditions and Natural Disasters
- Cultural Values
- Farming and Grazing
- Forests, Grasslands and Natural Areas
- Gender Roles
- Human Settlements
- Institutional and Community Environmental Management Structures
- Livelihood Security
- Parks and Protected Areas
- Soils and Land
- Waste Management
- Water Resources and Watersheds and
- Wildlife and Livestock.

A stakeholder in HWD is a person who is affected or affects wildlife or wildlife management and action (Sandström 2020). Hence, a stakeholder analysis is the review of different groups and parties being involved or affected by wildlife and

wildlife management. For that I created a table whereby the horizontal arrow, pointing to the right visualizes the interest of the different groups and the vertical arrow pointing upwards shows the amount of power each party has. With the aim of getting a clear understanding of the situation in the study area, the method taught during the course *Natural Resource Management in Low-Income Countries* by Cuadra (2021) was applied. According to Cuadra (2021) creating a rich picture gives a first understanding of a system and assists the researcher to come up with different themes of the system for which systems maps are created in the next step. By using those systems maps, the different interconnections within the system become clearer and provide an understanding for formulating a desired future situation. Using the method of a force field analysis helps to evaluate the probability of the desired change and to develop ideas for action. Those can then be used to formulate the work plan.

A rich picture is a drawn image of a system with limited words that helps getting an overview over the system and is mostly created more for oneself than for others (Armson 2011; Cuadra 2021). It represents everything the drawer knows about the system through visual signs and drawings including things, ideas, people and connections (Armson 2011). However, the rich picture should not be corrected after having a better idea though things can always be added, not too many words should be used, and it should not be structured (Ibid.). Consequently, despite its limited representation towards others, the rich picture is a useful tool for the researcher to grasp processes and ideas that are part of the system, relate them to each other and proceed with the research with a structured idea in mind. Those two tools of a stakeholder analysis and a rich picture assisted me in identifying a suitable target group for the planned environmental education program by gaining an understanding of the various levels of power and interest of each stakeholder and seeing their position within the community.

Additionally, the rich picture helped me in coming up with relevant themes of this system and creating systems maps for each of the themes. Themes are names that “capture a significant part of the messy situation” (Armson 2011, p. 79). The easiest way of identifying themes is from a rich picture (Ibid.). It is hereby important to use not more than three words and not to name a problem or indicating judgment in the name which would lead to treating the messy system as difficulty. The systems maps that are based on the themes show the structure of systems and help making sense of situations (Armson 2011). They “are composed of labelled blobs and a title” (Armson 2011, p. 149) and show systems and subsystems to clarify the thinking of a specific situation (Ibid.)

Following that, I combined the findings to formulate the desired future situation as an outcome of the planned environmental education program after ten years after implementation. A desired future situation is a written vision of how the analyzed messy situation should look like after a period of ten years (Langer 2021). It helps to set achievable goals and formulate an action plan that includes change towards the desired situation.

To evaluate its feasibility, I implemented a force field analysis based on the desired change of the *Implementation of the Environmental Education Program for Christian Creation Care in Churches in Nyakinyua*.

By bringing together the literature review, strategies from the different organizations and the findings in the field, ideas for action could be formed which enabled me to develop the environmental education program for Christian creation care with the aim of mitigating human-wildlife conflicts. After completion of the program, it will be implemented. Throughout the implementing process, the project needs to be monitored and evaluated which will not be part of the thesis anymore. However, questionnaires for participants as well as collaborating organizers of the program will be provided to facilitate the evaluation.

2.1 Study area and sample



Figure 1: Study location in Africa (top left) from Google Earth; Kenya (top right) from Google Earth and Nakuru County (bottom) from Google Maps

Nyakinyua is a remotely located community with Naivasha being the closest town. The community was found and chosen after looking for a suitable community, village, church, or conservation organization that fulfills the requirements of having a majority of Christians and being in an area where there are HWC's. This applied in several cases in the counties Taita-Taveta which

includes Tsavo National Park, Nakuru including Lake Naivasha and Hell's Gate National Park and Laikipia county where there are several privately or community owned conservancies. To narrow down the results, I focused on places where communities had first interactions between their Christian faith and conservation. Because of the connection to the three major organizations in this field A Rocha Kenya, Creation Stewards International and Eden Thriving, I was referred to different pastors or organizations who have attended a training. However, at the end, the organization Eden Thriving itself had the ideal place as a study site for this research. Because they have already interacted with locals in Nyakinyua and the neighboring community Gatamaiyu focusing on children's environmental education and empowerment, it created a foundation for the planned environmental education program for adults in churches. Additionally, they could provide further information on their own programs, the lives of Nyakinyuans and connect me with some community members. Furthermore, the organization was hoping to develop a program for adults in Nyakinyua in the near future. Hence, the environmental education program, which is the aim of this study, allows them to implement the program without investing time of their limiting working hours in the developing process. Because Nyakinyua has a majority of Christians, is facing human-wildlife conflicts, has an organization that is working in that field and is aiming to have such a program, it is a very suitable location for the study.

3. Results

3.1 Results – Literature Review

The literature review had the following results:

Table 1: Results of the literature review

Key Words	Publications
Conservation AND Christianity	51
Conservation AND Religion	349
Conservation AND Theology	49
Wildlife Management AND Christianity	1
Wildlife Management AND Kenya	245
Wildlife Management AND Religion	13
Wildlife Management AND Theology	1
Kenya AND Christianity	49
Kenya AND Religion	230
Kenya AND Theology	22
Africa AND Christianity	935
Africa AND Religion	2378
Africa AND Theology	590
Wildlife Management AND Attitudes AND Africa	105
Conservation AND Attitudes AND Africa	319
Wildlife Management AND Attitudes AND Kenya	28
Wildlife Management AND Africa AND Christianity	0
Wildlife Management AND Africa AND Religion	0
Wildlife Management AND Africa AND Theology	0
Wildlife Management AND Kenya AND Christianity	0
Wildlife Management AND Kenya AND Religion	0
Wildlife Management AND Kenya AND Theology	0
Conservation AND Africa AND Christianity	4
Conservation AND Africa AND Religion	18
Conservation AND Africa AND Theology	0
Conservation AND Kenya AND Christianity	1
Conservation AND Kenya AND Religion	3
Conservation AND Kenya AND Theology	0

After finding those results, the most relevant combinations that had > 0 results like *Conservation AND Africa AND Christianity*, *Conservation AND Africa AND Religion* and *Wildlife Management AND Attitudes AND Africa* were explored, and publications scanned for its importance for the research.

Human-wildlife conflicts are mostly very complex and are therefore often called wicked problems (Decker et al. 2012). Because those problems are often understood as environmental concerns, scientists attempt to solve them from a purely natural science perspective (Hodgson et al. 2020; Leopold 1990), yet its complexity requires an interdisciplinary and innovative approach and an involvement of all stakeholders and disciplines (Biggs et al. 2021; Hodgson et al. 2020; Pope Francis 2015; König et al. 2021; Dickman 2010). With a greater attention to the human dimensions of the problem including social, political, spiritual and historical factors, it is more likely to enable people to move from conflict to coexistence (Teel et al. 2010; Hodgson et al. 2020; Browne-Nuñez and Jonker 2008).

Referring to that, the result section is divided into different disciplines that are all relevant for the development of an environmental education program for creation care. After collecting crucial information of the different disciplines, it will be combined and used to formulate an action plan for the village Nyakinyua in Kenya.

3.1.1 Human Wildlife Conflicts (HWC)

With the growing human population, the global demand for land increases rapidly (König et al. 2021; Hodgson et al. 2020; Mukeka et al. 2019; Browne-Nuñez and Jonker 2008). That often leads to a growing overlap of human and wildlife habitat, most especially in wildlife abundant areas like in many African countries (Ibid.). Changing land use and climate as well as habitat fragmentation further increase the number and intensity of human-wildlife conflicts (HWC) (Mukeka et al. 2019; Mukeka et al. 2018; Hodgson et al. 2020).

Though biologists often invest in more research about wildlife to address HWC's, they often arise from human-human or human-state conflicts (Bond and Mkutu 2018). Consequently, they are rooted in social and political issues and cannot be solved by solely managing wildlife (Hodgson et al. 2020). It is therefore crucial to develop interdisciplinary mitigation approaches to Social Ecological Systems (SES) like HWC's (Dickman 2010; Biggs et al. 2021) and not to underestimate the relevancy of ethics and religions that create and shape the existing social imaginaries and dictate human thought and behavior (Mikusiński et al. 2014).

A rapidly growing human population is also observable in Kenya, the country of interest for this research, with only eight million people in 1960 to 56.6 million inhabitants in 2022 (United Nations 2022) of which around 88% live in rural areas (Bureau of Democracy, Human Rights, and Labor 2006). As in many other countries, a large proportion of Kenya's wildlife, which is said to be approximately 65%, lives outside of protected areas which leads to an increasing overlap of wildlife habitat and the growing human settlement areas (Mukeka et al. 2019; Gadd 2005; Barrow et al. 2000). Hence, it causes more HWC's in those areas and requires a systemic approach to mitigate the conflicts.

However, up to now the underlying narrative of HWC's in Kenya and many other African countries is mostly concerned about the economic value of wildlife and does not emphasize human lives (Bond and Mkutu 2018). This is amplified by the importance of wildlife for the state economy, most especially through tourism, which is the largest earner of foreign exchange in Kenya (Mukeka et al. 2018; Hazzah et al. 2009). Given that wildlife seems to have a higher value than humans to governmental authorities, distrust of the communities towards the government and local officials is generated (Bond and Mkutu 2018) and leads to negative attitudes towards wildlife (Hazzah et al. 2009) and conservation efforts¹ (Gadd 2005). Though protected areas are relevant for tourism, local communities mostly do not see any benefits from wildlife and are often denied access to protected areas (Barrow et al. 2000; Bond and Mkutu 2018). They can therefore not develop an appreciation for wildlife and nature and are only confronted with negative wildlife encounters causing trauma, anxieties, insomnia and injuries that cannot be compensated² (Bond and Mkutu 2018).

The severity of HWC varies depending on the location and the time of the year with the seasons defining water availability and animal movements (Mukeka et al. 2018; Manoa et al. 2020). Because of its scarcity, especially during droughts, water is the key driver for HWC in Kenya (Mukeka et al. 2018). According to Mukeka et al. (2018) the main conflicts in different Kenyan National Parks and their surroundings are with elephants, non-human primates, African buffalo, spotted hyaena and lions (see table 2) and mostly involve crop raiding, attacks on humans and livestock and property damage (see table 3). Conflicts that occur with baboons are relatively difficult to address. However, Hill and Wallace (2012) found out that the use of a chili paste on fences around crop fields are quite effective. Adding bells

¹ It is therefore crucial to create a feeling of being valued and heard among local communities.

² This shows the importance of creating positive encounters and experiences with wildlife which is otherwise mostly negatively associated.

on the fence further decreases the incident rate of human-baboon conflicts³. Lichtenfeld et al. (2015) have assessed the effectiveness of *living walls*, a strategy of planting *Scutia* as well as *Carissa* around livestock enclosures to avoid predator attacks on livestock and reduce the maintenance of regularly piling up thorny branches around the enclosure⁴.

Table 2: Major wildlife species involved in HWC in Kenyan regions like Tsavo and Masai Mara National Park and Kajiado and Laikipia County (percentage of the total number of HWC incidents in each region concerning the species involved in HWC)

Name of species		% Tsavo	% Mara	% Kajiado	% Laikipia
Elephant	<i>Loxodonta africana</i>	64.3	47.0	76.2	82.5
Non-human primates	<i>Cercopithecidae family</i>	11.4	11.6	8.8	4.6
African buffalo	<i>Syncerus caffer</i>	5.5	11.3	2.1	4.2
Spotted hyaena	<i>Crocuta crocuta</i>	2.4	5.8	4.4	1.4
Lion	<i>Panthera leo</i>	3.6	3.3	3.5	0.2
Reference		(Mukeka et al. 2018)		(Manoa et al. 2020)	

Table 3: Major human-wildlife conflict types that occur in Kenyan regions represented by the examples of Tsavo and Masai Mara National Park (percentage of the total number of HWC incidents in each region concerning the conflict type)

Type of conflict	% Tsavo	% Mara
Crop raiding	45.1	51.7
Attacks on humans	44.1	27.1
Attacks on livestock	9.0	15.8
Property damage	1.6	4.1
Reference	(Mukeka et al. 2018)	

General attitudes towards wildlife arising from those encounters are highly dependent on primary land use and ethnic groups (Gadd 2005) with crop farmers being more likely to be involved in HWC than pastoralists (Mukeka et al. 2018). Furthermore, attitudes towards wildlife are often more positive until an actual conflict situation arises, so that households that live further away from wildlife often have more positive attitudes towards them than people living in close proximity (Manoa et al. 2020; Ericsson et al. 2018). Because wildlife is seen as the government's property, communities are often very skeptical towards conservation

³ Incorporate chili fences with bells.

⁴ Incorporate living walls.

because of a fear that wildlife conservation will be used by government officials as an excuse to grab land from them rather than supporting local communities (Hazzah et al. 2009; Bond and Mkutu 2018). This worsens people's attitudes towards wildlife further.

Considering those factors, it is necessary to enhance not only the ecosystem connectivity but also community engagement as well as conservation benefits to the local communities⁵ (Mukeka et al. 2018). However, up to now the strategies have often been westernized with a biodiversity-centric view that does not consider traditional and cultural norms and practices that are already in place (Hodgson et al. 2020) and philosophy and religion that influence the daily lives of people⁶ (Leopold 1990).

To mitigate human-wildlife conflicts, there are several approaches including the technical, the structural and the cognitive fix (Heberlein 2012; Hodgson et al. 2020). While the technical or technological fix aims at altering the external environment like putting up fences, the structural fix addresses the political, social and economic context of the HWC which includes financial instruments or legislative changes (Heberlein 2012; Hodgson et al. 2020). Both of them are often short-term interventions and mostly do not lead to a permanent change in behavior once the fixes are lifted (Heberlein 2012) because of the negligence of relevant socio-economic factors of the surrounding communities and officials (Bond and Mkutu 2018). The third intervention method is the cognitive fix. It attempts to change human behavior towards wildlife through imparting knowledge in the hope of changing attitudes and hence behavior and human-wildlife interactions in a relatively short time (Heberlein 2012; Hodgson et al. 2020).

For an effective implementation of the cognitive fix, it is necessary to understand the behavior in place and define the desired behavior change (Heberlein 2012). Though the technological and structural fix aim at changing behavior, the most effective and long-lasting approach is to utilize already existing community-level mechanisms like social norms as well as existing belief systems (Hodgson et al. 2020). According to that, I will focus on the cognitive fix and on information that is relevant for its implementation. As part of the cognitive fix, conservationists often try to change attitudes which is mostly difficult or even impossible (Heberlein 2012). Hence, Heberlein (2012) suggests following the moving water rather than to move against the current in the hope to change attitudes. He advises to be aware of

⁵ It is necessary to enhance ecosystem connectivity, community engagement and conservation benefits for community.

⁶ Considering local cultures and traditions that influence daily lives.

the attitudes and underlying values and beliefs and work with them rather than trying to change them⁷.

3.1.2 Cognitive hierarchy

To get an understanding of those factors in a community, it is crucial to be aware of the cognitive hierarchy which is a construct that helps examining the process from human thoughts to action (Jacobs et al. 2012). It depicts underlying factors of human behavior and its interdependencies which is pictured in the picture below (see figure 2, adapted from Dreßel (2020)).

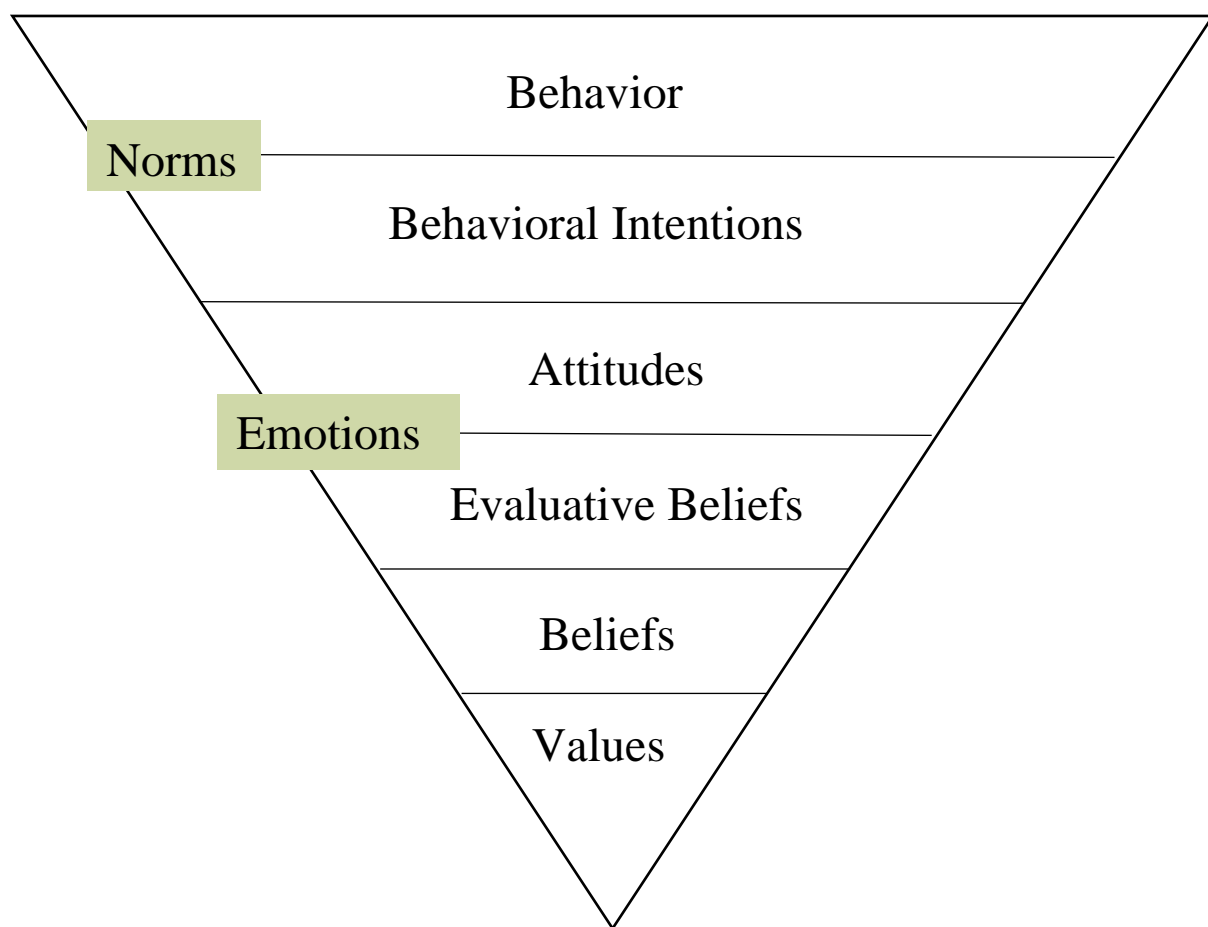


Figure 2: The cognitive hierarchy adapted from Dreßel (2020)

Referring to that, values are relatively few and influence personal beliefs which form attitudes on an individual level and norms on a community level. Both, attitudes, and norms affect behavioral intentions which may or may not lead to an actual behavior (Ibid.). It shows a very complex pattern of human behavior and

⁷ It is helpful to find out belief systems and social norms in place to build upon them rather than starting anew.

emphasizes that positive attitudes do not necessarily lead to a certain behavior but that there are several other factors that need to be considered (Heberlein 2012).

Values form the basis of the cognitive hierarchy. They are relatively few and are established very early in life so that they are closely tied to one's identity and therefore difficult to be changed (Decker et al. 2012; Jacobs et al. 2012). Being culturally constructed (Jacobs et al. 2012), values are strong determinants for decisions about right and wrong (Coleman 2010). Examples for values include equality, freedom, health, and security (Dreßel 2020).

Beliefs arise out of individual values and are defined as subjective facts or as what we think is true (Coleman 2010). They represent an individual's information about the world and hence form personal worldviews and provide a foundation for responses (Ajzen 2008). Consequently, an individual's beliefs do not necessarily represent reality but should be taken seriously and worked with at any time to reach the individual⁸ (Coleman 2010). One example is the fear of wildlife in HWC areas which can be disproportionately high and trigger retaliation killing without an actual risk posed by wildlife (Hodgson et al. 2020).

Humans can have many beliefs, but some might be more prominent and relevant for their lives (Heberlein 2012). Based on beliefs and their associated evaluations, attitudes are formed (Ajzen 2001). Attitudes are an individual's positive or negative evaluation of something or someone (Decker et al. 2012) that facilitate the decision-making process (Nyumba et al. 2021) and consist of affective and cognitive factors (Ajzen 2001; Decker et al. 2012). Therefore, they can predict and influence behavior (Decker et al. 2012). Because of its influence on human behavior, attitudes are studied to understand and direct behavior (Coleman 2010; Decker et al. 2012; McCleery et al. 2006). Many studies suggest education to change people's attitudes and consequently their behavior (McCleery et al. 2006; Heberlein 2012). However, attitudes consist of not only cognitive components that are influenced by imparting knowledge but also by affective components that are triggered by emotions and feelings (Decker et al. 2012; Ajzen 1991; Heberlein 2012). It is therefore said that attitudes do not only need facts but to the same extent feeling and following whereas facts refer to the cognitive and feeling to the affective parts while following describes the social setting in which humans are surrounded by other people with similar attitudes (Heberlein 2012). Heberlein (2012) concludes that attitudes are necessary to cause a certain behavior but are not sufficient to predict or direct behavior. Even though attitudes can change relatively quickly in a new role and social setting, it mostly takes a lot of time and happens unintentionally (Heberlein 2012). Additional to new knowledge, an attitude change often needs direct

⁸ Taking people's beliefs seriously is crucial even if they disagree with the researcher's beliefs.

experience and social influence (Ibid.). The more information an individual already has about a specific attitude object, the more difficult it gets to change someone's attitudes (Heberlein 2012). Nevertheless, even if an attitude change has taken place, it does not grant any change in behavior which depends on several different factors (Ibid.). If an attitude shows a relatively weak specificity with a broad behavior intention (BI) it is less likely to be applied in a specific case and reduces probability of a behavior in line with the attitude (Heberlein 2012). Ajzen (2008) therefore differentiates global attitudes which are rather broad and attitudes towards a behavior that deal explicitly with the implementation of a behavior. Global attitudes are not concerned about a specific behavior but are evaluations of subjects that do not involve a reaction which might be for example an attitude towards the Eiffel tower or gay people. Attitudes towards a behavior on the other hand are specifically towards a certain behavior and are therefore more likely to predict the behavior (Ibid.). Examples would be an attitude towards climbing the Eiffel tower or employing a gay person. Another factor affecting a behavior is the situational threshold (Heberlein 2012). It describes the fact that it is easier to articulate what one would like to do (BI) than to actually do it (B) (Ibid.). The third factor is the attitude strength. Even if an individual has a negative attitude towards a specific behavior and the intention to change it, it might still not come to an attitude change depending on the strength of the attitude. Hence, the lower the threshold and the stronger the attitude strength, the more likely it is that a behavior intention becomes an actual behavior⁹ (Heberlein 2012).

Referring to that, Heberlein (2012) lists four attitude principles that describe the nature of attitudes. The direct experience principle says that attitudes that evolved out of direct experiences rather than from theoretical knowledge are stronger, therefore harder to change and more likely to effect behavior (Heberlein 2012). Furthermore, direct experiences raise the accessibility of attitudes and make them more prominent and influential in daily life¹⁰ (Ajzen 2008). If attitudes are closely tied to one's identity, they are also hard to change which is discussed in the identity principle (Heberlein 2012). A change would mean a dramatic restructuring of the individual belief system which is highly emotional and very resistant to change¹¹ (Ibid.). The third principle is the consistency principle which says that attitudes tend to be consistent and do not easily change if a belief changes (Heberlein 2012). As mentioned earlier, attitudes can have different level of influence on human behavior depending on their specificity which is the concern of the specificity principle. The broader an attitude, the less likely to predict a specific behavior (Heberlein 2012; Ajzen 2008).

⁹ Suggested to lower the threshold for people by providing alternatives to their current, negative behavior.

¹⁰ Aiming to create direct experiences that oppose the current negative attitudes.

¹¹ Recommended that the belief system that gives identity is kept and broadened.

While attitudes are on individual level, norms are determinants of behavior on societal and communal level. They form the behavioral standards and regularities of what people should or should not do which are shared by a group and often come with sanctions like rewards or punishments (Decker et al. 2012; Heberlein 2012). They are often based on an imaginary ideal shaped by societal values (Taylor 2007). Norms emerge through clear, specific and observable behavior of the general public (Heberlein 2012). Because norms are visible, they are easier to understand than attitudes and hence key to changing environmental behavior (Ibid.). However, the influence of norms and attitudes weighs differently depending on the culture whereas an individualistic culture is more influenced by individual attitudes while a collectivist culture is more shaped by social norms (Ajzen 2001).

According to the cognitive hierarchy, the behavioral intention (BI) is based on the norms and attitudes and describes the plan of an individual to do a certain behavior (Ajzen 1991). Apart from the attitude towards a specific behavior and the social norm, the BI is also dependent on the perceived behavioral control under consideration of past experiences and possible obstacles which is summed up in the theory of planned behavior and puts a special emphasis on the confidence in the ability to perform a certain behavior (Ajzen 1991, 2001, 2008). It is therefore necessary to not just try to persuade individuals to change their behavior but to empower and encourage them for more self-confidence¹².

The final step of the cognitive hierarchy is the behavior itself. It is a result of all other cognitive steps that might or might not manifest themselves in a different behavior. However, none of the factors can actually predict behavior (Heberlein 2012). Additional to factors of the cognitive hierarchy, a frequently shown behavior forms habits which also influences future behavior (Ajzen 2001). Based on human's view on the world and their place therein, there are two wildlife value orientations, namely domination and mutualism which can be further divided into four groups of people. The domination or utilitarianism orientation sees wildlife as resource solely for human use and benefit whereas mutualists see wildlife as part of their extended family that deserves the same rights as humans (Jacobs et al. 2012; Teel et al. 2010). Those groups are further divided into the traditionalists who have the domination orientation and see wildlife as exploitable resource, the mutualists who see wildlife as beings deserving of rights, the pluralists who have traditionalist as well as mutualist views, depending on the situation and the group of the distanced who have neither a mutualist nor a domination orientation because they are less interested in and affected by wildlife (see table 4) (Teel et al. 2010).

¹² Empowering and encouraging people so that they gain self-confidence and feel able to implement a certain behavior.

Table 4: Wildlife Value Orientation adapted from Teel et al. (2010) and Dreßel (4/2/2020)

		UTILITARIANISM	
		LOW	HIGH
MUTUALISM	LOW	Distanced	Utilitarian
	HIGH	Mutualist	Pluralist

Furthermore, there are various attitudes towards wildlife that also shape people’s worldviews and the way they interact with their environment. Jacobs et al. (2012) mentions nine of them. While the *utilitarian* group supports an exploitation of wildlife, *naturalistic* oriented people seek direct experiences with wildlife. The *ecologistic-scientific* group studies wildlife scientifically, the *aesthetic* rejoices over its beauty and *symbolic* oriented people use wildlife as inspiration for language and thought. A strong emotionally bond and love to wildlife is characteristic for the *humanistic* orientation while the *moralistic* have an ethical concern for wildlife. *Dominionistic* groups see themselves as superior to wildlife and in control of it and the *negativistic* orientation is dominated by fear and alienation from wildlife.

The cognitive hierarchy with all its factors is increasingly considered in nature conservation whereby scientists often call for ‘educating the public’ to achieve a quick change in behavior (Heberlein 2012). However, the desired change comes from within and is not achieved by educating. Additionally, educating only aims for the cognitive component of the attitude whereas the affective and stronger one is neglected (Ibid.). It is therefore crucial to consider both, the cognitive as well as the affective component of attitudes and combine imparting knowledge to get first information with practical experiences¹³ (Ibid.).

Nevertheless, Kenya is a country with communal rather than individualistic emphasis which is why norms are prominent in society. With a majority of Christians (Marshall 2017), Christianity shapes social norms in Kenya.

¹³ Helpful to combine sharing knowledge with practical experiences.

3.1.3 Norms as Behavioral Determinant in Communal Societies

To understand communal societies, like in Kenya, it is important to recognize the social setting of a society (Heberlein 2012) and identify dominant mass media and social leaders who could help norms emerge and trigger and influence movements¹⁴. Furthermore, norms have the power to deactivate attitudes due to social pressure and people's desire to adapt to behavior of the masses and behave more like the average (Heberlein 2012).

3.1.4 Learning and Education as Cognitive Component of an Attitude

The cognitive component of an attitude is shaped by knowledge and information which is why education is an often-used tool aiming at changing attitudes (Heberlein 2012). Education is defined as a process of imparting knowledge and learning experiences (Coleman 2010) that are important for shaping societies (Moyer et al. 2014). Depending on previous experiences and encounters, education is more or less effective. If the attitude object is completely new to someone and the person doesn't have prior knowledge about it, attitudes are easily shaped through education (Coleman 2010; McCleery et al. 2006). In the case that the person already has a belief about the attitude object, no matter if the belief is accurate or not, education alone does not have enough power to change the attitude (Coleman 2010).

Knowledge should be taught carefully under consideration of different factors like credibility and trustworthiness (Elshayyal 2007; Coleman 2010). It is helpful to transfer information to the community not or not only by an outstanding person but by a well-respected person who is part of the community and serves as opinion leader¹⁵ (Coleman 2010). The chosen opinion leader who represents the source of the information should furthermore have the required expertise, be trusted and liked by the community and have a certain rank within that community (Ibid.). How the information is perceived by the community depends on current attitudes and their strength, their personality as well as their intelligence (Coleman 2010). Influenced by those factors, the perception of the message and the resulting behavior determine the effect of the message (Ibid.).

Learning is most effective and transformative when it affects the individual in thought and action through experiences and activities (Moyer et al. 2014) which is

¹⁴ Identifying social leaders of a society or community who can help norms to emerge.

¹⁵ Choose a social leader who imparts knowledge on community.

also mentioned in the direct experience principle for attitudes (Heberlein 2012). However, education and learning initiatives are probably only really effective for students who do not have prior knowledge about the issue yet¹⁶ (Coleman 2010). Lunney et al. (2013) concludes that even though it is often said that it needs more education, it rather requires an ecological conscience to form a better judgment because most decisions are made by the public based on attitudes, values, and emotions rather than pure facts.

3.1.5 A Sense of Awe as Affective Component of an Attitude

The affective component of an attitude that is shaped by feelings and emotions is often neglected, yet it is more powerful in shifting and strengthening attitudes than the cognitive component (Heberlein 2012). Emotions play a key role in experiences and responses to wildlife and shape the perceptions and memories more than mere imparting of knowledge¹⁷ (Jacobs et al. 2012). Hence, feelings tend to dominate in the situation when beliefs and feelings are opposite (Ajzen 2001).

Experiences of awe that touch upon the affective component have the power to evoke strong feelings and emotional responses (Keltner and Haidt 2003). According to Keltner and Haidt (2003) they can change the course of life permanently and profoundly¹⁸. Awe is defined as a destabilizing emotion that is provoked by something vast and difficult to understand (Gottlieb et al. 2018). It evokes a sense of humility and wonder as well as amazement towards a higher existence (Schneider 2011) which is why awe is very prominent in religions that point to a divine power (Keltner and Haidt 2003). Emotionally, awe is considered to be on the border between the positive and negative by provoking a sense of wonder but also powerlessness and uncertainty (Gottlieb et al. 2018). The sublime, defined as the inspiration to be in awe, is either created by something powerful and superior or by something obscure that humans cannot fully grasp (Keltner and Haidt 2003). Stimuli that are associated with a collective like shared values, goals or outcomes can further trigger a feeling of awe (Ibid.). Apart from vastness, accommodation is the second feature that forms awe (Ibid.). Vastness is defined as something much larger than the observer which can be in physical size but also applies for other characteristics that seem superior like fame (Keltner and Haidt 2003). Accommodation means the attempt to process and make sense of new experiences that involve confusion, obscurity, or other situations when knowledge is not sufficient to fully understand (Ibid.). Such situations have been observed to trigger experiences of enlightenment and rebirth when the brain accommodates

¹⁶ Starting topics of program with creation aspect that is not heavily influenced by negative attitudes.

¹⁷ Creating experiences and positive memories.

¹⁸ Exposing people to awe-inspiring situations.

truths that haven't been known before (Ibid.). So called peak experiences of which awe is a part, lead to a disorientation in time and space, self-forgetfulness and an increased awareness for the world around us as being good, desirable and beautiful (Keltner and Haidt 2003). They also evoke feelings of being passive, receptive, and humble and therefore increasingly fortunate or blessed (Ibid.). By experiencing awe, people find meaning which leads to an even stronger feeling of awe though awe and meaning are not the same (Schneider 2011). Being more exposed to awe-evoking experiences, individuals have an increased tolerance for uncertainty (Gottlieb et al. 2018). Because of its strong connection to personal feelings and emotions, awe has a great power to change people's views and is even said to be "one of the fastest and most powerful methods for personal change and growth" (Keltner and Haidt 2003, p. 312). It is therefore said to have the ability to transform people and inspire them to rethink their lives, goals, and values (Ibid.).

Bouma-Prediger (2001) states that humans are increasingly disconnected from nature and that they are losing the sense of their place which leads to a lack of awe of what they do not know nor look at. Nevertheless, a sense of awe is necessary for a responsible behavior because only by knowing the place including the flowers, trees, animals, seasons and moon phases, individuals develop an appreciation beyond ecological despoilation (Ibid.).

Objects that are new and different than familiar objects are more likely to produce awe and are mostly found in religion, literature, art, poetry, painting, politics and nature (Keltner and Haidt 2003). All of them can trigger a feeling of awe in different ways like through an experience of threat which can occur in a thunderstorm. Beauty inspires awe through aesthetic pleasure while exceptional ability and skill can create awe towards a person (Ibid.). When people show virtues and moral beauty it can create a desire to become a better person in others (Ibid.). Yet one of the strongest awe-inspiring 'flavors' is the perception that a supernatural being manifests himself in a terrifying or glorious way (Keltner and Haidt 2003). Pope Francis (2015) therefore concludes that nature has the ability to evoke awe in humans and points to a divine power. Consequently, contemplation of nature is said to be the key to a holistic approach to the environment¹⁹ (Nordlander 2021).

3.1.6 Religion

An important pillar in many people's lives is religion, which often arises out of a sense of awe (Gottlieb et al. 2018) and gives meaning through a higher power (Theuri 2013). Religions are systems of thought and action that are shared by a wider community (Ibid.) and provide moral practices, narratives and inspiration

¹⁹ Creating space where sense of awe towards nature and its creator can be developed.

(Mikusiński et al. 2014; Bhagwat et al. 2011). All religions have in common that they give a frame of orientation and inspire some kind of devotion to a higher power (Theuri 2013). Because of that, faith assists in creating, shaping, and maintaining values and behaviors which is an ability that science lacks (Moyer et al. 2011).

The majority of the global human population are believers (Pope Francis 2015) with around 88% who believe in some kind of religion (Zagonari 2020) and 77% belonging to one of the four world religions (Rafiqpoor and Barthlott 2018). Around 31% (Zagonari 2020) or 2.3 billion people identify themselves as Christians globally (Rafiqpoor and Barthlott 2018; Sluka et al. 2011).

Consequently, religions determine values and influence behavior of most people in the world (Rafiqpoor and Barthlott 2018). Those values and resulting attitudes reflect social and individual settings (Theuri 2013) which makes religious leaders to one of the most powerful and influential groups of people (Bhagwat et al. 2011). Zagonari (2020) therefore concludes that religions should promote a transformation of beliefs to encourage a more sustainable lifestyle. However, a religious affiliation with environmental concerns might not only inspire pro-environmental behavior but is also capable of encouraging harming behavior (Bhagwat et al. 2011).

The behavior towards the environment and wildlife depends on different wildlife value orientations that arise out of different religious motivations which are summarized by Chuvieco (2012). In the *empathy* orientation, humans have compassion with nature which is affected by human misbehavior. Seeing nature as an image of God is described in *the analogy orientation* which contrasts with the *God worshipper* idea whereby nature gives glory to God the creator. Seeing nature as being beyond human comprehension is defined as the *cosmic humility orientation*. The *natural mysticism model* suggests that a union with God is accomplished through contemplation of the created world. Seeing nature as sacred is the understanding of the *worship orientation*. In the *dominion model* humans see themselves as superior with the permission to use and exploit all natural resources. The opposite of that is the *stewardship* model which encourages people to use God's creation responsibly while also taking care of it (Chuvieco 2012).

Those orientations concerning wildlife and nature are part of the bigger worldview. A worldview is defined as a set of assumptions about the way the world works and about humanity's place therein (Kosoe et al. 2020). It not only explains reality but also gives meaning which influences people's values, attitudes, and behavior (Ibid.). Religions establish an understanding of the world and define the role of humans (Chuvieco 2012) by providing narratives and a social imaginary to live by (Watson and Kochore 2012; Taylor 2007).

Because religions not only provide a social imaginary but also include basic beliefs and a moral system, it influences individual behavior (Mikusiński et al. 2014; Chuvieco 2012). Spaling and Vander Kooy (2019) therefore conclude that faith has the power to change people's mindsets and initiate a behavior change.

However, current imagination-sets are not only influenced by an existing belief system which is given by religion but also by history and politics (Katongole 2011) which include colonialism, missions, independency and the Mau Mau rebellion in Kenya (Marshall 2017). To overcome current stories of corruption, violence and poverty in the African context, Katongole (2011) suggests using stories rather than skills to shape individual values and aims and consequently create a new imagination. This is also recommended by Jackson (2022) who, inspired by Jesus in the Bible, tells stories about what he is passionate about to reach people and make his concerns relatable to others. Because of its strong influence, Kohák (1984) states that religion or more specifically Christianity, has the power to transform hearts and minds. Yet, this power is barely used by churches (Katongole 2011).

Referring to their influential guidance, religions could be the most powerful collaborators of nature conservation initiatives (Rafiqpoor and Barthlott 2018). Combining spirituality or more specifically Christian faith with conservation and climate initiatives not only introduces hope into an otherwise very hopeless and depressing field but also inspires action because of awe and appreciation rather than desperation and bitterness²⁰ (Jackson 2022). Additionally, explaining the conservation message through religious leaders in their own language makes it more likely to be accepted by communities than from a secular motivation (Sluka et al. 2011; Northcott 2010).

This is especially true in places where Christians form the majority which is the case in Kenya. Around 80% of Kenya's population are Christians (Marshall 2017; Bureau of Democracy, Human Rights, and Labor 2006). Christianity is therefore very prominent in the Kenyan society and plays a major role in the daily lives of people (Marshall 2017; Watson and Kochore 2012). The most established denominations are the Roman Catholic Church, Anglican Church and Seventh-Day Adventist Church (Marshall 2017). However, various African Independent Churches are dominant in rural areas and are mostly led by pastors who lack theological training (Muga 2021; Baya 2021a). Furthermore, traditional religions are often still shaping some practices and beliefs in Christian as well as Muslim doctrines (Hastings 2004; Olupona 2014). Their influence includes a mostly oral

²⁰ Motivating actions out of awe and appreciation rather than desperation and bitterness.

tradition and an emphasis on storytelling which is often still prominent in churches²¹ (Olupona 2014).

Because faith is understood to be more powerful than governments or science, churches can become relevant entry points to the communities (Moyer et al. 2011). Christianity and other religions also determine the behavior towards the environment in Kenya (Watson and Kochore 2012) and can therefore be powerful tools for nature conservation (Mikusiński et al. 2014).

In countries like Kenya where religion plays an important role in the society, it has the power to transform thought and action (Moyer et al. 2011) and should therefore be considered more in the conversation about conservation (Mikusiński et al. 2014). Bhagwat et al. (2011), Northcott (2010), Bundesamt für Naturschutz (2015) and Kosoe et al. (2020) therefore suggest that environmental education programs should be implemented by religious leaders²² based on their faith to achieve more positive attitudes and a change in behavior.

3.1.7 Christianity and Stewardship

To achieve such a change with a Christian approach, the individual worldviews require a specific understanding of the environment and humanity's place therein (Chuvieco 2012). Like all religions, Christianity teaches respect to God's creation and calls to take care of it (Rafiqpoor and Barthlott 2018) which is often called creation care. However, churches often do not preach about creation care (Harris 2008; Chuvieco 2012; Bhagwat et al. 2011; Sluka et al. 2011) because they mostly focus on their own faith and prosperity, the salvation of their souls and heavenly concerns (Bouma-Prediger 2010; Katongole 2011; Watson and Kochore 2012; Muga 2021) and do not see the connection between environmental concerns and their own wellbeing (Watson and Kochore 2012; Pope Francis 2015). This reflects the general prioritization of human concerns over environmental concerns²³ The strong emphasis on salvation with little earthly concerns, the understanding of the scripture Genesis 1:28 as an invitation to exploit the earth and a strict dualism between body and soul, the material and the spiritual lead to a negligence of the creation care message in biblical teachings (Weaver and Hodson M. R. 2007).

The dualism between body and soul, spirit and matter often leads to putting a higher value on spirit and soul rather than material things which devalues creation and encourages an exploitation of the earth (Bouma-Prediger 2001). However, Christianity does not reject matter (Pope Francis 2015) and should focus more on

²¹ Having approach of telling stories, making biblical stories relatable in daily lives.

²² Considering implementation of program by accepted local church leaders.

²³ Important not to neglect human concerns like skill teaching or empowerment.

God's kingdom on earth with its entailing actions rather than denying matter (Katongole 2011). Especially Christianity has been a strong driver for development processes which has disconnected people from nature (Watson and Kochore 2012; Baird 2015).

The Scripture Genesis 1:28 stresses a dominion over creation which has been very controversially interpreted over the centuries.

God blessed them and said to them: "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground."

While sometimes religions lead to conservation, it has also often led to exploitation (Baird 2015; White 1967). According to White (1967), Christianity was the driving force for global environmental degradation due to the dominant anthropocentric orientation (Nordlander 2021) and the dominion model (White 1967; Moyer 2015; Sluka et al. 2011). He therefore suggests that if environmental degradation is rooted in religion, its remedy must also be religious (White 1967). The call for dominion in Genesis 1:28 was often misused to justify exploitation (Deane-Drummond 2008; Pope Francis 2015; Horan 2018; Zagonari 2020). Hence, it does not only lead to an exhaustion of natural resources but also undoes social structures and erases cultural identities and a sense of meaning²⁴ (Pope Francis 2015). Additionally, it has put humans in a superior position to nature (Weaver and Hodson M. R. 2007).

Nevertheless, the idea of dominion should be seen in a broader biblical context that suggests a good and servant leadership that encourages a flourishing of all of creation (Bouma-Prediger 2010; Watson and Kochore 2012). Apart from the scripture Genesis 1:28 to have dominion over the earth, the scripture Genesis 2:15 to till and keep the earth should also be considered (Pope Francis 2015).

The LORD God took the man and put him in the Garden of Eden to work it and take care of it.

Weaver and Hodson M. R. (2007) therefore understand the call for dominion over creation as an invitation to collaborate with God and reflect his kindness for all of creation. This way of taking up responsibility as stewards of the earth is called stewardship and is the second dominant worldview in Christianity which gains increasing attention (Deane-Drummond 2008). Stewardship is defined as taking up responsibility for creation as a grateful and appreciating response to God based on

²⁴ Creating a sense of meaning.

Genesis 2:15 (Deane-Drummond 2008; Horan 2018). It is therefore not only a crisis management but rather a whole lifestyle (Horan 2018). According to Pope Francis (2015) and Lunney et al. (2013) it needs a shift from the dominion model to the idea of stewardship which includes an acceptance of a human responsibility for environmental concerns²⁵.

The challenge is to include a care for the earth as an integral part of Christian discipleship (Bouma-Prediger 2010) and understand everything as owned by God (Horan 2018). Weaver and Hodson M. R. (2007) consequently conclude that environmental concerns should be included in missiology, Christian doctrine, practical theology, prayers, and songs²⁶. However, depending on the denomination, the emphasis on different symbols and traditions varies which should be considered when introducing creation care into churches²⁷ (Chryssavgis 2019; Weaver and Hodson M. R. 2007; Deane-Drummond 2008).

3.1.8 A Vision of Change

Because Christianity determines people's beliefs and behavior, it has the greatest opportunity to influence people's view on biodiversity (Baird 2015; Sluka et al. 2011). A vision for change is therefore founded in the Christian faith, which is not just spiritual but also highly social, political and economic (Katongole 2011; Pope Francis 2015). To form a new imagination-set which was suggested by Katongole (2011), it is necessary to write a new story to live by and a community that is committed to the vision.

Christianity speaks the language of imagination (Horan 2018), creates a different story than the status quo to live by (Katongole 2011) and has the power to create a sense of awe (Gottlieb et al. 2018; Keltner and Haidt 2003). Because more positive attitudes towards nature and wildlife often require awe and contemplation (Pope Francis 2015) to touch upon the affective component of attitudes (Heberlein 2012; Jacobs et al. 2012), the Christian faith has the possibility to create a change in people's hearts and minds which is proposed by many authors (Weaver and Hodson M. R. 2007; Lunney et al. 2013; Chryssavgis 2019; Deane-Drummond 2008; Horan 2018; Katongole 2011; Bouma-Prediger 2010; Pope Francis 2015; Kohák 1984; White 1967). This change of hearts that is needed for an improved coexistence of humans with the rest of creation is called metanoia (Weaver and Hodson M. R. 2007; Chryssavgis 2019).

²⁵ Introducing idea of stewardship.

²⁶ Including God's creation in songs, prayers, sermons, practical engagement in church.

²⁷ Considering emphasis of certain denomination and using that to make creation care relatable and meaningful (icons in orthodox church, St. Francis in catholic church).

There are various ecological ethics that might form a base for a new imagination. Bouma-Prediger (2010) identified and evaluated seven of them, using different criteria of the stewardship idea in Christianity for its suitability. The *conservation movement* which has a particular emphasis on “wise use” has a strong notation that natural resources should be used wisely but their only value is found in human use. The argument for *rights for future generations* widens an ecological ethic to also include humans not yet born but has a very anthropocentric approach. Extending general ethics to all animals is the focus of the *animal rights movement*, yet it is too individualistic and does not include whole ecosystems. Extended ethics that include animals as well as future generations are characteristic for *biocentrism*. However, even that is too individualistic and pays no attention to the interconnectedness of all beings in ecosystems. The aim of the *wilderness movement* is to preserve wild places, though it only values beings and landscapes of high aesthetic value. *Deep ecology* is a radical shift of consciousness away from individualism towards a holistic way of thinking and from a human community towards a biotic community (Deane-Drummond 2008). Despite its high emphasis on connectedness in the natural world, Bouma- Prediger (2010) criticizes that everything is given the same value. The *land ethic* aims to extend ethics to all organisms including energy flows, communities, and ecosystems. Though it mostly focusses on the community with less attention to individuals, it is the most adequate ethical perspective from a Christian perspective (Bouma-Prediger 2010). However, some minor changes should be applied for more suitable Christian environmental ethics which includes protecting not only rights of communities but also of single individuals. Furthermore, the land ethics should be renamed to also consider water bodies and the ecocentric view requires a shift to a theocentric perspective whereby all things exist to praise the Christian God²⁸ (Ibid.).

The land ethics were introduced by Aldo Leopold (1990) who criticized that existing ethics focus solely on other humans with no relation to humans’ relationship to the land, animals and plants (Ibid.). Similar to Rachel Carson (2000) ten years later, he also pointed out how conservation has ignored philosophy and religion in its efforts which are important to create love, respect and admiration for the land and encourage conservation (Leopold 1990). Eighteen years later, ecology was still seen as quantitative and reductionistic without sacredness nor spirituality (Berkes 2008). Leopold’s (1990) idea of the land ethics, to extend ethics from only humanity towards nature, animals, plants, and the entire environment with all its connections, is also promoted by other thinkers who understand nature as something of great spiritual value (Bhagwat et al. 2011). While Weaver and Hodson M. R. (2007) suggest extending justice, rights and care to the natural world, Horan (2018) calls for extending the love to the neighbors, which is of high importance in

²⁸ Orienting oneself on the concept of the Land Ethics

Christianity, towards all creatures. This philosophy goes back to the assumption that “we care for only what we love, we love only what we know, we truly know only what we experience” (Bouma-Prediger 2010).

3.2 Results – Field Work

The findings from the literature review were partly evident in the field and participant observations as well as in one-on-one conversations with locals and staff of the three organizations A Rocha Kenya, Creation Stewards International and Eden Thriving. One example are the different definitions of an animal which influence people’s approach to them. While the word animal in this thesis is used referring to every being that belongs to the kingdom of animalia and therefore excludes plants and fungi, many Kenyans have a different understanding of it. It is mostly influenced by the Bible and should not be discarded as wrong but accepted as belief and worked with it. In a conversation with a Christian man, it became clear that animals are often seen as beings with four legs which include domestic and wild animals, reptiles, amphibians and rodents whereas birds, fish and insects are not seen as animals and therefore understood as lower beings (Akwaba 2021).

Additionally, the Kenyan curriculum influences the attitudes towards nature and wildlife strongly. Though environmental education is a fixed part of the Kenyan curriculum with the power to develop an ecological conscience at an early age, it is often neglected by teachers who are mostly also not well trained for that subject (Lenna 2021). When different places and the behavior therein are taught in primary schools, the most prominent answer to the ‘most dangerous place’ is the forest (Salim I. 2021; Lenna 2021). It shows how the idea of nature as a dangerous place, which needs to be avoided or conquered, gets well established in the child’s belief system and is therefore hard to overcome.

This arising disproportional fear was also described in a conversation in which a young Muslim described the fear of cats, most especially black cats, which are suspected to be cursed by witchcraft and come to kill people (Salim S. 2021). Him and many other Kenyans of different origin and culture throw stones at cats or kill them as a result not of their fear of cats themselves but because of their fear of the supernatural, invisible and death which creates a strong negative attitude and extreme behavior against cats. This behavior is based on a belief that touches not the cognitive but the affective component of attitudes and therefore amplifies the urge to manifest a behavior based on that belief.

According to own observations from a creation care outreach in Dakatcha, a rural area where intensive tree-cutting threatens the environment, climate and

livelihoods, people in local communities tend to have more negative attitudes towards a conservation organization as well as towards wildlife itself when legal actions against them and for wildlife protection are performed.

3.2.1 Environmental Assessment

Based on *Educating for Life: Guidelines for Biodiversity Education* (McLeish 1997), an environmental assessment was conducted within the community of Nyakinyua. I hereby looked at different aspects of the environment and daily lives of community members within Nyakinyua including Biodiversity, Climatic Conditions, Cultural Values, Farming and Grazing, Forests and Grassland, Gender Roles, Human Settlements, Institutional and Community Environmental Management Structures, Livelihood Security, Parks and Protected Areas, Soils and Land, Waste Management, Water Resources and Watersheds as well as Wildlife and Livestock. To get a first impression of those factors, I visited Nyakinyua and explored the environment. Later, a church service was attended too to get an understanding of the values of the church and structure of a service. During the visits in Nyakinyua me and my research assistant got into simple conversations on the road with locals that revealed more information. Those locals were a pastor and his wife (Pastor Kamiti 2022), the chief of the area (Chief 2022), farmers, a Boda rider (motorbike taxi) (Dennis 2022) and shop owners. More targeted visits and conversations were conducted later with informants referred to by the organization Eden Thriving. Those included a woman community leader of Nyakinyua (Mama Ciku 2022) as well as a pastor. Furthermore, staff of Eden Thriving shared relevant knowledge with me (Smith and Mwangi 2022; Mwangi 2022; Methu 2022; Mburu 2022; Thuo 2022).

The village Nyakinyua is located north-east of Naivasha on 36°27' E and 0°35' S in mountainous terrain. It lays on the boundary between Nakuru and Nyandarua County which, together with its remoteness, leads to a low responsibility from both County governments (Smith and Mwangi 2022). Its infrastructure is therefore very basic with rocky roads that require vehicles with 4x4 wheel drive (Smith and Mwangi 2022; Mburu 2022) or in the dry season also motorbikes (Dennis 2022). While the landscape at the foot of the mountain is a flat open area that becomes lush green during rainy season, the ground becomes rockier and drier with increasing altitude. Heavy rainfalls occur mostly between the end of March and May and light but long rainfalls take place during August, September and October (Mburu 2022; The Global Historical Weather and Climate Data 2022). The major threats of biodiversity in this region are deforestation, change of landscape from forest and shrubland to agriculture as well as soil erosion and flashfloods. The increasing size of patches with bare soil makes it more prone to soil erosion and prevents the soil from holding rainwater. Some farms have adjusted to that and plant

crops on terraces, but the majority grows crops on a slope and therefore lose big portions of their harvest.

Despite its traditional village character, the communities of Nyakinyua and the neighbor Gatamaiyu do not have their origin there. The entire area from the foot of the mountain up to the ridge was owned by expatriate John Nimo (Pastor Kamiti 2022; Mburu 2022; Thuo 2022; Methu 2022). When his children sold parts of it after his death, individuals gathered in a collective to buy a portion of the land which is now known as Gatamaiyu, derived from the native tree called mtamaiyu (Pastor Kamiti 2022). Shortly afterwards another collective formed and bought land that was even more remote which is now known as Nyakinyua (Pastor Kamiti 2022) and the focus area of this study. Consequently, all residents don't originate there which makes the communities a collective of different cultures and backgrounds (Pastor Kamiti 2022). However, most of the inhabitants belong to the tribe Kikuyu which is the most spoken language in the area. Unlike many other places in Kenya, the land there is bought and owned by individuals rather than leased (Pastor Kamiti 2022; Mwangi 2022; Mburu 2022) with some public land for schools or a dispensary, both of which are only within Gatamaiyu but not in Nyakinyua. However, some landowners, especially in Nyakinyua, purchased big portions of land and hired people to work it without being present themselves (Mama Ciku 2022; Methu 2022). The land mostly consists of a small residential mud or metal hut, a crop farm, and an enclosure for livestock.

While most people in the more populated and better-connected village Gatamaiyu have small farms and often only grow crops for themselves, in Nyakinyua, many plots are of bigger size and for commercial use (Mburu 2022). Apart from growing crops, many community members also keep livestock like cows, goats, and sheep. The livestock roams around freely during the day but is brought into enclosures made of thorny sticks and wires to protect them from predation.



Figure 3: Thorny branches used as fences



Figure 4: Landscape of Nyakinyua

The farmed crops are corn, potatoes, beans, onions, green peas, cabbage, and carrots. Because the ground is dominated by rocks, the land for farming is limited. Therefore, farmers plant in open relatively flat patches between the rocks that are dominated by loam soil. Depending on soil, altitude and steepness, the number of crops per hectare varies. However, the productivity of the soil generally decreases over the years leading to smaller harvests and the usage of increasing amounts of fertilizers. Nevertheless, mulching is rarely applied. Constraints for farming are droughts and the increasing problem of erosion as well as flooding during rainy seasons, crop raiding by wildlife and the depletion of the soil. Consequently, the current trend is increasing opening and burning of landscape as preparation for agricultural use. Despite the knowledge about the decreasing harvest among farmers, the willingness to change farming methods is very low because of the fear to lose an entire harvest while experimenting with a new method²⁹. Furthermore, the belief that what has always worked and been taught to them by their parents and grandparents must be the best, keeps them from trying different strategies to increasing the harvest more sustainably.

Because most people do crop farming and keep livestock, there are no cultural differences between livestock owners and cultivators. Despite the general cultural differences between men and women whereby women spend more time at home, being devoted to family and hospitality of guests and men spend more time outside, meeting with friends and storytelling, there are no significant differences in the division of tasks. Men as well as women and even older children do farming including planting and harvesting. However, men are often more involved in ploughing of the ground whereas women are more often seen carrying the harvest to small local shops where they also sell it. Regarding livestock keeping, there are slight differences. While women often tie their livestock on a wooden pole where

²⁹ Create a demonstration plot to prove effectiveness of different farming methods to farmers.

they can graze in a certain radius, men and boys tend to move around with their livestock more often. Illegal poaching and tree cutting are generally done by men and boys. However, women, especially single mothers, often go tree cutting too. Just carrying them by motorbike or bicycle is not possible as it is with men because the women don't know how to use them.

Everyone accesses water from two wells within Gatamaiyu (Mburu 2022) and since 2021 there is a new borehole closer to the community of Nyakinyua (Mburu 2022; Mama Ciku 2022). Additionally, many households have water tanks on their property that allow them to store rainwater. Though livestock can drink from the seasonal stream during rainy season, during dry season the wells and the borehole supply the entire two communities with water for drinking, cooking, bathing, washing, irrigating, and feeding livestock as well as wildlife. To ensure the permanent availability of water, the government purchased a piece of land that includes one of the wells with the aim of protecting it and preventing a clearcut (Pastor Kamiti 2022). Reason for that is the rapid deforestation in the area due to increasing agriculture as well as logging for firewood and poles (Pastor Kamiti 2022; Mburu 2022). Though some few people decided to keep and protect the trees on their land, the majority of the land has been changed from dense forest and shrublands to agriculturally used farms and pasture (Mburu 2022). Even in protected land, the number of trees declines due to tree poaching which occurs specifically during droughts to allow families to earn some money to pay school fees (Mburu 2022). In Nyakinyua there was a cedar forest which was completely eradicated for commercial pole trade within the past five years (see figure 5) (Mburu 2022; Pastor Kamiti 2022).



Figure 5: Deforested Area in Nyakinyua

The community of Nyakinyua consists of 284 registered members and their children which brings their numbers up to around 400 (Mama Ciku 2022). The majority of the population are older people and children because the adult generation often moves to cities, trying to get employed (Smith and Mwangi 2022; Mburu 2022). Consequently, there is high poverty within the village where the only livelihood is farming (Mama Ciku 2022). All of the inhabitants identify themselves as Christians and are members in one of the around ten churches that are located within Nyakinyua and belong to different denominations (Mama Ciku 2022). Hence, people's cultural values are deeply rooted in Christian faith but vary depending on the church and denomination they go to³⁰. Based on their belief, the inhabitants of Nyakinyua see all of creation as for them to use because God has given it to them. This gives them a reason to rejoice and be grateful but at the same time allows them to exploit the landscape. Additionally, their understanding of dominion over God's creation does not put sanctions on throwing waste in the environment which is a consequence of a lacking waste management that would make disposing waste more convenient. Consequently, most waste is piled up in the environment and burnt on the site. However, their increasing awareness of the consequences of their exploiting actions as well as their rootedness in Christian faith show the opportunity to approach environmental concerns from a Christian perspective.

Because the village Gatamaiyu is better connected, its inhabitants have a higher chance of getting employment in the surrounding rose farms or as house helps in the missionaries' houses at the foot of the mountain (Mama Ciku 2022). For Nyakinyuans that is not possible which causes them to suffer during dry season or when the harvest is damaged by weather or wildlife (Mama Ciku 2022). Their only option to provide food for their families and pay their children's school fees during those times is to poach wildlife to sell the meat or cut trees and sell the wood (Mama Ciku 2022). The deforestation as well as the extinction of wildlife like antelopes are indicators that the use of natural resources is not sustainable which affects the environment negatively and threatens the community's livelihood security.

Because of the increasing human encroachment, the habitats of the people and wildlife overlap increasingly which leads to a growing Human-Wildlife Conflict (Thuo 2022). Though there are zebras, gazelles and impalas in the open area at the foot of the mountain, they are not seen in the higher altitudes which is probably caused by poaching (Mama Ciku 2022). However, around the villages there are buffaloes, baboons, leopards, hyenas and one hippo that cause problems and create conflicts with the community of Nyakinyua (Mburu 2022; Mama Ciku 2022; Pastor

³⁰ Adjust to specific traditions for each denomination.

Kamiti 2022; Chief 2022). While the buffaloes, baboons and the hippo raid peoples' farms and destroy the harvest on which their lives depend upon, leopards and hyaenas prey on their livestock (Pastor Kamiti 2022; Mama Ciku 2022; Mburu 2022). The baboons that mostly come out early in the mornings to feed on crops and hyenas that invade the villages at night to kill livestock are the two major conflicts the community complains about (Mama Ciku 2022). However, the buffaloes which mostly come out in the evenings (Thuo 2022) and the hippo that grazes early in the mornings and late in the evenings on peoples' farms (Thuo 2022; Mburu 2022) as well as the leopards that often kill domestic dogs at night (Mburu 2022), cause additional anxieties among the people (Mama Ciku 2022). One recent instance of livestock killing were fifteen reported sheep, goats and cows that were killed by hyaenas within one night³¹ (Mama Ciku 2022). The main determining factors for the wellbeing of wildlife populations are the size, quality and connectedness of habitat which is increasingly overlapping with human habitat as well as the availability of food. Because the favored habitats like forest and shrublands are disappearing, many wildlife species either go extinct in that area which has happened to many antelope species that have also been poached or they look for food elsewhere. Predators like hyaenas and leopards usually prey on antelopes but because the smaller antelopes don't live in that area anymore and buffaloes and elands are difficult to catch, domestic goats, sheep, cows, and dogs are more convenient for them.

Even though the Kenya Wildlife Service (KWS) is the appointed authority to manage wildlife within the entire country on behalf of the people of Kenya and are therefore obligated to compensate any loss that might have been caused by wildlife, no incident in Nyakinyua and Gatamaiyu has ever been compensated (Mama Ciku 2022) which leaves the community with the feeling of disappointment in the government and authorities and the desire to take action in their own hands. Nevertheless, KWS officers do visit the area sometimes to persecute people for poaching wildlife and trees (Mama Ciku 2022; Mwangi 2022). Even though, Nyakinyua itself does not have protected areas, hunting is generally prohibited in Kenya and makes any hunting activity illegal. The closest private protected areas often have a bad reputation among the Nyakinyuans because those areas are fenced to stop people from entering and poaching trees and wildlife there. One protected conservancy that is around 11km away is called Kigio Conservancy and is owned by the local community. It is home to numerous bird species, several antelope species, elephants, buffaloes, hyaenas, and leopards among others. Because of its wide range of wildlife, it is a tourist attraction with several lodges on the property and offering Game Drives, Birdwatching and Bicycle rides.

³¹ Creating safe enclosure for livestock during the night.

Despite the human-wildlife conflicts in that area, there are no organizations involved in addressing them. Even generally there is a lack of involvement and support of authorities and institutions visible in Nyakinyua. One organization that is active in Nyakinyua is Eden Thriving. The staff conduct environmental education programs for children that also include biblical teachings (Smith and Mwangi 2022). In collaboration with the independent organization Eden Reforestation, Eden Thriving has also started tree planting projects in Gatamaiyu for which they have established a tree nursery that is often used for tree donations to the villages (Mburu 2022). The program for children consists of clubs where they undergo a training with 16 sessions with the aim for them to see nature as God's creation, to appreciate it and to want to protect it (Methu 2022). Once the clubs are over, there is the possibility for the children to join the membership program where they can continue learning about and interacting in the environment more freely and do different tasks (Thuo 2022; Methu 2022). Both, the clubs and the membership program are implemented in Gatamaiyu as well as Nyakinyua (Methu 2022). Additionally, the adults in Gatamaiyu were trained in the farming method Farming God's Way which has its foundation in Christian faith and promises more yield in a smaller space than conventional farming methods (Methu 2022). However, the main focus of Eden Thriving lays in the work with children to equip them "to become environmentally responsible citizens, who are characterized by an attitude of Wonder towards creation, a heart of Worship towards the Creator, and a mind that seeks Wisdom to live sustainably on our fragile planet" (Arensen et al. 2018, p. 1). With this strategy the organization aims to change the children today to be able to recognize a visible change in ten years (Methu 2022). Nevertheless, today there is already a need for change that is not addressed because in Kenyan culture, children often don't have a say in decision-making which stops the program to be effective immediately. Because the parents in Nyakinyua don't understand what their children are learning in the clubs and because of their understanding of biodiversity as being solely for human use at this very moment without considering the future, the organization Eden Thriving has expressed the desire to have a program with adults in Nyakinyua (Methu 2022). With the disappearing of trees and change of landscape, there is an increasing desire of the community to restore it. This willingness opens the door for the program that is developed in this thesis.

3.2.2 Rich Picture

A Rich picture is a research tool which helps an individual to get an overview over a messy situation. With its drawings of things, ideas, people and connections, the first impression of a situation can be captured, and the researcher can proceed with a structured idea of the circumstances in mind (Armson 2011).

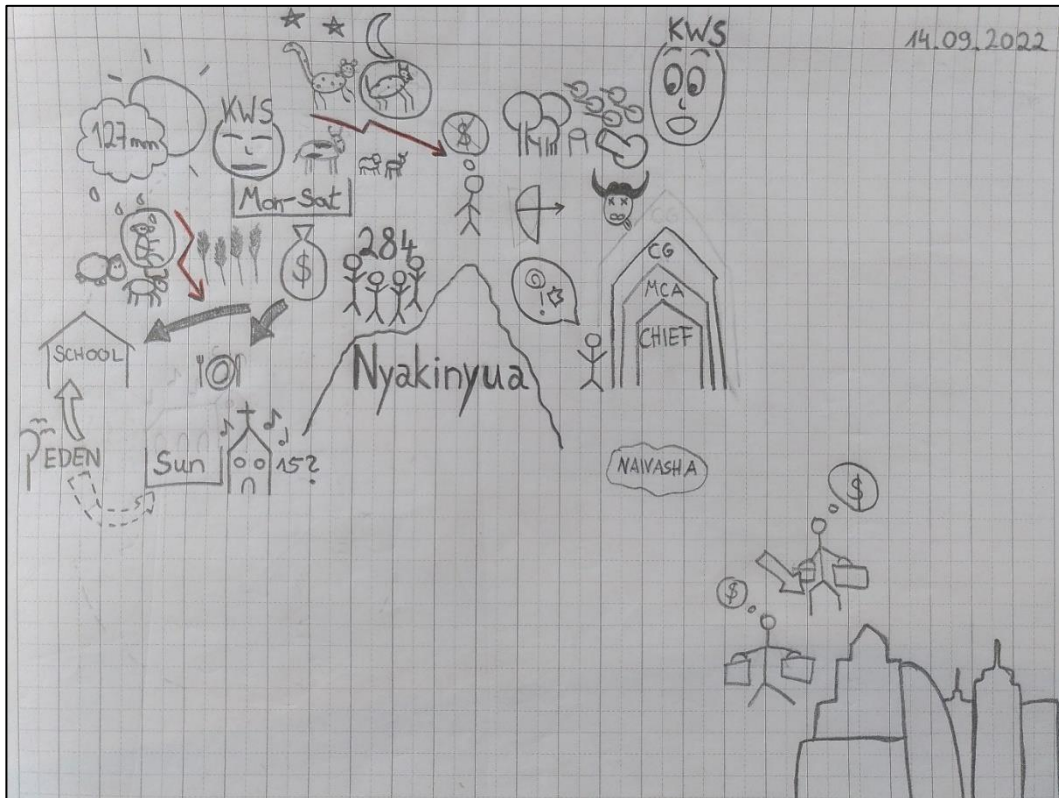


Figure 6: Rich Picture of Nyakinyua

Nyakinyua is a village in the mountains with a population of 284 registered adults who are mostly grandparents staying with their grandchildren because the parents moved to the city in hope to get employed. The closest town is Naivasha. Crop farming is the only source of income in that village and some people additionally keep livestock which keeps them busy, especially during harvest time from Monday to Saturday. The crops that they plant are corn, onions, potatoes, green peas, beans, cabbage and carrots and their livestock are cattle, goats and sheep. Sometimes the harvest is insufficient because of a lack of rainfall which amounts to 127 mm on average per month. Other factors that reduce the harvest are conflicts with buffaloes, baboons, and a hippo whereas baboons create most damage. Furthermore, livestock is taken by hyenas and leopards by night, whereby hyenas are the major threat. The money that would be earned through the harvest, supports the families to have enough food and to send their children to school. When that source of income is disturbed and the money is lacking, many inhabitants of Nyakinyua poach wildlife or the few remaining trees in the landscape. While the Kenya Wildlife Service (KWS) does not compensate occurring conflicts, they regularly check if locals break the law by poaching wildlife or trees. If the community has complaints, incidents, or arguments that they would like to report, they go to the chief who can then forward those issues to the next higher level which are the member of county assembly (MCA) followed by the county government

(CG) on the highest level. However, because the community is Christian, they gather on Sundays in the around fifteen churches belonging to different denominations to worship their God, hear a message from the Bible and exchange news with community members. The organization Eden Thriving is a Christian organization that already builds upon that foundation and teaches children about nature by collaborating with schools. Because the of the parents’ skepticism, they now plan to develop a program for adults to increase the understanding and interest of the parents and create an environment that is more beneficial for the community of Nyakinyua and wildlife.

3.2.3 Stakeholder Analysis

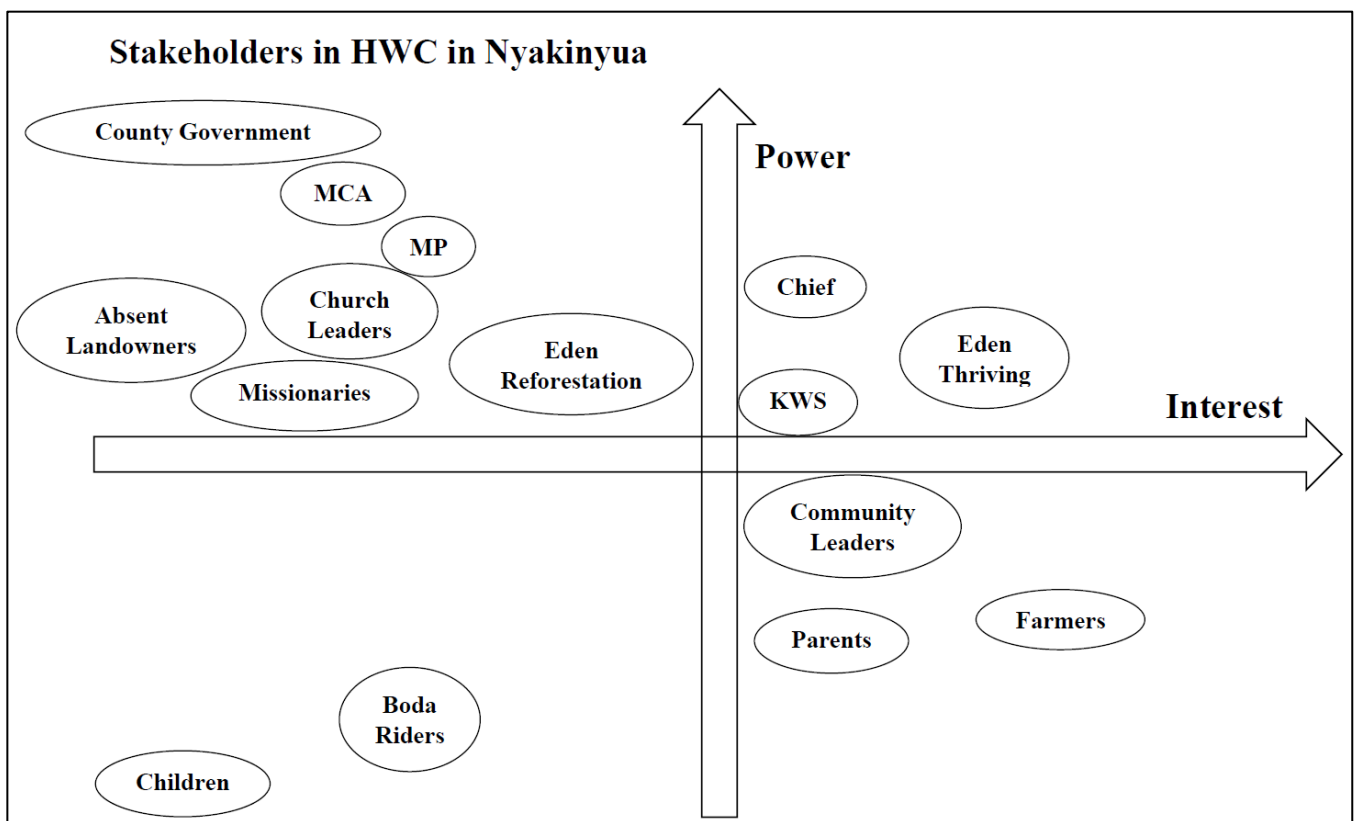


Figure 7: Stakeholder Analysis concerning HWC in Nyakinyua

The stakeholder analysis includes every involved party and reviews their level of power as well as interest in a specific field. For this thesis, I use it to identify parties’ different views on wildlife related issued in Nyakinyua. While the County Government of Nakuru and the Member of County Assembly (MCA) who are responsible for every resident within Nakuru County, they have very little to no interest in that village consisting of only 284 registered members and being located directly on the border to Nyandarua County. Landowners who don’t live within Nyakinyua and employ locals to work their land often own the biggest plots and

therefore have relatively high power to change their farming techniques. However, because they are absent, they are not affected by wildlife but just want to have their harvest and the biggest profit from it. Church leaders have not only a high respect and immediate contact with community members but also often serve as mediators between the people and God which makes them strong influencers in people's decisions and actions. Despite its potential, wildlife and nature are often not yet incorporated in the sermons which shows the little interest that church leaders have in the matter up to now. Nevertheless, they care about their congregation which often complains about conflicts with wildlife and they have also recognized the loss of trees which they would like to work against. Eden Reforestation is the organization that focusses on exactly that matter of planting trees. However, they mostly work in the other village Gatamaiyu and are not particularly interested in wildlife, though they help with creating more habitat. The Chief is the lowest position of the political hierarchy and operates on a local level. Hence, he is the one to whom inhabitants of Nyakinyua and Gatamaiyu come with complaints including Human Wildlife Conflicts so that he can report it to a higher authority if necessary. However, because he faces a wide range of challenges, HWC are only of limited concern to him. One authority to whom he reports HWC is the Kenyan Wildlife Service (KWS), the national authority for wildlife management who by law manages wildlife on behalf of the people. Despite a relatively high number of HWC incidents, they have not reacted to any report and did not pay the required compensation which shows a low interest in supporting communities. However, they have a high interest in incidents where locals poach wildlife or cut down trees. Eden Thriving is the organization that has a particular interest in improving people's lives in Gatamaiyu and Nyakinyua which is mostly through working with children but lacks a stronger focus on adult education and reducing HWC. Even though the group that Eden Thriving addresses, children, is the one that has the least power and interest in concerns around wildlife. However, they are aiming to raise them into adults who are in positions where they have power with an attitude to care about wildlife and nature. Boda Riders are locals offering to transport people and goods on their motorbike taxis. Despite possible encounters with buffaloes, they are not interested in wildlife and also don't have power for change. Similar to church leaders, community leaders care about the communities' concerns which includes HWC. Because a God and spirituality do not have as much importance to them, they can focus more on the everyday issues which makes them more interested in wildlife concerns. However, for the same reason they also have less power in influencing people's behaviors because it does not come from a higher power. Of the locals, parents and farmers have the strongest interest but as individuals not a lot of power. Parents express anxieties about their children's safety as well as concerns about earning less money due to a loss of harvest or livestock caused by wildlife which reduces the chance of feeding their children and sending

them to school. The farmers concerns overlap with the parents' as they fear a loss of harvest and consequently less money. Additionally, they sometimes fear for their own lives trying to defend their property against wildlife.

While the needs of the latents who have power, but no strong interest should be met and the group of the uninterested who have no high interest and no power should be monitored, the defenders, who are mostly affected but with little power to change, should be shown consideration and the promoters managed closely (Sandström 2020). However, because the farmers and parents don't hold a lot of power, addressing them only might not prove very effective. Eden Thriving shows a high interest and has some power. Nevertheless, the organization operates out of Naivasha and does not have a location there which makes their access to the community limited with a high demand of the community to be helped and compensated. But because farmers as well as parents go to church where the church leaders have a strong influence on their purpose in life and behavior and because Eden Thriving is a Christian organization that approaches nature and wildlife from a Christian perspective, working with the church leaders might prove effective. By introducing biblical teachings about nature in church services through various ways, the interest of church leaders and whole congregations might increase and shift the church leaders in the quarter of the promoters. Consequently, after evaluating the different parties, the environmental education program for creation care will address congregations through the trusted church leaders.

3.2.4 Systems Maps

Systems maps are conceptualized mind maps consisting of blobs representing systems and subsystems of a specific theme that was identified before (Armson 2011). The rich picture that I drew offered different themes, namely money, agriculture, ecosystem and culture. Based on those themes, I was able to develop four systems maps (see page 55-58).

The theme money covered the financial resources of the community of Nyakinyua and is divided in the subsystems *Income*, *Expenses* and *Obstacles*. Hereby the high dependency on crop farming and keeping livestock become clear. And so does the likelihood of community members being involved in illegal activities of tree cutting or wildlife poaching if the harvest doesn't cover the expenses that arise in the household and in agriculture. Obstacles that many families in Nyakinyua face are therefore harvest and livestock loss, no compensation for incidents with wildlife, persecution for illegal activities and hence no perspective for change.

Agricultural processes in the community are viewed more in detail in the systems map about agriculture. They are divided into the subsystems crop farming and keeping livestock. However, most inhabitants of Nyakinyua practice both. As emphasized in the systems maps on money, the community depends solely on those two methods as only source of income. Factors that limit the success of crop farming are the increasing soil erosion together with droughts, incidents with crop raiding wildlife and a poor infrastructure. The predation of livestock, decreasing grazing space and the small availability of food for livestock during droughts are defining limiting factors for keeping livestock.

Those influence other factors in the overall functionality of the ecosystem in and around Nyakinyua which is the third theme. It touches upon the different natural processes and is divided into the subsystems wildlife, habitat and humans. While herbivores like baboons and buffaloes provide ecosystem services like fertilizing the soil and disservices like crop raiding, they also generally graze and browse in the area which can have positive and negative effects on the habitat and the community. Carnivores provide the services of prey control and disease control but also killing livestock which is the livelihood for the community. The habitat provides ecosystem services, especially through trees, water, and soil. Trees are rapidly decreasing in the area because they provide wood and food for the community. Additionally, they also provide shade, oxygen through photosynthesis, prevent soil erosion and create their own microclimate. Water which is mostly accessed through two wells provides the foundation of life for drinking, giving it to livestock and watering plants. It is also used for hygiene and hence reduces diseases. However, due to the more extreme weather conditions the seasonal rain and stream quickly become ecosystem disservices when they create flash floods. This affects the soil immensely which is threatened by increasing soil erosion. Its ecosystem service of providing plants with nutrients is therefore weakened. Humans have played a crucial role in the development of the ecosystem. While they benefit from the ecosystem services by taking out water, native plants, wood, wildlife, and nutrients, they also change it by burning the land, adding fertilizers to the soil, and ploughing it. Additionally, they also introduce exotic plants and dispose waste in the environment.

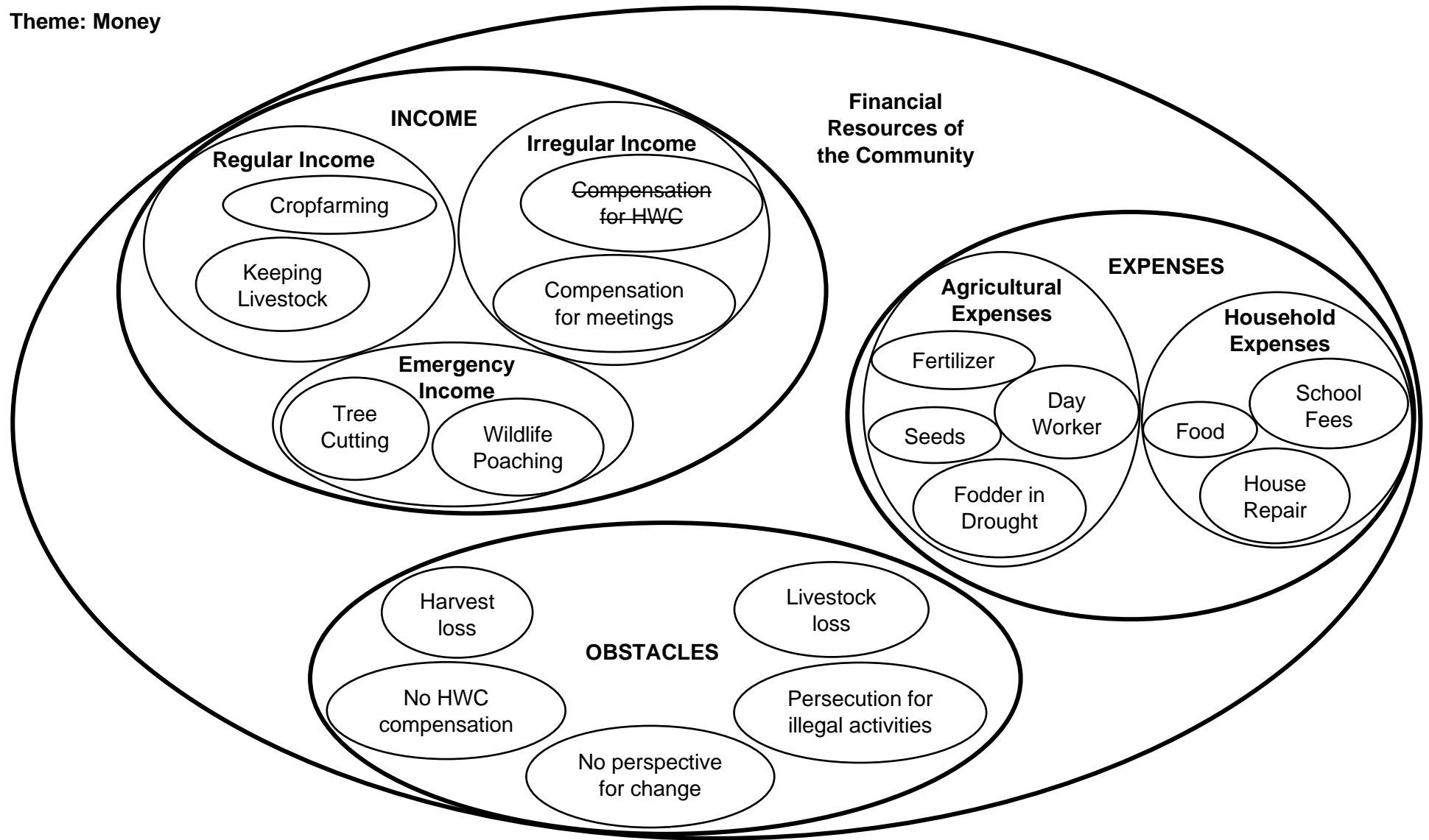
This derives out of their cultural norms which are captured in the systems map on culture. Referring to the different worldviews by Jacobs et al. (2012), the negativistic, utilitarian and dominionistic worldviews are commonly present whereas naturalistic, symbolic, aesthetic, humanistic and ecologicistic-scientific worldviews are desired³². According to the religious wildlife value orientations by Chuvieco (2012) in Nyakinyua the dominion worldview and the God worshipper

³² Supporting naturalistic, symbolic, aesthetic, humanistic and ecologicistic-scientific worldviews.

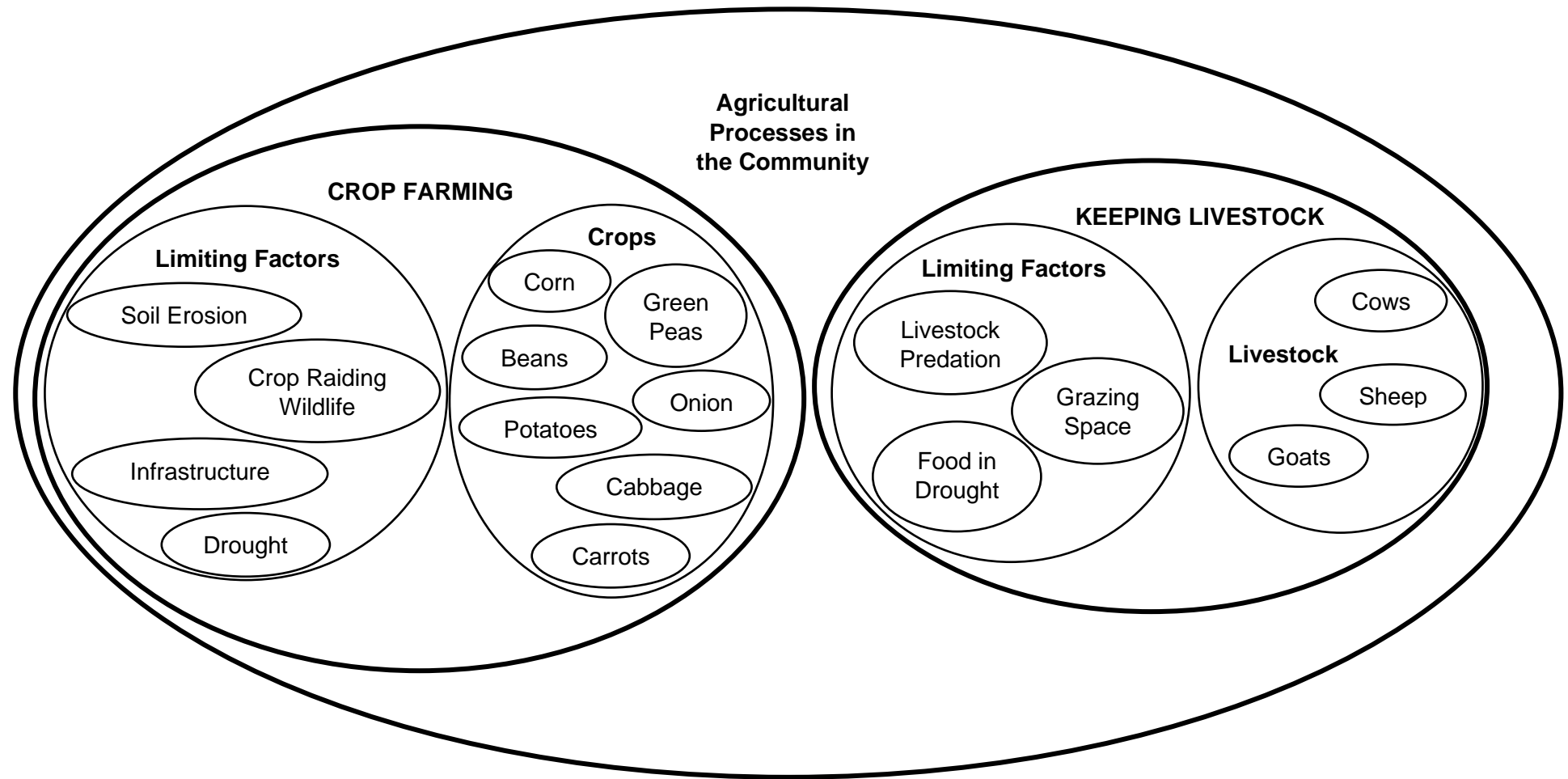
dominate in Nyakinyua. The latter applies because of the strong belief that God makes everything grow including the crops, trees and animals which consequently brings glory to their creator. Further desired worldviews are the cosmic humility model whereby nature is seen beyond human comprehension and the stewardship idea³³. Norms that are evident in the community are hard work among all community members, going to church every Sunday, no involvement of the children in decision making and a hospitality that dictates not to send anyone who comes to the house away. General values that play a major role in the daily lives of Nyakinyuans are family security because of their desire to provide food, clothing, and education for the children. Being clean is very important as it represents how serious a person is taken. The value to be ambitious is also commonly held in Kenyan circles. Because Kenyans often try to work their way out of poverty and understand hard-work as a virtue, Kenya is often called as the hustler-nation. Nevertheless, the personal salvation founded in their Christian belief is one of the most important things for many locals. However, beyond Rokeach's values, the major value that is driving most community members at the moment is mere survival. During the assessment some attitudes became clear. Because of the lack of support in any way, many Nyakinyuans are disappointed in the government and have a negative and distrusting attitude towards it. They rather follow and obey their church leader who often plays a big part in their lives and proves to them that following the church leader is a good thing. However, earning money is seen as the most important thing that often justifies the means and lowers the threshold of doing illegal activities. Consequently, they expect any outsider who comes to Nyakinyua to pay them money and often see them as sent by God. Their belief that every person who comes to Nyakinyua has money manifests itself in the attitude that every outsider should give them money.

³³ Presenting God worshipper, cosmic humility and stewardship worldview.

Theme: Money

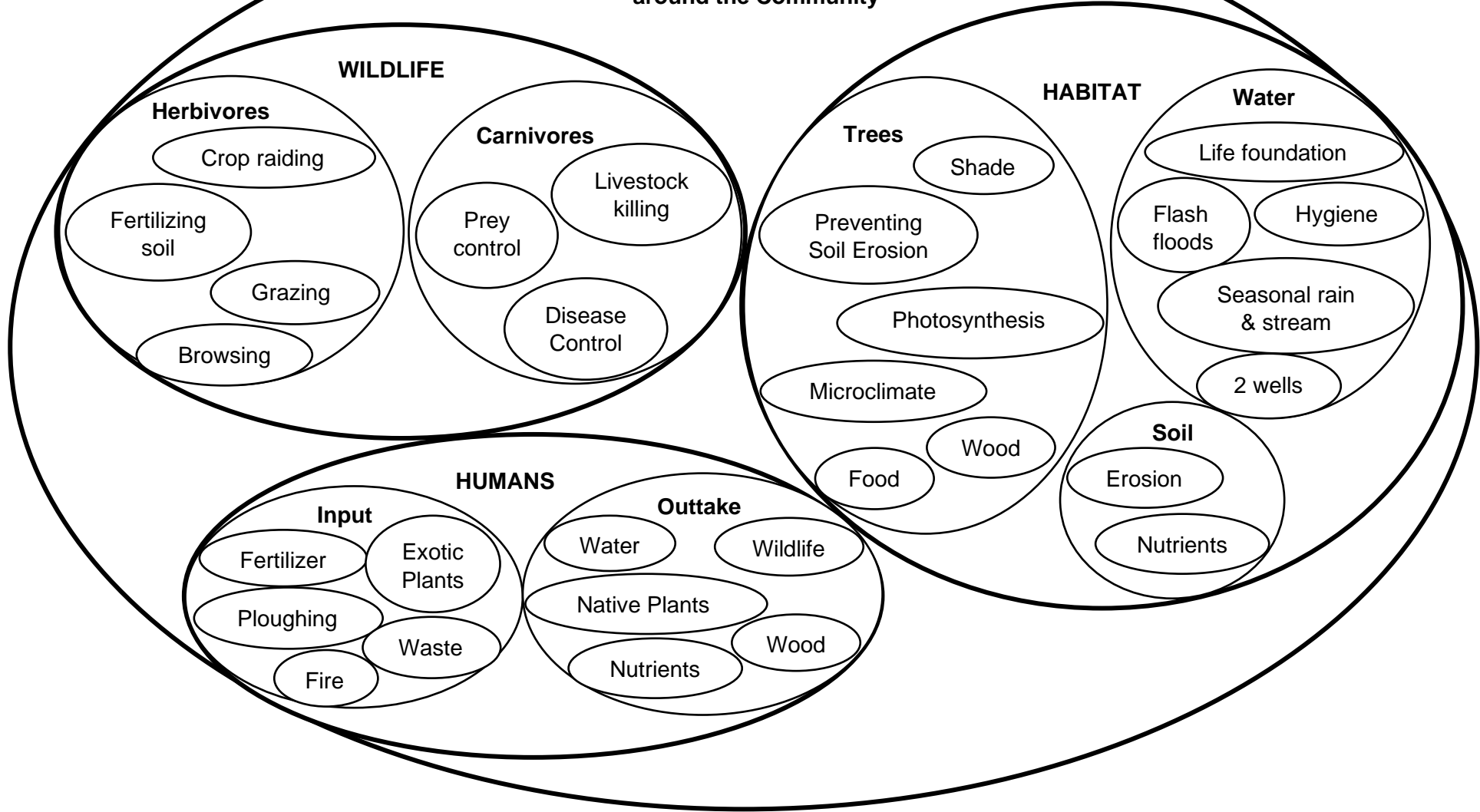


Theme: Agriculture

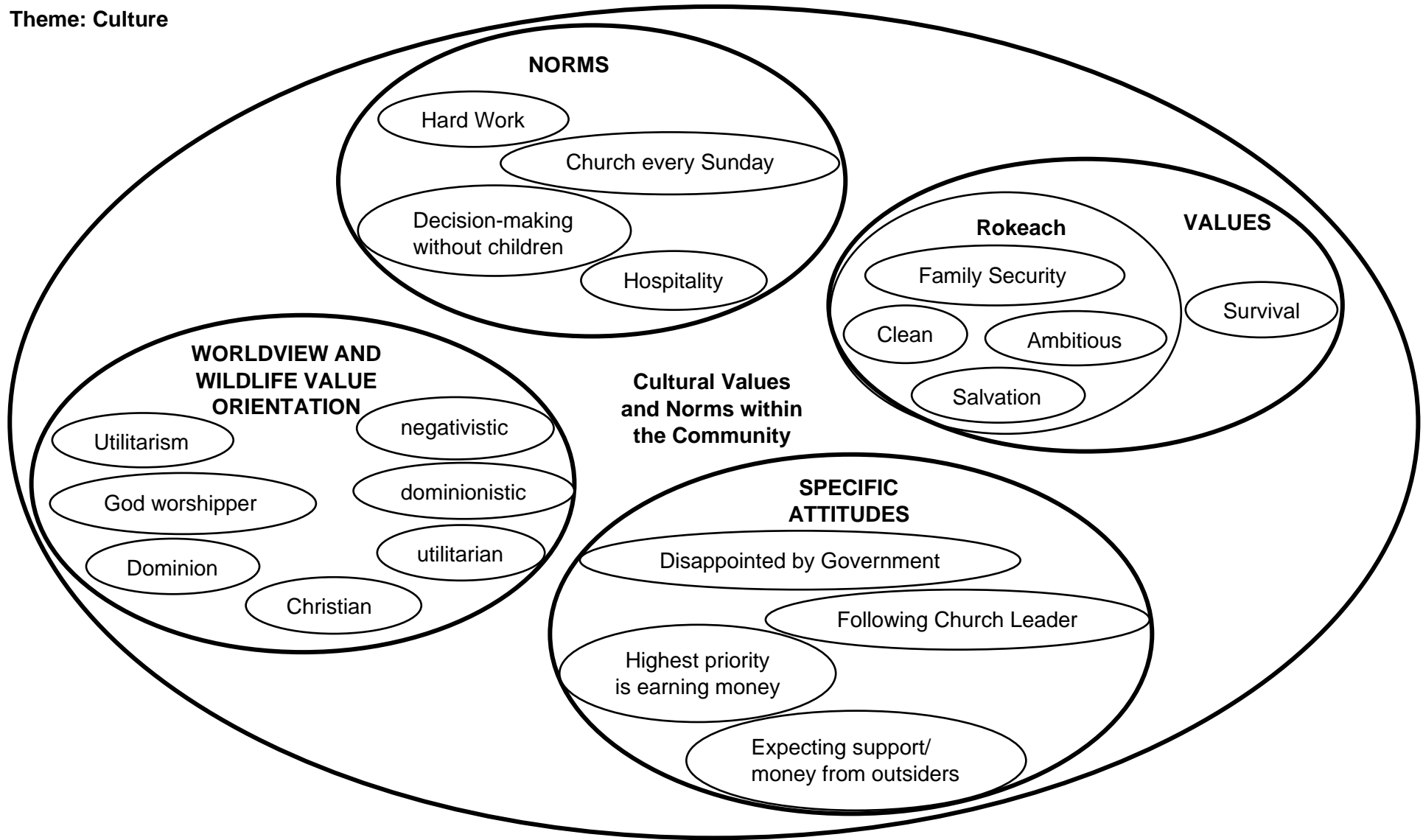


Theme: Ecosystem

Natural Processes in and around the Community



Theme: Culture



3.2.5 Desired Future Situation

The desired future situation is a tool for the researcher to formulate a clear vision of how the future should look like and in which areas of the messy situation it needs growth and development. For that a specific time in the future is defined which in this case is ten years. For this purpose, the desired future situation is formulated in the present assuming to be at a point in time ten years from the implementation of how the situation would ideally look like. By looking at the current situation that is pictured in the systems maps, areas that need change and opportunities for growth can be identified.

Those factors are further associated with existing UN Sustainable Development Goals (SDG's). The SDG's are global goals to alleviate poverty, end discrimination and inequalities, protect the planet and promote sustainability and peace. Because of its bandwidth, they require action from all disciplines, cultures and beliefs. Consequently, the factors of the desired future situation are associated with the SDG's to put the environmental education program in a wider frame and increase the attractiveness for investors.

The community of Nyakinyua has actively participated in a sermon series at their churches about God's creation and humans' vocation to take care of it including practical activities. Though the series is over, different sermons about creation are preached regularly. Additionally, the services include songs and prayers about God's creation. At times when the weather is good, the services are done as outdoor church.

Community members have planted trees on their property to avoid soil erosion and allow them to harvest wood more sustainably (SDG 11, 12, 15). Furthermore, it supports the water keeping capacity of the soil by slowing down strong rains and ensures the availability of clean drinking water from the wells (SDG 6). Trees of the Genus *Scutia* as well as *Carissa* have been planted on their properties to create the predator proof boma called *living walls* and provide a safe night enclosure for livestock against hyaenas and leopards. Additionally, different native and fruit trees have been planted in a distance to the farms, creating more habitat for wildlife including baboons to forage naturally. By planting more trees and therefore creating more habitat again, the antelopes have successfully come back, being natural prey to the predators around Nyakinyua (SDG 15).

The community's farming methods have mostly changed to Farming God's Way which enriches the soil with natural nutrients and uses the available resources for composting and mulching (SDG 12,13). It is also less effort and enables even the women to do all the work on the farm because it is a no-tilling method (SDG 5).

Fertilizers are not applied anymore, and the land is not burnt to be prepared for farming (SDG 12,13). Nitrogen fixing plants like green peas and beans are planted in between other crops to make the nitrogen available for the other plants. Another crop that is also introduced now are different chili species. They grow well in the very sunny spots of the farm and provide a resource for the community to produce a chili paste which is applied on the new fence poles around the fields to stop baboons from raiding their farms. Additionally, bells are applied on the net fences around the farms to shy baboons off and make people aware of their presence (SDG 15).

Because the community members go on Game Drives outside of Nyakinyua regularly (when it is not time for planting or harvesting which are very busy seasons) where they are taught skills like photography, they have become more appreciative of their environment and gained a new understanding of their own worth that goes beyond mere survival (SDG 3,4). The general sense of belonging to the community has increased through storytelling and bonding. Other skills that they have learned as a congregation are beekeeping and making fireless cookers which enables them to earn some money independent of the harvest, cook with less firewood and have more financial security (SDG 4,8). Because of that and the new 6 months-scholarship program for children who are part of the participating churches, costs for food, school fees and maintenance were covered in the first six months which reduced the poaching and tree cutting incidents significantly and encouraged participants to learn different skills during that time to create another source of income (SDG 1,2,3,4). Due to the holistic approach and the awareness of the UN Sustainable Development Goals (SDG's) that are included in the program, the project is now nationally and internationally promoted with more institutions being aware of its potential and more foundations are willing to support it financially³⁴. Therefore, more organizations in East and Southern Africa have expressed their interest in implementing the program in HWC areas.

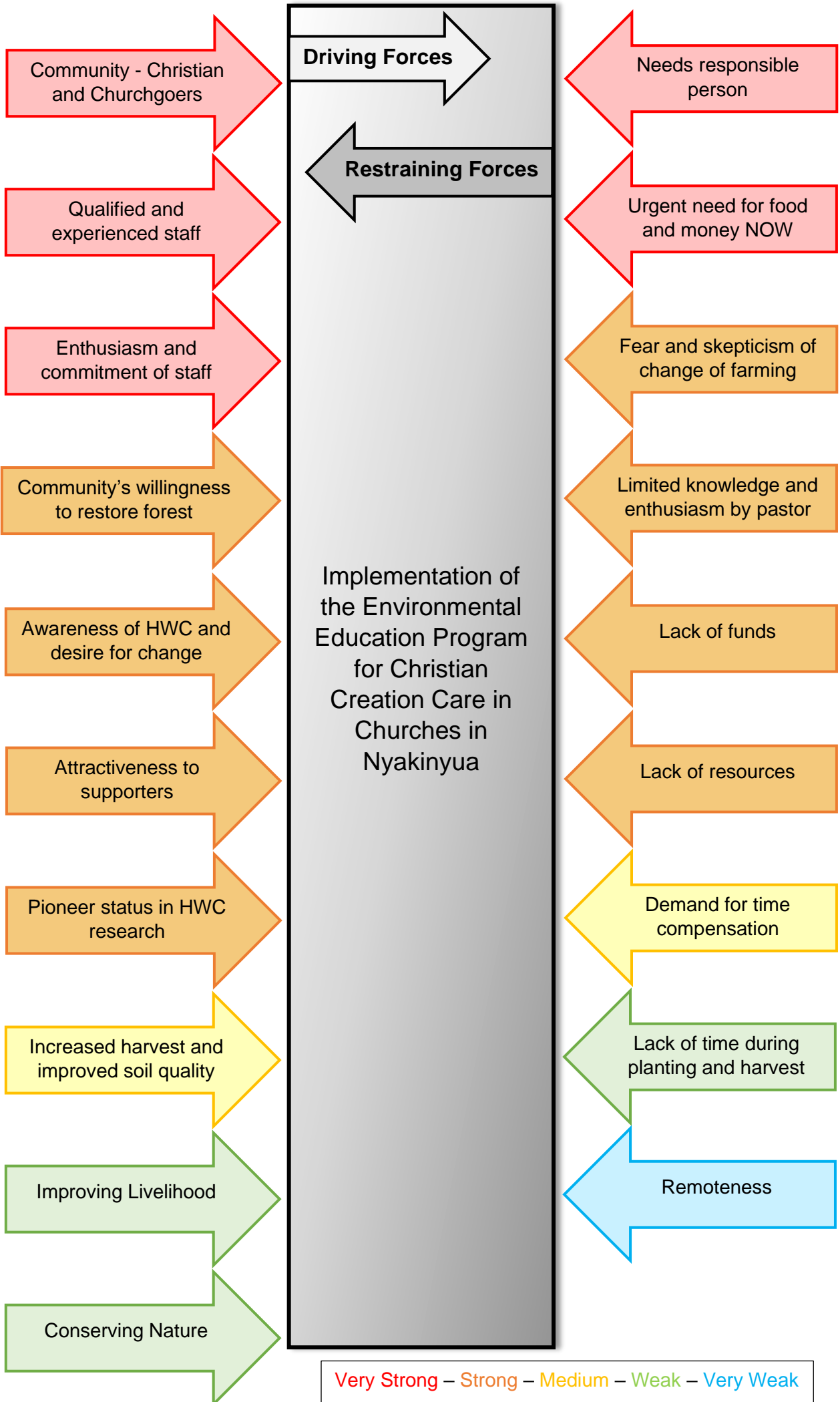
3.2.6 Force Field Analysis

According to Wells (2006) the Force Field Analysis is a management method developed by Kurt Lewin to evaluate the impact of all forces that influence a

³⁴ Sustainable Development Goals (SDG's)

- | | |
|-------------------------------|--|
| 1. No Poverty | 8. Decent Work and Economic Growth |
| 2. Zero Hunger | 11. Sustainable Cities and Communities |
| 3. Good Health and Well-Being | 12. Responsible Consumption and Production |
| 4. Quality Education | 13. Climate Action |
| 5. Gender Equality | 15. Life on Land |
| 6. Clean Water and Sanitation | |

planned change. While driving forces promote the evaluated change, restraining forces operate against the change. If the strength of both, the driving and restraining forces is equal, no movement towards or against the desired change occurs (Wells 2006). Based on that, reducing the strength of a restraining force, or improving a driving force might move the current state more in the direction of the desired change (Ibid.).



In the force field analysis above (see page 61) the evaluated change is the *Implementation of the Environmental Education Program for Christian Creation Care in Churches in Nyakinyua*. The arrows on the left, pointing to the right are driving forces promoting the suggested change, while the arrows on the right, pointing to the left are restraining forces that are resisting the change. The color of the arrows indicates the strength of each force from *very strong* in red to *very weak* in blue as marked in the bottom.

A very strong driving force for the implementation of the program is the Christian faith of the entire community and their shared norm that compels them to go to church on Sundays. Even though parts of the congregation might only go to church because that is what is required of them, many church members rejoice in their God during the service and listen attentively to the pastor. Because the organization Eden Thriving, who already works with Christian environmental education for children, plans to implement the program, it creates a strong base with experienced staff who is very enthusiastic about the topic. Despite the previous negligence of the community towards the environment, the rapid deforestation and its visible consequences caused the majority to be very willing and proactive to restore the forest. Furthermore, they are also aware of the reoccurring Human-Wildlife conflicts that threaten people's livelihoods and therefore lead to a strong desire for change. Addressing a wide variety of Sustainable Development Goals (SDG's) with a very holistic approach to the current situation, creates a high attractiveness for other organizations, foundations and individuals who might become supporters. This is amplified by the pioneer status of this program which is already known by different organizations who have raised their interest for their own future implementation. By implementing the program, the harvest would be increased, and the soil improved which is a driving force for the community. However, its strength is not very strong because of the community's hesitation for change in farming methods. Furthermore, their livelihoods would be improved, and nature conserved which are both weak forces because of a lack of evidence before the implementation.

However, for the program to be effective, it needs a person who is responsible for the implementation who is well connected within the community, speaks the main languages Kiswahili and Kikuyu and is enthusiastic about the program, God, people, and wildlife. One very strong restraining force is also the attitude of many community members to live for the current moment without considerations or thoughts about how the tomorrow looks like and how they could live more sustainably. For many families, there is an urgent need for food and money at that very moment that often stops them from considering consequences of their often-exploitative actions. This also affects their approach to a change in their farming

methods. Because a change might cause the loss of a complete harvest, many might not be very keen to implement the new farming methods they learn at the program³⁵. Even if some church leaders learn about creation care during their training in Bible Schools, it is often not an attractive topic which is why it is often not preached at the churches. Hence, the church leaders who have already expressed their willingness to preach about creation care, might not have a lot of knowledge about the topic and might lack the enthusiasm to get the message across to the congregation during the planned sermon series. A lack of funds and resources are additional restraining forces that can stop the program from being implemented. Though, most of the methods need a very limited amount of funds and resources, some support is needed to acquire seeds for trees, bells for the fence, cameras and sewing machines for skill teaching as well as several others. Additional to that, the community members often demand financial compensation for time that they spend with outsiders which arises from their understanding that every outsider has money and comes to help and their very limited time during planting and harvest season. A very weak but nevertheless existing restraining force is also the remoteness of the village Nyakinyua.

To work towards the desired change, the driving forces can be improved, and the restraining forces weakened. A responsible person who would lead the project, connect to church leaders, and enable the project to thrive can be found among the staff of Eden Thriving who are experienced and enthusiastic in the topic. The enthusiasm and effort will also help church leaders to create the services lively and let the congregation enjoy coming to church. Though the urgent need for food and money is a very strong restraining force, and the strategies of planting trees or changing farming methods only show benefits in the long term, the sponsorship program for children to attend school will relieve the families of the financial pressure. The attractiveness to supporters as well as the pioneer status of the research have the power to gain increasing attention and support which reduces the lack of funds and resources. To reduce the fear and skepticism of farmers to change their farming methods, a demonstration plot for the new methods will be established where the farmers can see the differences and learn the methods practically to apply them on their own land. This will also help putting promises of an increased harvest, improved soil, and hence improved livelihood into visible practice. Besides working with enthusiastic staff, the church leaders will also attend Game Drives and workshops prior to implementation in their churches to increase their knowledge and understanding of the topic. By seeing visible changes and participating in the church services, the participants will see their own benefits and might no longer demand money for spending their time with outsiders. The program will additionally be adapted to the planting and harvest time to make the teachings

³⁵ Creating FGW demonstration plot within Nyakinyua to show farming method and effectiveness.

practically applicable and to allow the congregation to work on their farms without missing a practical part of the program. Because Nyakinyua is remote with a bad infrastructure, it is difficult for people from outside to get there. However, the responsible staff would have a 4x4 car which allows them to commute there regularly. Additionally, moving between Nyakinyua and Gatamaiyu creates the opportunity of giving locals a ride who would otherwise walk, strengthening the bond between locals and staff and broadening the understanding of the topic in conversations.

3.2.7 Program Evaluation

A Rocha Kenya

A Rocha is an international Christian conservation organization that was founded in 1983 in Portugal with a commitment to work towards poverty alleviation and biodiversity conservation from a Christian perspective (Sluka et al. 2011). Now it has locations in 20 countries across the globe with more countries working towards it. One of the locations is in Watamu, Kenya. Besides their focus on bird and marine conservation, A Rocha Kenya (ARK) operates in the Arabuko-Sokoke Forest where they have a program that supports parents to pay their children's school fees to prevent deforestation and poaching in the forest³⁶ (Jackson and Naughton-Treves 2012). Furthermore, ARK conserves parts of the Dakatcha Woodland by purchasing land with the aim to create the A Rocha Dakatcha Nature Reserve in close collaboration with surrounding farmers and churches. To achieve good collaborations, A Rocha staff teach local communities in Dakatcha about the Biblical stewardship of nature (Nyale 2019) in the creation care program. This program is a sermon series that addresses the Christian call to care for creation and is implemented in churches belonging to various denominations in the remote and relatively poor community of Dakatcha. Its aim is to raise awareness for conservation among the communities around Dakatcha and illegal activities (Baya 2021a). Oftentimes ARK reaches out to churches to request implementing the sermon series at their church. However, sometimes the churches express their desire to ARK themselves (Baya 2021b).

The program is divided into four Sundays whereby the staff tries to mention as much as possible (Baraka 2021). Consequently, the sermons include a wide range of topics so that now there are plans of stretching it to six Sundays to allow more room for the different topics (Baya 2021a).

³⁶ Effective idea to support families to send children to school and relieve financial pressure.

During the first church service, the preaching ARK staff aims to create meaning in people's lives by showing that the place they live in is intentional and valuable. Creating this first understanding of individual worth and God's plan for every life, it builds a foundation from which the staff continues during the following sermons³⁷. On the second Sunday the creation of the entire universe and humanity's place therein based on Genesis 1 and 2 are discussed. Other scriptures are added throughout the sermon to emphasize God's ownership of the beautiful and useful world that he has created and bring across the sense of awe that many psalmists have expressed in the Bible, arising from contemplating in and about nature. They continue with including sin into the picture and how that had consequences on humanity but also on the rest of creation. In between those scriptures the preacher always relates them back to the audience's daily lives and what they mean today. In week 3 the ARK offer a solution to the broken relationship that came into the world by sin. Their aim is to create an understanding among the congregants of God's plan to redeem and restore mankind and all of creation to spread hope among them. Building up on that, they encourage congregants to become part of God's hope and join in the efforts to restore the land. Week 4 includes a reflection of the teachings and emphasizes on loving God, their neighbor and all of creation around them. Furthermore, they highlight lessons from the past weeks that their place in the world is intentional and encourage them to see what is good as well as challenging in the place where they live in.

Because of a lack of time of involved staff, the services are implemented very irregularly and the sermons are always the same rather than adjusted to each denomination they go to (Baya 2021a; Baraka 2021). Though the sermons are planned to be one hour long, they often stretch over more than three hours. During that time, the congregation which consists of mostly women and children, is often eager to learn about God and the gospel, sitting with pen and paper to write everything down. However, because of the heat, the lack of fresh air and the length of the service, many members lose concentration during the sermon and some fall asleep³⁸. Additionally, many churches in those remote places don't have trained pastors so that the congregations often don't know the gospel, the central message of Christianity (Baya 2021a). Hence, despite their plans to preach about creation care, ARK staff needs to adjust and preach about the gospel first, which is the foundation for their creation care program. After completion of the series, ARK staff hopes that the local pastors include creation care in their regular preaching at the churches and that there will be an ongoing relationship between the churches and ARK (Baya 2021b). However, the reality often differs from the planned sermons especially because of an initial need of many churches to hear the gospel.

³⁷ Creating an understanding of their own worth and an appreciation for the place they live in.

³⁸ Keeping the sermon short.

Consequently, the message of the sermons is mostly focused on sin and grace with creation care only being mentioned.

Creation Stewards International

The organization Creation Stewards International (CSI) was founded by Craig Sorley in 2004 (Muga 2021) based on his deep sense of awe towards nature, wildlife and the Christian God who has created all of it and the realization how little the church seems to care about nature.

Based in Kijabe, Creation Stewards International teaches different groups about creation care. Though they collaborate with the Moffat Bible College to implement a mandatory biblical course on creation care for all students at the College (Muga 2021), the main focus of the organization lays on the education of farmers and pastors. With that aim, they offer a 5-day training where participants learn about Farming God's Way and a more sustainable way of everyday life to improve their livelihoods (Muga 2021). This adult education is mostly for farmers with the aim of improving their farming methods and for pastors to equip them to preach about creation care and Farming God's Way in their churches (Muga 2021). Consequently, most participants are men. However, the program is open for anyone. According to Muga (2021) the organization offers to visit places to do their trainings there. Nevertheless, they prefer training participants at their center in Kijabe with the hope of them teaching others once they are back in their community which might be within Kenya but oftentimes participants also come from Uganda, Congo, Tanzania or even the US to attend the program (Muga 2021).

The 5-day training is a program from Monday to Friday with a tight schedule that starts at 8am and mostly goes until 6-7pm. The participants stay at the nearby guesthouse where they are also provided with food during their breaks. During the lessons the staff tries to teach as much as possible to equip the participants with a foundation from which they can continue once they are back home. While the focus of the program is on the farming method Farming God's Way, additional information is given about the general state of the Kenyan environment, beekeeping, birds of prey, the fireless cooker, tree planting, composting, and grafting. All of those are relevant and possibly life changing lessons interwoven with biblical teachings. However, the lessons often start a bit later than anticipated when everyone has arrived at the training site which delays the lessons for the rest of the day. Considering that many participants are adults who have not attended school for a long time, if at all, it is a very exhausting schedule. Consequently, it may be difficult to focus for such a long period of time.

Every day usually starts with some devotionals that include different reasons to care for creation from a Christian point of view, based on the book *Honoring Christ and Caring for His Creation* by Sorley (2016). While in the beginning of the week, most lessons take place in the classroom and include videos, presentations, and group discussions to provide a basic understanding of the current situation and a reason for change, towards the end of the week, more practical lessons dominate the timetable where the class spends much time outdoors with hands-on experiments of farming methods, soil erosion prevention, tree-planting and practical presentations in beekeeping, grafting and compost making.

After completion of the training every participant gets a certificate as well as all media that was used during the week and additional literature for further reading on the different topics. They are also added to a WhatsApp group where alumni can share their experiences, ask questions, or request support for the implementation of the learned methods or for teaching events. Strategies and formulations that stand out are the emphasis on nature and natural resources as being God's creation and possession. That becomes clear in the daily devotionals, and the used language during the lessons. The teachers repeatedly use phrases like God's trees or God's soil to let this awareness sink in. Furthermore, they teach that everything that God has created was very good which is also evident in their enthusiasm in the topic.

Eden Thriving

Eden Thriving is an organization based in Naivasha that focusses on "cultivating thriving lives and flourishing landscapes" (Eden Thriving 2022). It was founded in 2010 by Miriam Smith, Mim Grooms and Kym Arensen. Even though, the organization manages an ecopreneur project in Naivasha to empower women, their emphasis lays on environmental education for children in more remote areas. As part of their program for children, they offer environmental clubs. Once the clubs are completed, the children have the opportunity to join the Eco-champion membership and environmental camps (Smith and Mwangi 2022; Methu 2022).

The club curriculum consists of 16 sessions with each including goals and objectives, required materials, instructions for different activities and a conclusion as well as a faith lesson that is based on a related scripture in the Bible. It aims to reveal the "mystery of creation" (Arensen et al. 2018, p. 1) to the children and hence transform their attitudes through education for sustainable development (ESD) and experiential education (Arensen et al. 2018). The facilitators are expected to show enthusiasm in and awe for God's creation and patience to encourage a social, intellectual, physical, spiritual, and emotional growth in the around 30 to 50 children per class.

The topics of the sessions are called:

- 1) Wonder – Worship – Wisdom
- 2) Habitat
- 3) Photosynthesis
- 4) Food chain
- 5) Wildlife Appreciation and Conservation
- 6) Water Cycle
- 7) Water Pollution and Treatment
- 8) Healthy Soil
- 9) Soil Erosion
- 10) Human Wildlife Conflict
- 11) Wetlands
- 12) Trees
- 13) Sustainable Living
- 14) Pollution and Waste Management
- 15) Renewable Energy
- 16) Wangari Maathai

The first session introduces the children to the teachers, the organization and the general concept of wonder, worship, and wisdom. With the aim of encouraging wonder in nature that inspires to worship its creator and develop wisdom to know how to live as part of God's creation, a presentation is shown with different images of nature in Kenya. Afterwards, Psalm 19:1-2 is memorized.

The heavens declare the glory of God; the skies proclaim the work of his hands. Day after day they pour forth speech; night after night they reveal knowledge.

With the agreement that everything that God has created declares his glory, the children go into different group activities where they explore the natural surroundings and practice thankfulness for them. The lesson ends with a biblical reflection on Psalm 139 which emphasizes how God has created not only nature but also every human including every child in this class and how much He knows and loves every single one of them.

By continuing this lesson structure, lesson 2 to 15 deal with different topics relevant in conservation. The practical activities allow the children to explore and reflect on nature while the Bible study not only relates what they have learned to the God, their families believe in, but also stresses their individual worth.

Lesson 5 covers the topic of wildlife appreciation and conservation. Before every new lesson starts, the students are asked to reflect on the previous lesson and what they have learned from it. Following that, the class watches the video “creation calls” by Brian Doerksen before they go into different group activities. One of them is the “smell trail” where the children are blindfolded and must follow a scent trail. When every child has done that, they discuss how difficult it was and what going in a wrong direction might mean to wildlife whose lives depend on their sense of smell. The second group game called endangered animals charades explores the meaning of being endangered. During this activity the students are encouraged to brainstorm animals that might be endangered and different reasons for that. After coming up with different endangered species, the names are written on cards and put in a basket so that a child takes a card and acts out the behavior of the animal for the others to guess, makes its sound or draws it on the blackboard. Kenya Wildlife Match Game is the name of the third group activity whereby every pair of cards includes one card with a photo of an endangered species and the other one the name of it. All cards are shuffled and put face down so that the children have to find the pairs. Consequently, they learn to identify different endangered species. To conclude, the whole class discusses which of the seven reasons leading to extinction might apply to different species, how those factors are influenced by humans and which choices they could make to protect wildlife. If there is still time left, the facilitators can ask the students how the extinction of wildlife species might affect the habitat. The lesson ends with reading Genesis 1 and 2 together and realizing how God has created everything and thought it was good. Psalm 150:6 is added which says

Let everything that has breath praise the Lord

and Psalm 148 that goes into even more detail and describes all the natural powers and all the creatures including wildlife that should all praise God in their own way. The bible study concludes with looking at humans who are made in the image of God and therefore different from other creatures. Humanity’s responsibility is therefore to rule over all the other creatures like it is said in Genesis 1:28. However, they emphasize here that God’s type of rule is different than that of politicians which is further explained based on Genesis 2:15 which calls humanity to take care of God’s creation.

In lesson 10 Human-Wildlife Conflicts are addressed. The topic is introduced by watching the video *Living with Wildlife - Introduction* published by the PACE (Pan African Conservation Education) Project (PACE 2021). After asking the children some questions about what they have seen in the video, some other videos of the same series are played for a video competition (e.g. baboon, predator or elephant

conflicts). The children are divided in 3 groups and questions about the videos are asked to everyone. Whoever can answer the quickest and correctly gets points and the team with the most points wins. That way the children pay attention during the videos and are willing to share their knowledge to get points. To conclude, the students are encouraged to discuss about the importance of wildlife and about the different strategies to solve conflicts that have been mentioned in the videos or new ideas they could come up with. One success story is of the Maasai boy Richard who created blinking lights to keep lions away from the livestock bomas at night. By referring to the story of Noah and the ark after the flood has disappeared the facilitators point out how much God cares for humans and all the creatures that he has created. Looking at Genesis 9:8-11 they emphasize that God does not only care about humanity but also cares about the survival and wellbeing of “the birds, the livestock and all the wild animals, all those that came out of the ark [...], every living creature on earth” (NIV 2011, Genesis 9:8-11). Consequently, the children are encouraged to take up responsibility and help in solving Human-Wildlife Conflicts.

In lesson 16 the curriculum concludes with looking at different heroes of environmental conservation and challenge the children to adopt the attitudes of wonder, worship, and wisdom. As part of that they watch a presentation about Wangari Maathai while the book *Seeds of change* (Cullerton and Sadler 2010) about Wangari's life is read to them. Just as she as a role model planted seeds of change, the children plant tree seeds in fertile soil which they can carry home. In that way they are reminded that just as they bring those seeds home to let them grow, they will be seeds of change in their own communities if they follow Eden's philosophy and lessons (Arensen et al. 2018, p. 113). Before they watch a Ted Talk of the Maasai boy Richard who reduced lion conflicts, they create a tree with leaves of change. Every child draws the shape of their hand and writes positive changes in them of what they would like to achieve within the next year. Those hands will all be put together as leaves of a tree of change. The faith lesson at the end reflects again on Psalm 19 which was memorized in the beginning. The ending verse 14 speaks of the psalm as a meditation of the heart. Hence, the children are invited to remember the scripture and like Wangari act for change, even if it starts very small, not because they have to but because they decide to do something. And that can be achieved by remembering the key theme of wonder, worship and wisdom which is discussed at the end. Before sending the children off, they speak about the story of the loaves and fish in the Bible (Matthew 14:13-21) and that whatever small they can give, God can make a lot out of it just like he did with Wangari Maathai which is their concluding prayer at the end of the curriculum.

3.2.8 Ideas for Action

The ideas for action derived from the footnotes taken throughout the result section, the targets in the desired future situation, the force field analysis, the program evaluation as well as ideas from lectures from the bachelor's degree landscape management and nature conservation and the master's degree management of fish and wildlife populations (see Environmental Education Program for Creation Care in the Appendix 1).

4. Discussion

Starting with the literature review to explore the potential of combining Christian faith and wildlife conservation created a strong foundation on which it was easy to base practical ideas and the development of the environmental education program. Instead of searching for every keyword combination separately, a more effective method, which would have prevented repetitions of papers, would have been TOPIC = (Wildlife AND (Christian* OR Religio* OR Theolog*)).

Additionally, visiting the three major Christian conservation organizations in Kenya that all have a different focus but a similar aim, proved very helpful to gain insights into various practical implementations and their advantages and disadvantages and to connect the gained knowledge to the theoretical knowledge of the literature review. While being exposed to different Christian conservation programs, I was able to do participant observations and have face-to-face conversations with participants and facilitators which equipped me with further understanding and knowledge relevant for the development of the environmental education program. However, conversations that were organized by facilitators where I was introduced as a researcher created an atmosphere in which participants became the research objects and therefore did not feel free nor comfortable and answered in a way that they thought, I as a researcher wanted to hear. Conversations that randomly came up with locals whom I met on the streets were on the contrary very open, welcoming, and friendly. Those conversations were mostly initiated by them as a result of me just being present and being open and friendly to whoever I met and what they had to say. A more structured approach to the conversations and creating a safe space where people could come to at a certain place and time is another very helpful tool which could be implemented if the researcher resides among the community for a longer time than just one month to gain trust and become a part of the community. Consequently, spending more time in the community and with the congregation would have been more effective to gain trust and become part of them. This would have enabled me to get a deeper understanding of the norms that are in place that shape people's behaviors and lives and to identify the sanctions and punishments that are common there. Furthermore, more time would have allowed me to conduct the environmental assessment in more depth. It proved to be a very helpful tool to get a first understanding of the

place in a very wide spectrum of disciplines which is necessary to capture the different interdependencies that are in place. Because of the limited time, it was only possible to conduct a very simple environmental assessment with the focus on farming and wildlife. Additionally, it would have enabled me to participate more in the community's life by helping in farming activities, visiting the market, and being involved in several church services where simple conversations could come up and I could have experienced some of their complaints, especially of the HWC firsthand to have a better understanding of it. What also became a hindrance was the language barrier. Though I communicated with my little knowledge of Kiswahili, which was highly appreciated by the community, I could not have more complex conversations with the community. My research assistant helped with Kiswahili which already distanced me from the conversation partner. Being exposed longer in the community would have also improved the research in that regard. Following the set of methodologies to understand and structure a system and develop a work plan taught by Cuadra (2021) and Armson (2011) was a successful tool that is worth exploring more. This includes the rich picture, themes, systems maps, future desired situation, field force analysis, ideas for action and eventually developing a work plan. Complementing it with a stakeholder analysis gave even more insight to the system and assisted in creating the force field analysis. Though in human dimensions in wildlife management public participation is highly recommended for a success of a program involving several stakeholders, it has not been included in the development of this program yet. Reason for that is the sole responsibility of the pastor to write sermons which are presented on Sundays. Having the congregation participate in that regard would have reduced the trustworthiness of the pastor as well as the assumed connection to God to be enabled to speak on his behalf. Furthermore, the lack of knowledge about and commitment for environmental concerns of the community, would have resulted in a low commitment of the community. Consequently, I decided to introduce the topic through the church services by their trusted pastor rather than beforehand with a white young woman who was mostly associated with money. Once the sermon series with all its practical activities starts, the congregation will be encouraged to go steps towards a change that they desire themselves and start participating in that way, rather than feeling helpless without outside help.

Because of the growing human population and increasing consequences of climate change, habitat fragmentation, extreme weather conditions, food shortage and HWC are known challenges in many African countries. It stresses an urgency that requires researchers to find new innovative ideas to support communities and wildlife. While there is an ongoing conversation among conservationists about how important human dimensions in wildlife management and an interdisciplinary approach to HWC are, the western dominated conservation world often lacks the

inclusion of religion, spirituality and philosophy which play significant roles in the vast majority of people's lives world-wide. This lack becomes evident in the literature review whereby eight of the most relevant keyword combinations like *Wildlife Management AND Africa AND Christianity*, *Wildlife Management AND Kenya AND Christianity* or *Conservation AND Kenya AND Theology* have zero results. However, other relevant combinations like *Conservation AND Africa AND Religion*, *Conservation AND Africa AND Christianity*, *Conservation AND Kenya AND Religion* and *Conservation AND Kenya AND Christianity* had a few results. The authors of those papers did recognize the potential that religions have for more effective conservation strategies. But despite the theoretical knowledge among authors who explored the interface between religions and conservation, there have been only a few concrete recommendations for practical implementations and almost no actual implementation itself.

In the individualistic influenced western societies, scientific disciplines are often researched isolated from each other despite the increasing call for more interdisciplinarity. Yet, the more the complex systems are taken apart, the more valuable intersections get lost. Faith has always helped humanity in creating, shaping, and maintaining values, behaviors and an overall worldview that connects life experiences and knowledge from different fields. This ability is something that science lacks and is not able to achieve for the general public. Consequently, there are instances where scientific success highly depends on an understanding of each belief system and people's devotion, love, service, and fear of the invisible. As seen in the literature review, conservation has not explored religions' full potential to avoid forcing a worldview onto a group of people but to incorporate an appreciative, responsible, and sustainable lifestyle in devotion to a divine power which is not achieved by giving scientific facts and knowledge. This also agrees with the findings of the literature review where it is suggested to work with existing belief systems, 'swim with the current' and build upon an existing identity. Because Christianity is an existing belief system and provides a strong identity for many Kenyans, it has the potential, based on the identity principle, to inspire an entire community to be committed for environmental conservation and HWC mitigation. Because moral practices, narratives, a sense of meaning and of capability are required for more positive attitudes towards conservation and wildlife, Christianity is a suitable foundation for 'swimming with the current' and to base environmental education on.

Additionally, up to now, many conservation strategies aim to change attitudes by only addressing the weaker cognitive component of an attitude without considering the affective part of it. Hence, their strategy is based on imparting knowledge. However, as seen in the results, most decisions are made based on

feelings and emotions which are part of the affective component. Because of that, my primary focus in this thesis is identifying, interacting with, and addressing the existing belief system Christianity. It does not only give the communities certain beliefs, but also provides an influential written book, the Bible, on which the environmental education program can be based on. Even more effective are working with the spiritual, which is more emotional and therefore belongs to the affective component of attitudes, as well as with the feeling of awe which has psychologically such strong effects that it creates lasting memories and is able to change the course of life. Findings in the result section of awe-research suggest that the repeated feeling of awe strengthens humility, responsibility, and self-forgetfulness. Hence, it creates a suitable foundation for a holistic approach to appreciate and conserve the environment and will be aimed for during the environmental education program.

One major problem that worsens HWC is the dissatisfaction of local communities who see that wildlife is often protected and supported more than themselves. Consequently, it creates negative attitudes not only to the government but also towards wildlife. Elevating communities by making them feel heard and valued, creating a sense of meaning, belonging and purpose and empowering them to act for change out of their own will and commitment is a key to success of the program. This would create confidence that moves beyond a dependence on governmental actions against HWC. When local communities start to have confidence in themselves and their abilities, rather than feeling hopeless and depending on outside help, their lifestyles and behavior intention are likely to change with a shift from mere survival towards actual living. This is caused by lowering the threshold of the behavior intention by improving the perceived behavioral control. Though this has the potential to shift attitudes towards wildlife slowly, combining this cognitive fix with the technological or structural fix is more successful. Consequently, as part of the program the congregation will be encouraged to plant chilis and establish simple fences with bells and chili paste around the crop fields to prevent baboon conflicts as a technological fix. They will furthermore learn about living walls to avoid predator-livestock conflict. Especially in the beginning, community members might struggle to feed their families while trying to implement the suggested changes. The program will therefore be complimented with an incentive that the children's school fees will be covered for up to six months if the parents visit the practical activities during the Sunday services and on weekdays and show efforts to implement some learnt methods.

Based on the findings, the environmental education program was structured and developed. Because of the influential and trusted position local church leaders are in, the sermon series is designed to be facilitated by them, addressing their known

congregation. This is also based on the finding that having a local leader who inspires the community to change, opposes the widely spread belief that rural communities do not have the power and resources for change and hence put themselves in the victim position by making themselves dependent on outsiders. Furthermore, it avoids fueling the passive-demanding position that communities tend to take when outsiders come into a community. This also helps establishing long-time viability rather than having a western conservationist implement the program temporarily. Assuming that the interest in the topic is relatively low, church leaders will participate in a Game Drive with biblical verses related to it prior to the sermon series for the entire congregation. Furthermore, the Christian, experienced and enthusiastic staff from Eden Thriving will assist them and share their knowledge. Though attitudes are difficult to change, seeing the forest of Nyakinyua disappear within five years because of deforestation has made community members and church leaders more aware of environmental concerns and willing to protect and restore the land.

Referring to the lived experience principle, the program does not only include the common parts of a church service but is also complimented with practical activities to create space for lived experiences that impact attitudes stronger than pure facts and raise the accessibility of those attitudes in daily life. Additionally, the practical activities allow congregations to learn about and reflect on different topics, relate theoretical sermons to daily life, learn skills, gain confidence, bond with each other and be exposed to positive situations that have previously been negatively associated, especially including wildlife. Consequently, the environmental education program does not only address HWC, a topic that is already negatively associated. It rather creates a space to voice everyday struggles, address them as a community and slowly learn to appreciate their abilities, place and life with everyone and everything around them. Addressing HWC is therefore only really effective when it is part of a holistic approach to initiate a change that comes out of the community.

The church services itself are meant to stay as the congregation is used to so that they are in a familiar and comfortable environment. Hence, sermons will be held including biblical scripture which offers an opportunity to bring across basic environmental teachings in a trusted and familiar setting. Additionally, the prayers will include the discussed topic which enables the praying person to address desires for change in the future as well as regrets of past behavior without addressing the congregation directly. During the testimony time the congregation has time to share with each other how the new topics and methods impact their lives which allows individuals who have been more skeptical to be more open and willing to adapt. The praise and worship time is a joyous and lively time where the congregation

comes in awe in front of God and therefore creates strong feelings and emotions. It is therefore planned that the congregation reflects together on songs in their mother tongue where God's creation is praised.

Because of the high importance of self-worth and the confidence in oneself and their abilities, the program starts with a sermon that addresses the community's place in the world and its purpose and meaning therein. The second sermon builds up on that, addressing the situation this community is in including possible struggles and creating a sense of hope that something new is coming and the congregation is called to be part of that. After the two introducing uplifting services, the topics are structured according to the attitude strength that might be attached to each topic, starting with topics that might have weaker attitudes attached to them like habitat, soil and trees moving towards topics that might be associated with stronger attitudes like wildlife and farming in which all the other sermons are brought together. This allows the congregation to slowly agree with the things said and learned and form attitudes in the less emotional topics and slowly move into topics that might be more emotional with an already existing creation care foundation.

As several authors of different fields agreed upon, the way people think, feel, and behave is strongly influenced by a social imaginary, a story to live by. It allows or prohibits a person to dream and long for change. Because of the hopelessness influenced by past historical events, it is necessary to write a new story to live by. This is the aim of this environmental education program. By addressing several different aspects of everyday life in Nyakinyua, a foundation is laid for the community to write a new story and live by a new social imaginary that moves beyond mere survival and promotes a lifestyle where wildlife and communities can live alongside each other.

By implementing the developed environmental education program, this research enables communities to take own committed and convicted steps to restore wildlife habitat and appreciate a functioning ecosystem of which wildlife is a part. This study presents the theoretical agreement of authors from different fields to include religions, especially Christianity, in environmental concerns including wildlife conservation and management. It furthermore stresses the lack of its implementation and hence provides a first draft of how this implementation can look like. Based on the general awareness among conservationists to include human dimensions in wildlife management and the call to change attitudes, especially in HWC, this study points out a strategy where this can be achieved by working with existing belief systems found in several religions. Those provide a framework which can not be found in science. Because of the uniqueness of each religion, this

study focused on Christian faith, which is commonly practiced in Southern and East Africa, regions where there is also an abundance of wildlife and therefore potential HWC's. Implementing this first draft of an environmental education program for creation care with the aim to mitigate human-wildlife conflicts, is therefore only a first step before adjusting and improving it for other places in Southern and East Africa.

5. Conclusion and Further Research

By implementing this program, communities are able to experience their environment from a different perspective. Possibly for the first time, they can experience the lion in its majesty, the hypnotizing flight of a zebra herd or the complex organization of a termite mound and be in awe.

Though the developed program includes several short-term steps to improve people's livelihoods immediately, it is mostly aimed for a long-term transformation and therefore needs time for the anticipated changes. To test its effectiveness, participants as well as church leaders are recommended to be interviewed concerning the effect that the environmental education program has on their view on environmental concerns, most especially on wildlife. Those questionnaires are attached in Appendix VIII and IX. Consequently, more research is required in a few years on the effectiveness of the program, using the provided questionnaires. Because the developed environmental education program is a pioneering draft that includes Christian faith to address environmental concerns including HWC, there is a need to constantly monitor, evaluate, learn and adjust the program throughout the implementation process. The results will be useful for further research as well as for the implementation in other places for which it needs to be adjusted to the specific local conditions. However, the more the program is implemented in different places, it is relevant to continuously update it with new findings in awe-research, the cognitive hierarchy and astonishing awe-inspiring facts on wildlife for the game drives.

References

- Ajzen, I. (1991): The Theory of Planned Behavior. In *Organizational Behavior and Human Decision Processes*, pp. 179–211.
- Ajzen, I. (2001): Nature and Operation of Attitudes. In *Annual Review of Psychology* (52), pp. 27–58.
- Ajzen, I. (2008): Attitudes and the prediction of behavior. In W. D. Crano, R. Prislin (Eds.): *Attitudes and attitude change*, pp. 289–311.
- Akwaba, V. N. (2021): Definition of an animal. Talk to S. Tornow, 15/10/2021.
- Arensen, K.; Heckmann, C.; Smith, M. (2018): *Wonder Worship Wisdom. Life Transforming Environmental Education*. Edited by Eden Environmental Camps and Clubs. Eden Thriving.
- Armson, R. (2011): *Growing Wings on the Way. Systems thinking for messy situations: Unspecified*.
- Baird, T. D. (2015): Conservation implications of the diffusion of Christian religious ideals in rural Africa. In *Popul Environ* 36 (4), pp. 373–399. DOI: 10.1007/s11111-014-0222-3.
- Baraka, M. (2021): *Creation Care Outreach and Farming God's Way*. Talk to S. Tornow. Watamu, 13/09/2021.
- Barrow, E.; Gichohi, H.; Infield, M. (2000): *Rhetoric or Reality? A Review Of Community Conservation Policy and Practice in East Africa*. International Union for Conservation of Nature. Available online at https://www.researchgate.net/profile/Mark_Infield/publication/242452368_Rhetoric_or_Reality_A_Review_Of_Community_Conservation_Policy_and_Practice_in_East_Africa/links/0a85e531b08e836e79000000/Rhetoric-or-Reality-A-Review-Of-Community-Conservation-Policy-and-Practice-in-East-Africa.pdf.
- Baya, S. (2021a): *Creation Care Church Outreach Dakatcha* to S. Tornow. Watamu, 19/10/2021. Talk.
- Baya, S. (2021b): *Care of Creation Training Program*. Document to S. Tornow. Watamu, 12/11/2021.
- Berkes, F. (2008): *Sacred ecology*. 2. ed. New York: Routledge (Environment /Anthropology).

- Bhagwat, S. A.; Ormsby, A. A.; Rutte, C. (2011): The role of religion in linking conservation and development: Challenges and opportunities. In *Journal for the Study of Religion, Nature and Culture* 5 (1). Available online at https://www.academia.edu/5898108/The_Role_of_Religion_in_Linking_Conservation_and_Development_Challenges_and_Opportunities.
- Biggs, R.; Vos, A. d.; Preiser, R.; Clements, H.; Maciejewski, K.; Schlüter, M. (Eds.) (2021): *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge.
- Bond, J.; Mkutu, K. (2018): Exploring the Hidden Costs of Human–Wildlife Conflict in Northern Kenya. In *Afr. stud. rev.* 61 (1), pp. 33–54. DOI: 10.1017/asr.2017.134.
- Bouma-Prediger, S. (2010): *For the Beauty of the Earth. A Christian Vision for Creation Care*. Grand Rapids: Baker Academic (Engaging Culture). Available online at <https://ebookcentral.proquest.com/lib/gbv/detail.action?docID=3117081>.
- Bouma-Prediger, S. C. (2001): *For the Beauty of the Earth. A Christian Vision for Creation Care*. 2nd ed.: Baker Academic (Engaging Culture Ser).
- Browne-Núñez, C.; Jonker, S. A. (2008): Attitudes Toward Wildlife and Conservation Across Africa: A Review of Survey Research. In *Human Dimensions of Wildlife* 13 (1), pp. 47–70. DOI: 10.1080/10871200701812936.
- Bundesamt für Naturschutz (Ed.) (2015): *Religionen und Naturschutz–Gemeinsam für biologische Vielfalt*. With assistance of J. Micksch, Y. Khurshid, H. Meisinger, A. Mues. *Religionen und Naturschutz–Gemeinsam für biologische Vielfalt*. Bonn, 25.-26.02.2015. Bundesamt für Naturschutz. Bonn: Bundesamt für Naturschutz. Available online at http://www.biologischesvielfalt.de/fileadmin/nbs/images/dialogforen/dokumentation_df_religionen_i_skript_426_religionen-und-naturschutz_bf.pdf.
- Bureau of Democracy, Human Rights, and Labor (2006): *Kenya International Religious Freedom Report 2006*. Edited by U.S. State. The Office of Electronic Information, Bureau of Public Affairs. Available online at <https://2001-2009.state.gov/g/drl/rls/irf/2006/71307.htm>, updated on 9/6/2019, checked on 3/10/2020.
- Carson, R. (2000): *Silent spring*. With assistance of Shackleton, J. Huxley, L. Lear. Reprinted. London: Penguin (Penguin classics).
- Chief (2022): *Human Wildlife Conflicts in the Village*. Conversation to S. Tornow. Naivasha, 05/09/2022.
- Chryssavgis, J. (2019): *Creation as sacrament. Reflections on ecology and spirituality*.
- Chuvieco, E. (2012): Religious approaches to water management and environmental conservation. *Water Policy* 14, pp. 9–20. DOI: 10.2166/wp.2011.000.
- Coleman, G. J. (2010): Educating the Public: Information or Persuasion, pp. 74–82.

- Cuadra, M. (2021): Working with local natural resource management in low-income countries. Online preparation course: Working with local natural resource management in low-income countries. Swedish University for Agricultural Sciences. Online, 21/01/2021.
- Cullerton, J.; Sadler, S. L. (2010): *Seeds of change. Planting a path to peace.* 1st ed. New York: Lee & Low Books.
- Deane-Drummond, C. (2008): *Eco-theology*: Toronto: Novalis.
- Decker, D. J.; Riley, S. J.; Siemer, W. F. (Eds.) (2012): *Human dimensions of wildlife management.* 2. ed. Baltimore, Md.: Johns Hopkins Univ. Press.
- Dennis (2022): Mobility between Naivasha and Nyakinyua. Conversation to S. Tornow and V. N. Akwaba. Naivasha, 08/09/2022.
- Dickman, A. J. (2010): Complexities of conflict: the importance of considering social factors for effectively resolving human-wildlife conflict. In *Animal Conservation* 13 (5), pp. 458–466. DOI: 10.1111/j.1469-1795.2010.00368.x.
- Dreßel, S. (2020): *Cognitive Hierarchy. Human Dimensions in Wildlife Management.* Swedish University for Agricultural Sciences. Aspen, Umea, 02/04/2020.
- Eden Thriving (2022): *Eden Thriving. Cultivating thriving lives and flourishing landscapes.* With assistance of M. Smith. Available online at <https://edenthroving.org/>.
- Elshayyal, B. (2007): A Sense of Awe and Wonder. In *Religious Education* 102 (4), pp. 357–361. DOI: 10.1080/00344080701657618.
- Ericsson, G.; Sandström, C.; Riley, S. J. (2018): Rural-urban heterogeneity in attitudes towards large carnivores in Sweden, 1976–2014. In Tasos Hovardas (Ed.): *Large carnivore conservation and management. Human dimensions.* First edition. Boca Raton, FL: Routledge an imprint of Taylor and Francis (Routledge library editions. welfare and the state), pp. 190–205.
- Gadd, M. (2005): *Conservation outside of parks: Attitudes of local people in Laikipia, Kenya.* 32nd ed. Edited by Foundation for Environmental Conservation. Environmental Conservation (1).
- Gottlieb, S.; Keltner, D.; Lombrozo, T. (2018): Awe as a Scientific Emotion. In *Cognitive science.* DOI: 10.1111/cogs.12648.
- Harris, P. (2008): *Kingfisher's Fire. A story of hope for God's earth.*
- Hastings, A. (2004): *The Church in Africa. 1450 - 1950.* Reprint. Oxford: Clarendon Press (Clarendon paperbacks).
- Hazzah, L.; Borgerhoff M., M.; Frank, L. (2009): Lions and Warriors: Social factors underlying declining African lion populations and the effect of incentive-based management in Kenya. In *Biological Conservation* 142 (11), pp. 2428–2437. DOI: 10.1016/j.biocon.2009.06.006.
- Heberlein, T. A. (2012): *Navigating environmental attitudes.* New York: Oxford University Press.

- Hill, C. M.; Wallace, G. E. (2012): Crop protection and conflict mitigation: reducing the costs of living alongside non-human primates. In *Biodivers Conserv* 21 (10), pp. 2569–2587. DOI: 10.1007/s10531-012-0318-y.
- Hodgson, I. D.; Redpath, S. M.; Sandström, C.; Biggs, D. (2020): *The State of Knowledge and Practice on Human-Wildlife Conflicts*. Luc Hoffmann Institute.
- Horan, D. P. (2018): *All God's creatures. A theology of creation*.
- Jackson, C. (2022): *Establishing Conservation Project Based on Christian Convictions*. Talk to S. Tornow. Watamu, 26/01/2022.
- Jackson, M. M.; Naughton-Treves, L. (2012): Eco-bursaries as incentives for conservation around Arabuko-Sokoke Forest, Kenya. In *Envir. Conserv.* 39 (4), pp. 347–356. DOI: 10.1017/S0376892912000161.
- Jacobs, M.; Manfredo, M. J.; Vaske, J. J.; Teel T. (2012): Human Dimensions of Wildlife. In L. Steg, van den Berg, A. E., J. de Groot (Eds.): *Environmental Psychology: An Introduction*, pp. 77–86.
- Katongole, E. M. (2011): *The Sacrifice of Africa. A political theology for Africa*. Grand Rapids, Mich: W.B. Eerdmans (The Eerdmans Ekklesia series).
- Keltner, D.; Haidt, J. (2003): Approaching awe, a moral, spiritual, and aesthetic emotion. In *Cognition & emotion* 17 (2), pp. 297–314. DOI: 10.1080/02699930302297.
- Kohák, E. V. (1984): *The embers and the stars. A philosophical inquiry into the moral sense of nature*. Paperback edition. Chicago: The University of Chicago Press.
- König, H. J.; Carter, N.; Ceaușu, S.; Lamb, C.; Ford, A. T.; Kiffner, C. (2021): Human–wildlife coexistence in science and practice. In *Conservat Sci and Prac* 3 (3), e207. DOI: 10.1111/csp2.401.
- Kosoe, E. A.; Osei-Wusu Adjei, P.; Diawuo, F. (2020): From sacrilege to sustainability: the role of indigenous knowledge systems in biodiversity conservation in the Upper West Region of Ghana. In *GeoJournal* 85 (4), pp. 1057–1074. DOI: 10.1007/s10708-019-10010-8.
- Langer, V. (2021): *The desired future situation*. Online preparation course: Working with local natural resource management in low-income countries. Swedish University for Agricultural Sciences. Online, 02/01/2021.
- Lenna (2021): *Environmental Education in Schools in Kilifi County*. Conversation to S. Tornow. Watamu, 14/12/2021.
- Leopold, A. (1990): *A sand county almanac. With essays on conservation from Round River*. 29. pr. New York: Ballentine Books.
- Lichtenfeld, L. L.; Trout, C.; Kisimir, E. L. (2015): Evidence-based conservation: predator-proof bomas protect livestock and lions. In *Biodivers Conserv* 24 (3), pp. 483–491. DOI: 10.1007/s10531-014-0828-x.

- Lunney, D.; Recher, H. F.; Hutchings, P. (2013): The critical importance of an ecological conscience. In *Grumpy Scientists: The Ecological Conscience of a Nation*, pp. 126–138. DOI: 10.7882/FS.2013.021.
- Mama Ciku (2022): Life in Nyakinyua. Conversation to S. Tornow. Nyakinyua, 12/09/2022.
- Manoa, D. O.; Mwaura F.; Thenya T.; Mukhovi S. (2020): Comparative analysis of the typology, seasonality and economic cost of human-wildlife conflict in Kajiado and Laikipia Counties, Kenya. In *East African Journal of Science, Technology and Innovation* (1).
- Marshall, K. (2017): Kenya's Complex and Vibrant Religious Landscape: Features and Prospects. In *Policy Brief Berkeley Center*, pp. 1–7.
- Mburu, F. (2022): Visiting the Village. Guided Tour to S. Tornow and V. N. Akwaba. Gatamaiyu, 05/09/2022.
- McCleery, R. A.; Ditton, R. B.; Sell, J.; Lopez, R. R. (2006): Understanding and Improving Attitudinal Research in Wildlife Sciences. In *Wildlife Society Bulletin (1973-2006)* 34 (2), pp. 537–541. Available online at <http://www.jstor.org/stable/3785162>.
- McLeish E. (Ed.) (1997): *Educating for Life. Guidelines for Biodiversity Education*. Council for Environmental Education.
- Methu, S. (2022): Eden in Nyakinyua and Gatamaiyu. Conversation to S. Tornow. Gatamaiyu, 12/09/2022.
- Mikusiński, G.; Possingham, H. P.; Blicharska, M. (2014): Biodiversity priority areas and religions—a global analysis of spatial overlap. In *Oryx* 48 (1), pp. 17–22. DOI: 10.1017/S0030605312000993.
- Moyer, J. M.; Sinclair, A. J.; Diduck, A. P. (2014): Learning for sustainability among faith-based organizations in Kenya. In *Environmental Management* 54 (2), pp. 360–372. DOI: 10.1007/s00267-014-0289-8.
- Moyer, J. M.; Sinclair, A. J.; Spaling, H. (2011): Working for God and Sustainability: The Activities of Faith-Based Organizations in Kenya. In *Voluntas* 23 (4), pp. 959–992. DOI: 10.1007/s11266-011-9245-x.
- Moyer, J. M. (2015): Faith-Based Sustainability in Practice: Cases Studies from Kenya. In *JSRNC* 9 (1), pp. 42–67. DOI: 10.1558/jsrnc.v9i1.17758.
- Muga, A. (2021): Creation Stewards International Kijabe. Talk to S. Tornow. Kijabe, 20/12/2021.

- Mukeka, J. M.; Ogutu, J. O.; Kanga, E.; Røskaft, E. (2019): Human-wildlife conflicts and their correlates in Narok County, Kenya. In *Global Ecology and Conservation* 18 (9). DOI: 10.1016/j.gecco.2019.e00620.
- Mukeka, J. M.; Ogutu, J. O.; Kanga, E.; Røskaft, E. (2018): Characteristics of Human-Wildlife Conflicts in Kenya: Examples of Tsavo and Maasai Mara Regions. In *1927-0488* 8 (3). DOI: 10.5539/enr.v8n3p148.
- Mwangi, L. (2022): Situation in Gatamaiyu and Nyakinyua. Text to S. Tornow. Naivasha, 12/09/2022.
- NIV (Ed.) (2011): Holy Bible. New International Version. 4th ed. Michigan: Zondervan.
- Nordlander, A. (2021): Green Purpose: Teleology, Ecological Ethics, and the Recovery of Contemplation. In *Studies in Christian Ethics* 34 (1), pp. 36–55. DOI: 10.1177/0953946820910672.
- Northcott, M. S. (2010): BP, the Blowout and the Bible Belt: Why Conservative Christianity Does Not Conserve Creation. Edited by The Expository Times. University of Edinburgh (3).
- Nyale, M., C. (2019): An Evaluatory Study of A Rocha Kenya's Christian Approach in Conservation of Nature in Kilifi County. Master Thesis. Pwani University, Kilifi.
- Nyumba, T. O.; Kimongo, N. E.; Leader-Williams, N. (2021): Measuring the conservation attitudes of local communities towards the African elephant *Loxodonta africana*, a flagship species in the Mara ecosystem. In *PLOS ONE* 16 (6), e0253234. DOI: 10.1371/journal.pone.0253234.
- Olupona, J. K. (2014): African religions - A very short Introduction. 15 facts on African religions. Available online at <https://blog.oup.com/2014/05/15-facts-on-african-religions/>, checked on 10/03/2020.
- PACE (2021): PACE - Living with Wildlife - Introduction. Living with Wildlife: Tusk. Available online at https://www.youtube.com/watch?v=JT_KrJGL3yc, checked on 24/10/2022.
- Pastor Kamiti (2022): Gatamaiyu and Nyakinyua. Conversation to S. Tornow and V. N. Akwaba. Gatamaiyu, 08/09/2022.
- Pope Francis (2015): Laudato Si. On Care for our Common Home: Libreria Editrice Vaticana. Available online at http://www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html, checked on 23/02/2021.
- Rafiqpoor, M. D.; Barthlott, W. (2018): Biodiversität im globalen Wandel zwischen Evolution, Migration, Kultur und Religion. In Hans-Werner Frohn, Frank Wichert

- (Eds.): Naturschutz: natürlich sozial, interkulturell und inkludierend?! Ergebnisse der Tagungen "Naturschutz - natürlich sozial"! (24.-25. November 2015), "Naturschutz - natürlich interkulturell?!" (22.-23. November 2016) und "Naturschutz - natürlich inklusiv!" (11.-12. Oktober 2017) im Bundesamt für Naturschutz, Bonn. Bonn - Bad Godesberg: Bundesamt für Naturschutz (BfN-Skripten, 514), pp. 71–85.
- Salim, I. (2021): Environmental Education at Kenyan Primary Schools to S. Tornow. Watamu, 14/10/2021.
- Salim, S. (2021): Witchcraft and the fear of animals to S. Tornow. Watamu, 23/09/2021.
- Sandström, C. (2020): Role of Stakeholders and stakeholder analysis. Human Dimensions of Wildlife Management. Swedish University for Agricultural Sciences. Aspen, Umea, 03/02/2020.
- Schneider, K. J. (2011): Awakening to an awe-based psychology. In *The Humanistic Psychologist* 39 (3), pp. 247–252. DOI: 10.1080/08873267.2011.592464.
- Sluka, R. D.; Kaonga, M.; Weatherley, J.; Anand, V.; Bosu, D.; Jackson, C. (2011): Christians, biodiversity conservation and poverty alleviation: a potential synergy? In *Biodiversity* 12 (2), pp. 108–115. DOI: 10.1080/14888386.2011.599780.
- Smith, M.; Mwangi, L. (2022): Choosing the research area. Conversation to S. Tornow. Naivasha, 16/08/2022.
- Sorley, C. (2016): Honoring Christ and Caring for His Creation. a second edition to Christ & Creation: Kul Graphics Ltd.
- Spaling, H.; Vander Kooy, K. (2019): Farming God's Way: agronomy and faith contested. In *Agric Hum Values* 36 (3), pp. 411–426. DOI: 10.1007/s10460-019-09925-2.
- Taylor, C. (2007): A Secular Age. First Harvard University Press paperback edition. Cambridge, Massachusetts, London, England: The Belknap Press of Harvard University Press.
- Teel, T. L.; Manfredo, M. J.; Jensen, F. S.; Buijs, A. E.; Fischer, A.; Riepe, C. et al. (2010): Understanding the Cognitive Basis for Human—Wildlife Relationships as a Key to Successful Protected-Area Management. In *International Journal of Sociology* 40 (3), pp. 104–123. Available online at <http://www.jstor.org/stable/20788557>.
- The Global Historical Weather and Climate Data (2022): Weather and Climate. Climate of Kinangop. Available online at <https://tcktcktck.org/kenya/nyandarua/south-kinangop>, checked on 01/12/2022.

- Theuri, M. M. (2013): *The Relationship between Christianity, Education, Culture and Religion in Kenya since Political Independence in 1963*. 3rd ed. Edited by The International Institute for Science (ISTE). The International Institute for Science (ISTE) (16). Available online at <http://repository.dkut.ac.ke:8080/xmlui/bitstream/123456789/196/1/The%20Relationship%20between%20Christianity%2c%20Education%2c%20Culture%20and.pdf>.
- Thuo, D. (2022): *The Environment in Naivasha*. Guided Tour to S. Tornow and V. N. Akwaba. Naivasha, 04/09/2022.
- United Nations (2022): *Population of Kenya*. Edited by Worldometer. Department of Economic and Social Affairs, Population Division. Available online at <https://www.worldometers.info/world-population/kenya-population/>, checked on 15/12/2022.
- Watson, E. E.; Kochore, Hussein, H. (2012): *Religion and Climate Change in Northern Kenya: New Moral Frameworks for New Environmental Challenges?* In *Journal for the Study of Religion, Nature and Culture* 6 (3). Available online at https://www.academia.edu/2125847/Religion_and_Climate_Change_in_Northern_Kenya_New_Moral_Frameworks_for_New_Environmental_Challenges?email_work_card=view-paper.
- Weaver, J.; Hodson M. R. (Eds.) (2007): *The Place of Environmental Theology: a course guide for seminaries, colleges and universities*.
- Wells, S. (2006): *Force Field Analysis*. Mini-Tutorial Quality Management.
- White, L. (1967): *The historical roots of our ecologic crisis*. In *Science* (New York, N.Y.) 155 (3767), pp. 1203–1207. DOI: 10.1126/science.155.3767.1203.
- Zagonari, F. (2020): *Comparing Religious Environmental Ethics to Support Efforts to Achieve Local and Global Sustainability: Empirical Insights Based on a Theoretical Framework*. In *Sustainability* 12 (7), p. 2590. DOI: 10.3390/su12072590.

Popular science summary

For years conservationists come up with different ideas to reduce dangerous and sometimes lethal conflicts between humans and wildlife in East and Southern Africa. Oftentimes, those conflicts arise out of misleading beliefs, solely negative encounters and dramatic storytelling within communities. But could there be a way to change the story those communities live by and influence their behavior?

Based on scientific literature from several fields, there is an effective way, that has not been explored yet. This work presents a new way of addressing conflicts with wildlife by approaching them from a Christian perspective, the faith that determines people's worldviews, values and behavior in most of East and Southern Africa.

The aim of this study was to develop an environmental education program for a particular Christian community in Kenya that is facing human-wildlife conflicts. Its focus lies on combining the existing Christian faith with a conservation message as well as practical activities. This unique program is only a first draft, adapted to the specific conditions of a community in Nyakinyua. However, this first draft provides a general framework for adjusting and implementing it in other places and change people's lives profoundly.

For the development process, the author Svenja Tornow did research in different fields including conservation, psychology and theology, visited Christian conservation organizations and did several assessments in the study location Nyakinyua.

The developed environmental education program will be implemented by church leaders, the most trusted and respected people in a community. It consists of a sermon, prayers and songs that create a familiar atmosphere while dealing with a new environmental topic with a biblical foundation. Additionally, the program includes practical activities where the community can see wildlife from a different perspective, learn new skills and be empowered for change from within.

This program therefore provides a promising new approach to addressing human-wildlife conflicts, offering a new story to live by and uplifting communities.

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Appendix

Appendix 1 – Environmental Education Program for Creation Care to Mitigate Human-Wildlife Conflicts



ENVIRONMENTAL EDUCATION PROGRAM FOR CREATION CARE TO MITIGATE HUMAN-WILDLIFE CONFLICTS



This first draft of an environmental education program for creation care as a holistic approach to mitigate human-wildlife conflicts was written in the years 2021-2022 by Svenja Tornow student of the M.Sc. Management of Fish and Wildlife Populations as well as M.A. Systematic Theology.

It is dedicated to all who have found hope in the Christian God and still struggle to make ends meet caused by human-wildlife conflicts. But it is specifically designed for the *Arise and Shine* church in Nyakinyua, Nakuru County. The implementation at other churches needs some adjustment to the specific circumstances of the church community.

All photos in this document are taken by the author Svenja Tornow with exception of the photo of the *Arise and Shine* congregation which was taken by Victor Akwaba and the Game Drive which was taken by a participant of the Game Drive guided by Svenja Tornow with her camera.

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VISION

The vision of this program is to empower local Christian communities in Kenya that face human-wildlife conflicts to move from mere survival to living with a purpose, appreciating the place they have been put in by their God and recognizing the call and responsibility they have to take care of creation which includes wildlife. Consequently, a more fulfilled and sustainable lifestyle will be achieved and conflicts with wildlife reduced.

MISSION

To achieve the vision, the mission of this environmental education program for creation care is to provide a holistic experience for local communities facing human-wildlife conflicts in Kenya which includes biblical teachings regarding the environment and humanity's interaction with it, skill teaching, establishing simple strategies against HWC and exposure to awe-inspiring experiences in their natural environment.

INTRODUCTION

This environmental education program for creation care aims to reduce human-wildlife conflicts in Christian communities in Kenya. To ensure a long-term success, a holistic approach is applied. Through that current problems and struggles of community members are analyzed and addressed while encouraging the community, giving them purpose and inspiring them to care for nature based on their Christian faith. Consequently, it does not only aim at HWC but the overall wellbeing of local communities which involves farming, HWC reduction, empowerment and alternative sources of income, education, and health. This holistic faith-based approach aims to create awe towards the creator God by experiencing nature in a new way and being able to improve old ways. Hence, communities are encouraged to address problems they are facing including HWC's together as a community with simple methods they can learn during the program and apply in their daily lives.

The learning is divided into a preached sermon adapted to the service structure of each church with interactions between the pastor and the congregation, experiential learning as part of the service and related to each topic and additional practical activities that take place during the week in different locations. The field trips complement the sermon series and seek to establish a holistic picture of their God, his creation and humanity's place therein. By showing the connection between the three in word and action, it creates an understanding of the interdependence of all living things.

Furthermore, the curriculum contributes to the international education for sustainable development and targets several of the Sustainable Development Goals (SDG'S), namely:

- | | |
|-------------------------------|--|
| 1. No Poverty | 8. Decent Work and Economic Growth |
| 2. Zero Hunger | 11. Sustainable Cities and Communities |
| 3. Good Health and Well-Being | 12. Responsible Consumption and Production |
| 4. Quality Education | 13. Climate Action |
| 5. Gender Equality | 15. Life on Land |
| 6. Clean Water and Sanitation | |

The teachers/facilitators of the program will:

- Show enthusiasm and awe towards God's creation
- Have patience towards congregation
- Have understanding towards the issue/problems that the congregation faces
- Build the program upon and around people's comments and contributions to a topic
- Become involved/ live out what is preached and taught
- Have a clear and open communication that allows questions at any time
- Have a basic understanding of general guiding skills based on Hine (2016)

Guides on the Game Drives will additionally:

- Give a safety briefing before every activity
- Embody calmness throughout the activity
- Have a valid First Aid certificate
- Check the vehicle before use
- Take care of and listen to everyone to create a safe and comfortable environment
- Encourage congregation to participate in conversations
- Be observant of the environment to spot animals
- Be observant of the participants to understand their wellbeing throughout the activity
- Be skilled in photography, navigation, bird and mammal identification to teach the participants

As a consequence, the congregation will be able to:

- Reflect on the topics of the different sessions
- Strengthen the community bond
- Gain skills in photography, Farming God's Way, Cooking with less firewood
- Experience wildlife in their natural habitat
- Develop a sense of awe and of responsibility towards nature

- Feel safe, comfortable, seen and valued

CURRICULUM DESIGN

The design of this curriculum aims at being implemented in the Arise and Shine Church in Nyakinyua, led by Pastor Kamiti in collaboration with Eden Thriving staff. However, the curriculum also applies for other churches in Nyakinyua and after revision and adaptation to churches in other regions, it is also suitable for any church in Kenya in an area where human-wildlife conflicts occur. Because the preaching pastors who are trusted and valued by the communities might not be very enthusiastic about the topic at first, they will participate in guided Game Drives prior to the program to get a first understanding of the program, be exposed to wildlife and recognize the interface of their Christian faith and nature around them. The lessons can be adapted or complemented according to specific traditions in each denomination.

The program contains seven sessions which are all developed for implementation at church throughout a church service. The sessions are designed to be held in seven consecutive weeks. However, it is suggested to continue having a creation care service once every four to eight weeks.

Each session contains:

- A title that introduces the topic
- Goals to set the frame for the preacher of the session
- Objectives that define hoped outcomes of the session
- An overview of the sermon to each session including the referred scripture from the Bible (of which the bold scripture will be referred to, but the surrounding verses provide more context for possible further questions and discussion)
- A prayer referring to the topic (based on the general structure at Arise and Shine Church)
- Time for testimonies that might include good outcomes of previous sermons or practical activities
- A practical activity where the congregation explores God's creation practically or learns new skills

SESSION 1 – OUR PLACE IN GOD’S CREATION

GOALS

- Addressing an understanding of their place in the world
- Reflecting on God’s placement and purpose of every single individual with all their gifts, values, experiences
- Recognizing pain and suffering as ‘common’ for all humanity

OBJECTIVES

As a result, the congregation will:

- Appreciate their place in the world more
- Be able to recognize own gifts
- Realize their worth in God’s eyes who knows and loves every single one of them intimately

SERMONS + SCRIPTURE

- Welcome, Introduction
- What are good things about this place? What are challenges? [discussion with congregation]
- Acts 17:26

26 From one man he made all the nations, that they should inhabit the whole earth; and he marked out their appointed times in history and the boundaries of their lands.

- God has set out the boundaries for everyone’s land already, he has a purpose for every single one of us on their appointed land
- That is clear from the beginning of time
- First God creates everything in its order, and he sees that it is good, at the end, when he is done, he looks at how everything is working together and he sees that it is VERY GOOD
- Genesis 1:31

³¹ God saw all that he had made, and it was very good. And there was evening, and there was morning—the sixth day.

- We are part of that big picture, that God sees as so good and beautiful, and we are in a very special position because God entrusts us with a huge responsibility
- For that, he has put every one of us in the exact place we are in
- Genesis 2:15

¹⁵ The Lord God took the man and put him in the Garden of Eden to work it and take care of it.

- God had a specific plan for humans, he created them to put them in his creation to work it, like all the farmers here do, but also to look after it and care for it
- The place we are in, he has appointed us to be here, the task we do, he has a purpose for us through them
- God knows us from before we were born and knows everything we do, think, feel, struggle with
- Psalm 139

*You have searched me, LORD,
and you know me.*

² *You know when I sit and when I rise;
you perceive my thoughts from afar.*

³ *You discern my going out and my lying down;
you are familiar with all my ways.*

⁴ *Before a word is on my tongue
you, LORD, know it completely.*

⁵ *You hem me in behind and before,
and you lay your hand upon me.*

⁶ *Such knowledge is too wonderful for me,
too lofty for me to attain.*

⁷ *Where can I go from your Spirit?
Where can I flee from your presence?*

⁸ *If I go up to the heavens, you are there;
if I make my bed in the depths, you are there.*

⁹ *If I rise on the wings of the dawn,
if I settle on the far side of the sea,*

¹⁰ *even there your hand will guide me,
your right hand will hold me fast.*

¹¹ *If I say, "Surely the darkness will hide me
and the light become night around me,"*

¹² *even the darkness will not be dark to you;
the night will shine like the day,
for darkness is as light to you.*

¹³ *For you created my inmost being;
you knit me together in my mother's womb.*

¹⁴ *I praise you because I am fearfully and wonderfully made;
your works are wonderful,
I know that full well.*

¹⁵ *My frame was not hidden from you
when I was made in the secret place,
when I was woven together in the depths of the earth.*

¹⁶ ***Your eyes saw my unformed body; all the days ordained for me were written in your book before one of them came to be.***

¹⁷ *How precious to me are your thoughts, God!
How vast is the sum of them!*

¹⁸ *Were I to count them,
they would outnumber the grains of sand—
when I awake, I am still with you.*

¹⁹ *If only you, God, would slay the wicked!
Away from me, you who are bloodthirsty!*

²⁰ *They speak of you with evil intent;
your adversaries misuse your name.*

²¹ *Do I not hate those who hate you, LORD,
and abhor those who are in rebellion against you?*

²² *I have nothing but hatred for them;
I count them my enemies.*

²³ *Search me, God, and know my heart;
test me and know my anxious thoughts.*

²⁴ *See if there is any offensive way in me,
and lead me in the way everlasting.*

- He has determined the boundaries of our lands, down to the finest details of our neighborhoods, homes, workplaces, and relationships

PRAYER

Dear God.

We come before you in awe today. You are the one who knows us, the one who formed us and wanted us before anyone else. You see exactly where I am at. You see the struggles I face and the questions I have. You have equipped me with gifts that are uniquely mine and have placed me in this place with its appointed boundaries for a reason. Lord, reveal those reasons to me and make me a good steward of your land. Help me to work and take care of your creation. Help me to be a light and represent your love and care to the people and the land around me.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up

PRACTICAL ACTIVITY

- No practical activity in the first service

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili

SESSION 2 – FROM STRUGGLE GOD STARTS SOMETHING NEW

GOALS

- Reflecting on the state of the environment in Nyakinyua
- Discussing Job's situation and God's response to his suffering
- Exploring how God could respond in this instance on a Job walk
- Recognizing a 'desert time' and how God works through those
- Getting hope for something new to come

OBJECTIVES

As a result, the congregation will:

- Be able to point out environmental destruction
- Identify with struggles that other humans face
- Experience and find answers in God's response to Job's suffering and loss
- Be in awe by all the things God has orchestrated for this world to function
- Have new hope in a new thing that God will do to restore the land and break through the 'desert time'

SERMONS + SCRIPTURE

- We are in Nyakinyua, when we look around us, what do we see? How is it different to maybe 10 years ago?
- Environment harmed, forest cut down, people are struggling, time of "desert"
- Job also struggled, everything was taken away from him, his house, farm, servants, wife, children, health; he complains to God, but God just takes him on a tour to let Job lift up his eyes away from his sorrow and see everything God has created and in control
- Job Tour (Job 38-40)

Then the LORD spoke to Job out of the storm. He said:

*² "Who is this that obscures my plans
with words without knowledge?"*

*³ Brace yourself like a man;
I will question you,
and you shall answer me.*

⁴ "Where were you when I laid the earth's foundation? Tell me, if you understand.

⁵ Who marked off its dimensions? Surely you know!

Who stretched a measuring line across it?

⁶ On what were its footings set,

or who laid its cornerstone—
7 while the morning stars sang together
and all the angels shouted for joy?

8 "Who shut up the sea behind doors
when it burst forth from the womb,
9 when I made the clouds its garment
and wrapped it in thick darkness,
10 when I fixed limits for it
and set its doors and bars in place,
11 when I said, 'This far you may come and no farther;
here is where your proud waves halt'?

12 "Have you ever given orders to the morning, or shown the dawn its place,

13 that it might take the earth by the edges
and shake the wicked out of it?

14 The earth takes shape like clay under a seal;
its features stand out like those of a garment.

15 The wicked are denied their light,
and their upraised arm is broken.

16 "Have you journeyed to the springs of the sea
or walked in the recesses of the deep?

17 Have the gates of death been shown to you?
Have you seen the gates of the deepest darkness?

18 Have you comprehended the vast expanses of the earth? Tell me, if you know all this.

19 "What is the way to the abode of light?
And where does darkness reside?

20 Can you take them to their places?

Do you know the paths to their dwellings?

21 Surely you know, for you were already born!
You have lived so many years!

22 "Have you entered the storehouses of the snow
or seen the storehouses of the hail,

23 which I reserve for times of trouble,
for days of war and battle?

24 What is the way to the place where the lightning is dispersed,
or the place where the east winds are scattered over the earth?

25 Who cuts a channel for the torrents of rain,
and a path for the thunderstorm,

26 to water a land where no one lives,
an uninhabited desert,

27 to satisfy a desolate wasteland
and make it sprout with grass?

28 Does the rain have a father?

Who fathers the drops of dew?

29 From whose womb comes the ice?

Who gives birth to the frost from the heavens

³⁰ when the waters become hard as stone,
when the surface of the deep is frozen?

³¹ "Can you bind the chains of the Pleiades?
Can you loosen Orion's belt?

³² Can you bring forth the constellations in their seasons
or lead out the Bear with its cubs?

³³ Do you know the laws of the heavens?
Can you set up God's dominion over the earth?

³⁴ "Can you raise your voice to the clouds
and cover yourself with a flood of water?

³⁵ Do you send the lightning bolts on their way?
Do they report to you, 'Here we are'?

³⁶ Who gives the ibis wisdom
or gives the rooster understanding?

³⁷ **Who has the wisdom to count the clouds? Who can tip over the water jars of the heavens
³⁸ when the dust becomes hard and the clods of earth stick together?**

³⁹ **"Do you hunt the prey for the lioness and satisfy the hunger of the lions
⁴⁰ when they crouch in their dens or lie in wait in a thicket?**

⁴¹ **Who provides food for the raven when its young cry out to God
and wander about for lack of food?**

³⁹ "Do you know when the mountain goats give birth?
Do you watch when the doe bears her fawn?

² Do you count the months till they bear?
Do you know the time they give birth?

³ They crouch down and bring forth their young;
their labor pains are ended.

⁴ Their young thrive and grow strong in the wilds;
they leave and do not return.

⁵ "Who let the wild donkey go free?
Who untied its ropes?

⁶ I gave it the wasteland as its home,
the salt flats as its habitat.

⁷ It laughs at the commotion in the town;
it does not hear a driver's shout.

⁸ It ranges the hills for its pasture
and searches for any green thing.

⁹ "Will the wild ox consent to serve you?
Will it stay by your manger at night?

¹⁰ Can you hold it to the furrow with a harness?
Will it till the valleys behind you?

¹¹ Will you rely on it for its great strength?
Will you leave your heavy work to it?

¹² Can you trust it to haul in your grain
and bring it to your threshing floor?

¹³ "The wings of the ostrich flap joyfully,
though they cannot compare
with the wings and feathers of the stork.

¹⁴ She lays her eggs on the ground
and lets them warm in the sand,

¹⁵ unmindful that a foot may crush them,
that some wild animal may trample them.

¹⁶ She treats her young harshly, as if they were not hers;
she cares not that her labor was in vain,
¹⁷ for God did not endow her with wisdom
or give her a share of good sense.

¹⁸ Yet when she spreads her feathers to run,
she laughs at horse and rider.

¹⁹ "Do you give the horse its strength
or clothe its neck with a flowing mane?

²⁰ Do you make it leap like a locust,
striking terror with its proud snorting?

²¹ It paws fiercely, rejoicing in its strength,
and charges into the fray.

²² It laughs at fear, afraid of nothing;
it does not shy away from the sword.

²³ The quiver rattles against its side,
along with the flashing spear and lance.

²⁴ In frenzied excitement it eats up the ground;
it cannot stand still when the trumpet sounds.

²⁵ At the blast of the trumpet it snorts, 'Aha!'
It catches the scent of battle from afar,
the shout of commanders and the battle cry.

²⁶ "Does the hawk take flight by your wisdom and spread its wings toward the south?

²⁷ Does the eagle soar at your command and build its nest on high?

²⁸ It dwells on a cliff and stays there at night; a rocky crag is its stronghold.

²⁹ From there it looks for food;
its eyes detect it from afar.

³⁰ Its young ones feast on blood,
and where the slain are, there it is."

40 The LORD said to Job:

² "Will the one who contends with the Almighty correct him?
Let him who accuses God answer him!"

³ Then Job answered the LORD:

⁴ "I am unworthy—how can I reply to you?
I put my hand over my mouth.

⁵ I spoke once, but I have no answer—
twice, but I will say no more."

⁶ Then the LORD spoke to Job out of the storm:

⁷ "Brace yourself like a man;
I will question you,
and you shall answer me.

⁸ "Would you discredit my justice?
Would you condemn me to justify yourself?
⁹ Do you have an arm like God's,
and can your voice thunder like his?
¹⁰ Then adorn yourself with glory and splendor,
and clothe yourself in honor and majesty.
¹¹ Unleash the fury of your wrath,
look at all who are proud and bring them low,
¹² look at all who are proud and humble them,
crush the wicked where they stand.
¹³ Bury them all in the dust together;
shroud their faces in the grave.
¹⁴ Then I myself will admit to you
that your own right hand can save you.

¹⁵ "Look at Behemoth,
which I made along with you
and which feeds on grass like an ox.
¹⁶ What strength it has in its loins,
what power in the muscles of its belly!
¹⁷ Its tail sways like a cedar;
the sinews of its thighs are close-knit.
¹⁸ Its bones are tubes of bronze,
its limbs like rods of iron.
¹⁹ It ranks first among the works of God,
yet its Maker can approach it with his sword.
²⁰ The hills bring it their produce,
and all the wild animals play nearby.
²¹ Under the lotus plants it lies,
hidden among the reeds in the marsh.
²² The lotuses conceal it in their shadow;
the poplars by the stream surround it.
²³ A raging river does not alarm it;
it is secure, though the Jordan should surge against its mouth.
²⁴ Can anyone capture it by the eyes,
or trap it and pierce its nose?

- Like Job we are in a time of lack and suffering and when difficulties arise it is easy to get carried away by them, but when we lift our eyes to him, our problems seem smaller already, and maybe he even has a purpose for the things we go through
- Sometimes God leads us into the desert away from everything else to renew our faith and dependence on him (like when he led the Israelites out of Egypt and they were in the desert for 40 years)

- Hosea 2:14-20

"Therefore I am now going to allure her; I will lead her into the wilderness and speak tenderly to her.

¹⁵ There I will give her back her vineyards, and will make the Valley of Achor a door of hope. There she will respond as in the days of her youth, as in the day she came up out of Egypt.

*¹⁶ "In that day," declares the Lord,
"you will call me 'my husband';
you will no longer call me 'my master.'*

*¹⁷ I will remove the names of the Baals from her lips;
no longer will their names be invoked.*

¹⁸ In that day I will make a covenant for them with the beasts of the field, the birds in the sky and the creatures that move along the ground.

*Bow and sword and battle
I will abolish from the land,
so that all may lie down in safety.*

*¹⁹ I will betroth you to me forever;
I will betroth you in righteousness and justice,
in love and compassion.*

*²⁰ I will betroth you in faithfulness,
and you will acknowledge the Lord.*

- In this scripture we see that sometimes God leads us into times of hardships and struggles, like in the desert, not to punish us but to remind us of who he is and what he has done in our lives already

I will lead her into the wilderness and [...] There she will respond as in the days of her youth, as in the day she came up out of Egypt.

- But we also see that God doesn't want us to stay in the desert, it is just temporary
- God wants to do a new thing; he wants to lead us out of the desert and renew our land and restore relationship with all wildlife and birds in it
- Isaiah 43:19

¹⁹ See, I am doing a new thing! Now it springs up; do you not perceive it? I am making a way in the wilderness and streams in the wasteland.

- God is doing a new thing, the barren land, the desert, he wants to restore it, he prepares a way for us, wants to bless us abundantly and brings hope

PRAYER

Dear God.

You see Nyakinyua, you see us. You have created this place and put us in the middle. Without our attention, we slowly exploited what you had given us so abundantly. Lord, please forgive us. We are longing for you and for a change. You have laid the earth's foundation, you have created the universe and you have everything in control. Please shift our focus away from our struggles and back to you. Take us on a tour through your creation and show us your goodness. We await you in the desert, we expect you to move. Just as you promised, we are longing for you to do something new. Lord, restore our land and use our hands to do that.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has changed anything positively in their daily lives

PRACTICAL ACTIVITY – JOB'S TOUR

- Going on a nature walk, experiencing Job's struggles and questions and God's response to it
- Reflecting on Scripture Job 38-40 and sharing it in own words
- Lifting our look away from our sorrows and struggles and towards God who is in control

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili

SESSION 3 – GOD’S HABITAT

GOALS

- Recognizing the Creator's power and creativity in nature based on Psalm 19
- Reflecting on the interconnectedness of everything in nature and how God cares for all of it (including wildlife)
- Remembering God's masterpiece when looking into creation
- Recognizing that environmental destruction is consequence of human sin
- Experiencing God's love and grace for all of us that he wants to save all of creation
- Encouraging congregation to actively take part in God's restoration and receive strength from him to do that

OBJECTIVES

As a result, the congregation will:

- Be in awe of God's masterpiece with all its interconnections
- Acknowledge own sin, its consequences and need for a savior
- Experience God's grace and his will for everyone's best
- Be willing to participate in God's restoration of the land

SERMONS + SCRIPTURE

- God is the one who has created everything around us, from the clouds that bring rain to the trees that bring air and shade, the soil that provides nutrients and all the crops that flourish on it
- He has put everything in an amazing balance where everything is connected to everything else and can't live without the rest
- Every time we look into the sky, we can see his artwork like in Psalm 19:

The heavens declare the glory of God; the skies proclaim the work of his hands.² Day after day they pour forth speech; night after night they reveal knowledge.³ They have no speech, they use no words; no sound is heard from them.⁴ Yet their voice goes out into all the earth, their words to the ends of the world.

- But we often don't see that and want to get more than what is good for us so that we destroy what God has carefully woven together
- Hosea 4,1-3

Hear the word of the Lord, you Israelites, because the Lord has a charge to bring against you who live in the land: "There is no faithfulness, no love, no acknowledgment of God in the land.² There is only cursing, lying and murder, stealing and adultery; they break all bounds, and bloodshed

follows bloodshed. ³ Because of this the land dries up, and all who live in it waste away; the beasts of the field, the birds in the sky and the fish in the sea are swept away.

- There is so much evil in the world and sin is evident, that's why the land dries up and everyone in it is affected (humans, wildlife, birds, fish)
- But God loves all humans, the wildlife that he has created and all the birds and fish so he wants to save us
- Isaiah 35:1-3

The desert and the parched land will be glad; the wilderness will rejoice and blossom. Like the crocus, ² it will burst into bloom; it will rejoice greatly and shout for joy. The glory of Lebanon will be given to it, the splendor of Carmel and Sharon; they will see the glory of the LORD, the splendor of our God. ³ Strengthen the feeble hands, steady the knees that give way;

- He tells us that the place we live in, doesn't have to waste away
- The whole land will rejoice and be glad again, they will bloom so that our hearts can bloom too
- He wants to strengthen our hands and knees so that we can start working hand in hand with God for the restoration of his land
- Together we can restore the habitat we live in
- God will strengthen our hands and knees so that we can plant trees and restore what we have lost so that we can bring glory to him who has saved us
- Isaiah 41:19-20

I will put in the desert the cedar and the acacia, the myrtle and the olive. I will set junipers in the wasteland, the fir and the cypress together, ²⁰ so that people may see and know, may consider and understand, that the hand of the Lord has done this, that the Holy One of Israel has created it.

PRAYER

Dear Lord,

We thank you for the skies that you have created and the rain that you pour forth on the earth. Thank you for every tree in the landscape and every bird that sings your name. Thank you for putting everything into this perfect order. Please forgive us for the mistakes that we made. Forgive us that we exploited your land. Lord, forgive us our sins. We need you. We seek you. The place we live in has become a wasteland, a desert. We have destroyed your order of things and have pushed your wildlife, birds, and fish away. Forgive us. Lord, help us now. Strengthen our hands and knees to work your land, to take care of it so that everything that you want to be here, will return and flourish. We invite you, be among us. Bless this land, work with us so that your glory will be known to everyone and that everyone knows that you are the one who has done it.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has positively changed anything in their daily lives

PRACTICAL ACTIVITY

FIRELESS COOKER

- The congregation stays after the service and is invited to a share meal
- For that, several fireless cookers will be used to prepare rice
- While the rice is cooking, they will discuss together what the current deforestation looks like and how the fireless cooker can protect God's habitat by protecting trees
- Additional offer that congregation can learn to make a fireless cooker during the week with material that will be provided for them (Weekday activity in Appendix I)

BEEKEEPING

- While eating the meal together, mentioning the benefits of keeping bees for biodiversity, the harvest but also for the local economy to create interest in weekday activity of beekeeping
 - Only little land needed
 - Low investment
 - Doesn't compete for resources
 - Little labor
 - Several different products from beekeeping
 - Stable source of income
- Offer to join the beekeeping activity during the week to learn how to make money and conserve God's creation easily
- There different beehives will be presented, the position of the location of the beehive discussed, possible monetary outcomes mentioned including possible harvest improvement (Appendix II)

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili
- Fireless cookers
- Rice
- Water for cooking
- Tea
- Sugar
- Ready prepared stew

WEEKDAY BUILDING A FIRELESS COOKER

- One big basket per person
- A covering cloth per person (e.g. blanket, curtain, traditional Kitenge, Kanga, Shuka, Lesso)
- Enough insulation material for everyone (e.g. banana leaves, cotton, wool, old cloth, hay, feathers, newspapers, blanket)
- Scissors
- Black cloth
- Large needles
- Cobbler string
- Chalk

WEEKDAY BEEKEEPING

- Empty Langstroth, Kenyan Top-bar and Log hive
- Smoker
- 2 complete beekeeping protection suits
- Steel hook
- Hive brush

SESSION 4 – GOD’S SOIL (EROSION)

GOALS

- Learning the importance of a healthy soil and how the harvest fully depends on that
- Learning about the effects of deforestation like soil erosion and decreasing water retention
- Reflecting on own faith and if it is like good soil or if something is in the way of that
- Recognizing that ‘bad soils’ are not judgment from Jesus but invitations to reflect and grow
- Recognizing that everyone is valuable, seen and cared for in God’s eyes and that he wants to work through all of us even with faith as small as a mustard seed
- Learning that good things take time and God is asking patience from everyone

OBJECTIVES

As a result, the congregation will:

- Recognize and appreciate the importance and functions of a healthy soil
- Reflect on their behavior in the environment and its consequences
- Understand own faith better
- Grow in faith without judgment
- Understand their value and uniqueness
- Realize that faith can’t be ‘too small’ for their God to work with and for them
- Learn patience rather than longing for quick fix

SERMONS + SCRIPTURE

- Parable of the Sower Luke 8:1-16

4 While a large crowd was gathering and people were coming to Jesus from town after town, he told this parable: 5 “A farmer went out to sow his seed. As he was scattering the seed, some fell along the path; it was trampled on, and the birds ate it up. 6 Some fell on rocky ground, and when it came up, the plants withered because they had no moisture. 7 Other seed fell among thorns, which grew up with it and choked the plants. 8 Still other seed fell on good soil. It came up and yielded a crop, a hundred times more than was sown.”

- The same way, there are different types of soil here in Nyakinyua
- The soils in Jesus’ time were also different and the people also did farming, which is God’s divine task, so they were aware of it
- Jesus emphasizes how important a good soil is
 - That a path doesn’t provide good soil, we would just step on the seed
 - That rocky ground doesn’t provide the important nutrients and water so that the seedlings quickly die

- That soil that is covered by thorny plants doesn't allow the seedlings to get the necessary sunlight and they wither too
- Only the good soil that has nutrients, water and sunlight can yield many more crops than what was planted

- **SOIL EROSION AND WATER RETENTION EXERCISE OUTSIDE**

- But this scripture continues

⁹ His disciples asked him what this parable meant. ¹⁰ He said, "The knowledge of the secrets of the kingdom of God has been given to you, but to others I speak in parables, so that, "though seeing, they may not see; though hearing, they may not understand.' ¹¹ "This is the meaning of the parable: The seed is the word of God. ¹² Those along the path are the ones who hear, and then the devil comes and takes away the word from their hearts, so that they may not believe and be saved. ¹³ Those on the rocky ground are the ones who receive the word with joy when they hear it, but they have no root. They believe for a while, but in the time of testing they fall away. ¹⁴ The seed that fell among thorns stands for those who hear, but as they go on their way they are choked by life's worries, riches and pleasures, and they do not mature. ¹⁵ But the seed on good soil stands for those with a noble and good heart, who hear the word, retain it, and by persevering produce a crop.

- Jesus continues to say that the seed is the word of God and God is the Sower who is sowing the seeds of his word into our hearts (the different soils)
 - When his Word falls on the path, we are able to hear his word but is quickly taken away by the devil
 - When his word falls on the rocky ground, we receive his word with joy but as soon as our faith is tested, we fall away from our faith
 - When the seed falls among the thorns, we receive the word but worries and the desire for riches and pleasures quickly takes the faith away
 - But when God's Word falls on good soil, our seeking hearts, we hear the word, persevere challenges through faith and produce crops and bear fruits
- God does not need us to be perfect and with a good soil, he wants to work through all of us, if we just have faith
- Jesus emphasizes that in his parable in Matthew 17:20-21

²⁰ He replied, "Because you have so little faith. Truly I tell you, if you have faith as small as a mustard seed, you can say to this mountain, 'Move from here to there,' and it will move. Nothing will be impossible for you."

- However little our faith is, just like a mustard seed, it is enough for us to grow it and see it unfold, to feed on good soil and see fruits from God
- So, we want to plant a seed now that we can take home and watch it grow

- And just as we plant a seed for it to become a tree, so it is with our faith; it starts very small, but God will breathe life into it and nourish it if we provide the good soil
- PLANTING A TREE

PRAYER

- While still being outside and after planting trees

Dear Lord,

We thank you today for the soil that you have put like a blanket over all the earth so that things can grow, and we can eat. Thank you for providing good soils for us. We ask for your forgiveness where we have not treated your soil well and have exploited it so much that it is no longer good soil. Help us to restore the soil. See our longing for a place where trees grow abundantly again, where soil erosion is reduced and the little rains that we get can be hold in the soil and water our plants. Lord, please be with us on our efforts to create good soils. And make our faith a good soil as well. Let us be receptive to your word so that it will be like the seed we have planted here today and will grow, blossom and bear fruit just as you have willed for us. Thank you for your mercy.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has positively changed anything in their daily lives

PRACTICAL ACTIVITY

- Soil Erosion Exercise + Water retention practice (during the sermon) (Appendix III)
- Planting a tree (after the sermon, before the prayer)

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili

EROSION EXERCISE

- Two half 20l water bottles (cut vertically)
- One filled with conventional plowed soil
- One filled with conventional soil + mulch
- One bottom half of 2l bottles with holes at the bottom (cut horizontally)
- Two bottom halves 2l bottles without holes (cut horizontally)
- One bucket with water

WATER RETENTION EXERCISE

- 2 buckets (one filled with water)
- 2 same size sponges (one of which is torn apart and put in a thin sock)
- 2 bottom halves of 2l bottles (cut horizontally)

PLANTING A TREE

- Old plastic bottles or cups
- Soil
- Tree seeds
- Water

SESSION 5 – GOD’S TREES

GOALS

- Recognizing the complexity and importance of trees
- Reflecting on own actions in the environment towards trees
- Learning about a hope from God manifested through a dead tree bringing new life
- Learning the message of the Gospel
- Recognize dependency on each other in a community as parts of a tree and on God who is the tree itself
- Establishing a tree nursery

OBJECTIVES

As a result, the congregation will:

- Appreciate and support trees
- Find hope in a God who cares about trees and about humans
- Appreciate being created in dependency on each other, on the provision in nature and on God
- Learn how to establish and maintain a tree nursery
- Recognize hope in the act of planting trees
- Believe in the things that they do, according to the law that they are taught at church

SERMONS + SCRIPTURE

- Genesis 2:9

⁹ The Lord God made all kinds of trees grow out of the ground—trees that were pleasing to the eye and good for food. In the middle of the garden were the tree of life and the tree of the knowledge of good and evil.

- God created all the trees according to their place and provided everything they needed to survive and multiply there
- He gave them roots to be stable and get water, they were able to get all the nutrients from the good soil they stand on, they got leaves to breathe and provide oxygen for us, all of that was invented by God
- But like we discussed 2 weeks ago, humans tend to destroy his beautiful habitat with all the trees in it
- We learned about the destruction just as we know here in Nyakinyua where there was a cedar forest not long time ago

- So often, all that remains are dead stumps of trees
- But in that mess, the destruction and our sin, God still brings hope
- Despite all the felled and dead trees and all the tree stumps, God sends life
- Isaiah 11:1-3

A shoot will come up from the stump of Jesse; from his roots a Branch will bear fruit.

²The Spirit of the LORD will rest on him— the Spirit of wisdom and of understanding, the Spirit of counsel and of might, the Spirit of the knowledge and fear of the LORD—

³and he will delight in the fear of the LORD. He will not judge by what he sees with his eyes, or decide by what he hears with his ears;

- Despite the destruction, God brings life into a dead tree, he brings life and hope into the world in the person of Jesus Christ
- He came to reconcile the whole creation (with humans, animals, trees) back to God, himself and forgave all sin
- In him we can find strength and hope and flourish
- So Jesus said in John 15:1-8

"I am the true vine, and my Father is the gardener.

²He cuts off every branch in me that bears no fruit, while every branch that does bear fruit he prunes so that it will be even more fruitful. ³You are already clean because of the word I have spoken to you. ⁴Remain in me, as I also remain in you. No branch can bear fruit by itself; it must remain in the vine. Neither can you bear fruit unless you remain in me.

⁵"I am the vine; you are the branches. If you remain in me and I in you, you will bear much fruit; apart from me you can do nothing.

⁶If you do not remain in me, you are like a branch that is thrown away and withers; such branches are picked up, thrown into the fire, and burned. ⁷If you remain in me and my words remain in you, ask whatever you wish, and it will be done for you.

⁸This is to my Father's glory, that you bear much fruit, showing yourselves to be my disciples.

- So here Jesus says that he is a vine, he is the whole body, and we are all the branches, as long as a branch is on its tree, it can have flowers, leaves to breathe and get energy and bear lots of fruits
- But as soon as we are separated from the tree, we can't do anything; therefore, we need him in whatever we do and whatever we do we should do for him

- Last week we planted trees from tiny seeds that can reflect our faith, here we read now that God actually likes when we bear fruit like love, patience, joy, kindness, self-control that all point towards him and how he is to us
- So a tree is not only for fruit to eat and pleasing to the eye like it was mentioned in the creation story, trees are actually complex beings that God created in such a beauty and complexity, that they are used so often in pictures and parables in the Bible
- He has given trees a place on our earth that nothing else can replace
- He cares about them, and so should we
- He invites us to be with him and follow his ways, it says:
- Psalm 1:1-3

*Blessed is the one
who does not walk in step with the wicked
or stand in the way that sinners take
or sit in the company of mockers,
² but whose delight is in the law of the Lord,
and who meditates on his law day and night.*

**³ That person is like a tree planted by streams of water, which yields its fruit in season
and whose leaf does not wither—whatever they do prospers.**

- God gives us his law and his way, not to limit us but to give us the best life possible
- He invites us to follow his ways and be like a tree planted by streams of water
- He wants us to bear fruit but for that we need to take action
- But he promises that whatever we do with a pure heart prospers, he wants to bless the work of our hands if we start working for his glory and restore his creation here in Nyakinyua
- So that is what we want to do together, to restore God's creation right here, see his goodness and bring hope in dry places, we want to establish a tree nursery together
- Because God has blessed our hands, we want to use them to give him all the glory

PRAYER

Dear God,

Thank you for the trees that you have created. Thank you that the trees give us shade and provide fruits. Thank you for the roots that keep the soil together. Thank you that you provide the air that we breathe through the trees around us. Thank you for the wood that trees give us so that we can cook our food. We ask for your forgiveness where we have taken more than we should have. But we are grateful that despite our wrongdoing, you still care for us, you forgive us and give us new hope. Thank you for Jesus Christ who is the living seedling coming out of tree stumps to bring us new hope. Please bless the work of our hands as we want to spread this message of hope with our neighbors by planting trees and restoring this place where you have placed us. Thank you, Lord, for your provision, for your blessing and for your love towards every single one of us.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has positively changed anything in their daily lives

PRACTICAL ACTIVITY

- Starting a tree nursery (Appendix IV) (Beforehand a plot within Nyakinyua was bought already which will be used as a Farming God's Way presentation plot as well as a tree nursery)

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili
- Seedlings
- Space
- Shovel
- Bucket with mulch
- Buckets with water

SESSION 6 – GOD’S WILDLIFE

GOALS

- Recognizing wildlife as God’s creation
- Realizing that everything on earth is interdependent because God created it this way and when he was done, he said that everything together is VERY GOOD
- Creating awe towards wildlife as God’s masterpieces
- Creating interest in wildlife through Game Drives

OBJECTIVES

As a result, the congregation will:

- Be in awe of wildlife and its creator with its unique characteristics
- Appreciate wildlife
- Identify with struggles of wildlife
- Want to take steps to restore God’s intention for wildlife

SERMONS + SCRIPTURE

- Long time ago, God has created everything on earth and in the universe; part of that were all the wild animals and birds and fish
- Genesis 1:20-24

²⁰ And God said, "Let the water teem with living creatures, and let birds fly above the earth across the vault of the sky." ²¹ So God created the great creatures of the sea and every living thing with which the water teems and that moves about in it, according to their kinds, and every winged bird according to its kind. And God saw that it was good. ²² God blessed them and said, "Be fruitful and increase in number and fill the water in the seas, and let the birds increase on the earth." ²³ And there was evening, and there was morning—the fifth day.

²⁴ And God said, "Let the land produce living creatures according to their kinds: the livestock, the creatures that move along the ground, and the wild animals, each according to its kind." And it was so. ²⁵ God made the wild animals according to their kinds, the livestock according to their kinds, and all the creatures that move along the ground according to their kinds. And God saw that it was good.

- God created all those beings and when he was done, he looked at them and said that they were good
- And when he finished all his work on the sixth day, he looked at everything and how it was working together, how the clouds watered the trees, the trees fed the animals, and the animals maintained the landscape in an incredible balance, and he saw that it was VERY GOOD

- He has put everything in a specific natural order, and it worked, it was very good!
- If we look around ourselves, if we pause and watch the birds over us, the ants in the ground or even the baboons, all of them receive new life from God every morning
- God wants and loves them, and he has given them their purpose too
- God has provided food for all of them, but we often become greedy and take more than we need, we take what God has planned for them and take away their food with which they want to feed their own children, they struggle to feed their families just as us
- But if we follow his calling and restore the habitat that he has appointed for them, they will go back there and eat the wild fruits they used to do
- For if we look at them, whatever they do, they praise God in their very own ways
- Psalm 148

*⁷ Praise the Lord from the earth, you great sea creatures and all ocean depths,
⁸ lightning and hail, snow and clouds, stormy winds that do his bidding,
⁹ you mountains and all hills, fruit trees and all cedars,
¹⁰ wild animals and all cattle, small creatures and flying birds,*

- Psalm 150

Let everything that has breath praise the LORD.

Praise the LORD.

- Everything on earth is praising God in their own ways
- And God loves every living being on the earth and he cares for the wild animals
- In fact, he has given them certain tasks to fulfill to keep the ecosystem in balance, if one species is removed, it has consequences on the ecosystem and so God's creation gets out of balance and we can feel it
- The way birds and baboons spread seeds so that new trees can grow, those trees give us fruits, shade and a good soil so that we can also have a better harvest
- Though this balance is disturbed, God still cares for all of us and gives life to all like it is said in Psalm 36:6

⁶ Your righteousness is like the highest mountains, your justice like the great deep. You, Lord, preserve both people and animals.

- God is not only interested in us, he preserves people and animals
- He cares for the baboons too and the buffaloes, hippos, hyaenas and leopards
- Just like it is written here, how much he cares and provides for all his creatures:

- Psalm 104:27-28

²⁷ All creatures look to you to give them their food at the proper time.

²⁸ When you give it to them, they gather it up; when you open your hand, they are satisfied with good things.

- He has made all of them, each in their very own ways, and he thinks that everything he did including all wild animals and birds and fish are very good
- Throughout the bible we can see that God does not only care about us humans, but about his creatures, wildlife, too
- Do you remember the scripture from the beginning when we saw that God wants to make something new when he wants to speak to his people in the desert/wilderness
- Hosea 2:14-20

¹⁴ "Therefore I am now going to allure her; I will lead her into the wilderness and speak tenderly to her.

¹⁵ There I will give her back her vineyards, and will make the Valley of Achor a door of hope. There she will respond as in the days of her youth, as in the day she came up out of Egypt.

- The scripture continues where it is said that God wants to make a covenant with everyone and that wildlife will not be chased away, they will be a part of his holy covenant

¹⁸ In that day I will make a covenant for them with the beasts of the field, the birds in the sky and the creatures that move along the ground.

- Just as he provided everything from the beginning of time for wildlife and cared for them, he renewed this covenant several times and saved all wildlife before the flood in Genesis 7:1-3

² Take with you seven pairs of every kind of clean animal, a male and its mate, and one pair of every kind of unclean animal, a male and its mate, ³ and also seven pairs of every kind of bird, male and female, to keep their various kinds alive throughout the earth.

- God has a plan to make something new and he wants everything he has created, everything that he takes care of every day, even the animals that we often see as unclean, to be part of that

PRAYER

Dear Lord,

We thank you so much today for creating every living thing on earth uniquely the way you think was good. Thank you for putting everything in a balance and making it very good! Please forgive us for bringing your creation out of balance and treating your wild animals against your will. We pray that you move in that area, we pray that you equip us to prevent conflicts and to restore their habitat where it has been lost. Lord, help us to see wildlife through your eyes. Help us to appreciate it. And protect our livestock and crops so that we do not go to bed without a meal. Provide our daily bread. We trust you.

AMEN

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has positively changed anything in their daily lives

PRACTICAL ACTIVITY

- Learning about chili-fences and how to plant chilis
- Game Drive (Guiding info in Appendix V)
- Photography

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili
- Chili plants
- Game Drive Vehicle
- Cameras
- Binoculars
- Bird, mammal, and tree identification books

SESSION 7 – GOD’S FARMING

GOALS

- Recognizing God’s call to work (farm) the land in a sustainable way
- Realizing the origin of hard work
- Learning about the benefits of Farming God’s Way
- Recognizing own worth and that every individual is chosen by God

OBJECTIVES

As a result, the congregation will:

- Appreciate the farming method Farming God’s Way and apply it
- Farm more sustainably
- Want to become part of God’s hope for Nyakinyua
- Know how to establish a well-watered garden
- Spread their knowledge with neighbors and family

SERMONS + SCRIPTURE

- Like we learned some weeks ago, God has called us to work his beautiful creation (like through farming) but he also wants us to take care of it including everything in it (like the trees around us, the wild animals that cause problems sometimes, his soil) because he said that it was very good
- Genesis 2:15

¹⁵ The Lord God took the man and put him in the Garden of Eden to work it and take care of it.

- But because of sin and all the things that we do today, that are not correct, God makes the work of our hands difficult and exhausting
- Genesis 3:17-19

⁷ To Adam he said, "Because you listened to your wife and ate fruit from the tree about which I commanded you, 'You must not eat from it,' "Cursed is the ground because of you; through painful toil you will eat food from it all the days of your life. ¹⁸ It will produce thorns and thistles for you, and you will eat the plants of the field. ¹⁹ By the sweat of your brow you will eat your food until you return to the ground, since from it you were taken; for dust you are and to dust you will return."

- But we have a hope in God and Jesus Christ because he promised to restore the land like we saw some weeks ago when we talked about how God turns our struggles into something beautiful

- Isaiah 43:19

¹⁹ See, I am doing a new thing! Now it springs up; do you not perceive it? I am making a way in the wilderness and streams in the wasteland.

- We can be part of that and spread his wonderful message to everyone around us
- It starts by our daily lives and the way we interact with his creation
- God calls us to be his ambassadors, to show others the difference he makes
- Isaiah 58:9-11

***⁹ Then you will call, and the LORD will answer; you will cry for help, and he will say: Here am I. "If you do away with the yoke of oppression, with the pointing finger and malicious talk,
¹⁰ and if you spend yourselves in behalf of the hungry and satisfy the needs of the oppressed, then your light will rise in the darkness, and your night will become like the noonday.***

¹¹ The LORD will guide you always; he will satisfy your needs in a sun-scorched land and will strengthen your frame. You will be like a well-watered garden, like a spring whose waters never fail.

- With our actions we can show God's love to the people and all of his creation around us
- He wants us to be a well-watered garden, like an oasis in the desert, a place where people like coming to and find hope
- We can BE well-watered gardens, something different for other people to look at and see God's goodness but we can also ESTABLISH well-watered gardens and that is what we are going to do together to restore the land and increase the harvest
- This well-watered garden is like a light on a hill (Matthew 5:14-16)

¹⁴ "You are the light of the world. A town built on a hill cannot be hidden. ¹⁵ Neither do people light a lamp and put it under a bowl. Instead, they put it on its stand, and it gives light to everyone in the house. ¹⁶ In the same way, let your light shine before others, that they may see your good deeds and glorify your Father in heaven.

- You are chosen by God and put into exactly this place to be his light, restore the land, and renew the balance between humans, wildlife, and habitats

PRAYER

Dear God,

We thank you for this new day today and that we can gather here. Thank you for the past weeks where we could explore your beautiful creation together. Thank you for Nyakinyua and for putting us here with a purpose. We thank you that despite the struggles, you are still there, you still move, and you want miracles to happen. Thank you that you want to make something new here and that you have given us hands and feet so that we can become part of your plan. We are grateful for all the responsibility that you have given us by calling us to take care of your creation. Please forgive us where we have misused the things you have blessed us with. Help us to do your will. Equip us to become well-watered gardens.

To be a living oasis for people in need. But also help us establishing new habitats after your divine design to give wildlife a home and allow us to farm peacefully. Thank you for the gift of farming. We want to honor you in everything that we do. Let our farming be an act of praise towards you our Lord.

Amen

TESTIMONY

- Time for testimonies to share with congregation what God has done in life, where he moved and made miracles happen
- A time to renew faith, built trust in God and grow expectation in him to show up
- Reflecting on last week's sermon and if that has changed anything in their daily lives

PRACTICAL ACTIVITY

- Establishing a Farming God's Way demonstration plot (A Well-Watered Garden) based on Guidelines in *Farming God's Way Trainer's Reference Guide* by Dryden (2009) (Appendix VI) (Beforehand a plot within Nyakinyua was bought already which will be used as a Farming God's Way presentation plot as well as a tree nursery)

REQUIRED MATERIAL

- Bibles in Kikuyu/ Kiswahili
- Space
- Shovel
- Seeds
- Teren rope
- Fence
- Measuring sticks
- Mulch
- Water

- Farming hoe
- Manure/ compost
- Wood ash/ agricultural lime
- Measuring tape (or something similar)

APPENDIX I – FIRELESS COOKER ACTIVITY



The fireless cooker workshop will be conducted during the week based on (Vivien 2/2/2022) and (Care of Creation Kenya), offering material and practical help on how to build a fireless cooker. Because the first workshop will very likely have only few people, it will be offered again after the first people have participated in it and seen and enjoyed the benefits.

BENEFITS

- Fireless cookers are simple insulated baskets that use the heat of food being cooked and facilitate the ongoing cooking process or keep the food inside warm
- Reduced costs
- Easy access
- Saving time
- Improving health by avoiding open fire in the house and preventing respiratory diseases
- Use of less firewood
- Food does not have to be reheated when the man of the family comes home later

MAKING A FIRELESS COOKER

- Drawing a circle on the cloth as big as the bottom of the basket
- Cutting out the round piece of cloth
- Putting the round piece of cloth in the bottom of the basket
- Sewing one half of the cloth to the bottom of the basket
- Putting insulating material in the bottom, sewing it to the bottom more, adding more insulating material and sewing the rest of the cloth to the bottom
- Cutting a piece of cloth that goes inside the walls of the basket (making it a bit longer and wider than the walls)
- Sewing the ends of the cloth together to have one round cloth that can go on the walls of the basket
- Turning cloth inside out and putting it in basket
- Sewing the bottom edge of the cloth to the bottom of the basket
- Stuff insulating material between basket walls and cloth all the way to the top
- Sewing the top of the cloth together with the top of the basket when it is stuffed with enough insulating material
- Insulated walls should be as thick as the width of a hand
- To make a cushion for the lid, drawing two circles the size of the top of the basket on a cloth and cutting the two circles
- Placing them on top of each other
- Sewing two circles together and leaving a small gap unsewn
- Turning inside out

- Staffing the cushion with insulating material
- Sewing the hole, staffing more insulating material inside and closing the hole completely
- Putting cushion on the basket
- Fireless cooker is ready for use

FIRELESS COOKER USAGE

- A meal is boiled or cooked the normal way
- The cooking pot is put into the fireless cooker
- Taking the food out of the fireless cooker after maximum 6h to avoid bacteria growth
- Placing pot in fireless cooker in vertical position
- If the fireless cooker gets wet, placing it outside to dry
- If insulation smells badly, replacing by new one
- Time of preparation for different meals:

<i>Time of preparation</i>	<i>Boiling time on fire (in minutes)</i>	<i>Time in the fireless cooker (in minutes)</i>	<i>Comments to fasten the cooking</i>
<i>Ugali</i>	5	20	
<i>Rice</i>	5	30	
<i>Irish potatoes, plantains, bananas</i>	5	30	Cut in small pieces
<i>Green grams</i>	15	60-120	Let them soak in water over night
<i>Dry beans</i>	45	4-6	Let them soak in water over night
<i>Beef stew</i>	10-15	60-120	
<i>Eggs</i>	3	10	
<i>Arrowroots, sweet potatoes</i>	5	40	
<i>Kienyeji chicken</i>	45	180	

APPENDIX II – BEEKEEPING ACTIVITY



The beekeeping workshop will be conducted during the week, offering knowledge and experiences as well as practical assistance for the implementation for anyone interested based on (Russel 2/2/2022). Because the first workshop will very likely have only few people, it will be offered again after the first people have participated in it, seen and enjoyed the benefits. During the workshop, the different benefits and possible products will be presented as well as the

unused potential of honey production in Kenya. The participants will also get a brief overview on the unique God-given structure of a bee colony. Different hives including the Langstroth hive, and the Kenya top-bar hive (KTBH) will be presented and one of each will be placed on the purchased land permanently and the responsibility increasingly given to interested community members.

ADVANTAGES OF BEEKEEPING

- Requires little land
- Low initial investment
- Not competition for resources
- Not labor intensive
- Encourages environmental conservation
- Improve biodiversity
- Increase harvest
- Treatment of ailments through bee-products
- Stable source of income even in difficult conditions
- Quality honey (pure honey without mixing it with anything) does not go bad
- Honey is good energy source and has medical properties
- Honey has high market value

GOD'S BEES

- Bees are social insects and live in an organized community (caste) where everyone has their task and purpose
- Colonies of 10,000-60,000 members
- Have 3 different groups: queen, workers and drones
- Queen is the biggest bee and the mother of all thousands of bees in one community
 - She lays up to 2000 eggs a day
 - Lives to up to 5 years
- Worker bee are females in the community
 - They don't mate but do all the tasks depending on their age (nursing young, guardian, cleaner, foraging)
 - Have a sting and defend their nest with it

- But when they defend their family by stinging, they die, self-sacrifice for survival of the family
- Live few weeks to six months depending on season and task
- Drones are male bees
 - Don't have a sting and don't do any task
 - They mate with the queen in flight and die shortly after that
- One honeybee visits between 50-1000 flowers in a trip
- God has given them the ability to make honey so that they can survive cold winters or droughts when there are no flowers
- He provides food for their survival by giving them skills

BEEHIVE

- There are different beehive types
 - Pot hives or clay pots
 - Log hives (made of hollow tree)
 - Basket hive (from woven sticks and smeared with mud)
 - Kenya top-bar hive (KTBH)
 - Langstroth hive
- When choosing a beehive and building it, some factors are important
 - Dimensions (if wrong dimensions the bees don't lay eggs in it)
 - Wood quality (to prevent diseases)
 - Paint type
 - Queen excluder (to have bees producing honey and not only bees)

BEEHIVE LOCATION

- Once the bee community has entered the hive, it is very difficult and not suggested to change locations
- They always come back to the exact spot of the hive
- Away from human and animal interference
- Safe from strong direct sunlight, wind and theft
- Away from swamp or smelly areas
- Close to a good source of nectar
- Close to water source
- Hang the hive (or place on stand) that are stable to prevent pests from getting into hives
- Keep clean, trim branches and cut grass just before the entrance to avoid pests

BEE MANAGEMENT

- Supplement sources of nectar by cultivating crops like bananas, sunflowers, mangoes
- Remove old combs from the hive to stop spread of wax moth damage
- Inspect hives regularly (once a week to once a month)
- Provide permanent source of water
- Observe bees, are they collecting pollen?

HANDLING BEES

- To handle bees, some equipment is required for safe and effective beekeeping
 - Bee suit outfit
 - Smoker
 - Bee brush
 - Hive tool/ strong knife
 - Harvesting bucket
- Avoid the smell of alcohol
- Avoid strong soaps, perfumes
- Handle bees in the evening before it gets dark
- Be calm
- Always wear the complete suit (no dark colors)

APPENDIX III – SOIL EXERCISES

SOIL EROSION EXERCISE

- Looking at how much soil and how much water is lost on conventional and FGW farm when it rains?
- Place the two vertical halves of a 2l bottle next to each other, the bottom being slightly elevated to have the bottle neck face down
- One of the halves is filled with soil only (conventional soil, ploughed and loose), the other one with same soil and covered with God's blanket (mulch)
- Looking at how much soil and how much water is lost on conventional and FGW farm when it rains?
- Filling the half 2l bottle with holes in the bottom with water and let it rain on the conventional soil while someone is holding one half 2l bottle under the bottle neck to catch all the water that is running down the soil through bottle neck
- Repeat the same activity for the second soil with mulch on top
- Comparing the soil and water amount in both bottle halves with each other
- The conventional soil is expected to lose around 3x more water than mulched soil and conventional soil losing high amount of soil compared to little loss in mulched soil

WATER RETENTION EXERCISE

- Finding out which soil, ploughed or not, can retain more water?
- Having a bucket of water next to an empty bucket
- Putting sock with cut sponge pieces into bucket with water and squeeze air out to have it soak as much water was possible
- Once it is fully soaked, transfer to the empty bucket and squeeze out all the water
- When the sponge is dry, fill the water from the bucket into one half 2l bottle
- Repeat the same for the whole sponge and fill the water in the second half 2l bottle
- Compare the amount of water in the two bottles
- It is expected that the whole sponge can retain much more water which shows that an unploughed soil can retain more rainwater than ploughed soil

APPENDIX IV – CREATING A TREE NURSERY



The tree nursery will be established on the piece of land that was bought for the Farming God's Way plot and the tree nursery before implementation of the program. Experienced staff from Eden Thriving will assist the congregation based on *Good Tree Nursery Practices* by Wightman (2013). However, the responsibility for taking care of the tree nursery will be increasingly with the congregation. By planting trees and sharing them among church members and

possibly selling them within Nyakinyua, equips the members with a self-organized way to restoring the land, acquiring funds, avoiding human-wildlife conflicts through planting *living walls* and creating a strengthening bond between the community and their land. The introductory workshop of starting a tree nursery will be held during the week after the church service about God's trees. It will include an introduction to native trees, that God has intended for this particular area, rearing seedlings in the nursery, planting trees in suitable locations and their aftercare.

FIRST STEPS FOR CREATING A TREE NURSERY

- Choose parent trees in advance and ensure sufficient seed collection from them
- Not only choose any parent tree close to tree nursery but for good quality trees
- Select seeds from at least 30 trees to start with
- Sow seed as soon as possible after harvest
- Control water, light and shade during growth
- Sow seed in container
- Include species of *Scutia* and *Carissa* for *living walls*
- Include native trees and fruit trees to restore forest and wildlife habitat
- Improve substrate with compost
- Start compost before you need it
- Water the plants in early mornings or late afternoons
- Regularly check water status
- Water substrate and not the leaves
- Reduce the water the seedlings receive 4 weeks before planting them out
- Water well the day before transporting and planting out
- Cover seedlings with plastic sheet to avoid drying out on transport
- Using spray muzzle to water bigger soil surface with less pressure
- Using trees or shade material to provide shade for seedlings (and maintain them)
- Add shade if otherwise sun is on plant most of the day

- Reduce shade that the seedlings get while they grow older
- Observe how plants react to changes
- Monitor leaves for possible nutrient deficiencies
- If using fertilizers, knowing which has what nutrients and dissolving granular fertilizer in water

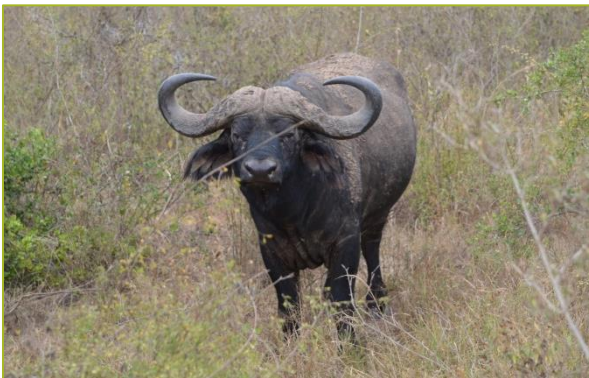
APPENDIX V – RECOMMENDATIONS FOR GAME DRIVES



The recommendations include general knowledge about the species involved in conflicts in Nyakinyua as well as some facts that can be combined with a Christian understanding of nature including wildlife. All information is based on the books *Game Ranger in Your Backpack* by Emmett and Patrick (2012), *Tracker Manual* by van den Heever et al. (2017), *Beat about the Bush. Exploring the Wild – The comprehensive Guide* by Carnaby (2017) and *The Behavior Guide to African*

Mammals by Estes (2012) and complimented with a Christian worldview assuming that all wildlife was created by God in their unique ways. Additionally to the mentioned species, it is recommended to include knowledge and awe-inspiring facts about other species and interdependencies that the group comes across during their guided Game Drive.

BUFFALOES *SYNCERUS CAFFER*



Size: 1.4-1.7 m

Weight: male 800-1000 kg; female 570 - 750 kg

Lifespan: up to 23 years

Gestation: 11-11 ½ months

Food: bulk-grazers; mostly long grass (occasional browsing during droughts)

- Buffaloes are family animals, they like staying close to their family in herds
- Just as God created us to live in family and community and help each other out, he has also created buffaloes and many other animals to live in family groups to make sure everyone is doing well
- The mother has always only one calf at a time so that they take very special care of it to make sure it survives and is safe
- When children are around 3 years old, they slowly leave the mother. The boys start getting together to form bachelor herds and the girls form subgroups with other girls within the herd
- The boys move away from the herd and grow up with their friends
- With 5 years they are old enough to come back to the herd and mate but mostly, they are not dominant yet so that most of them start mating with 7-8 years
- They act aggressively when they or their family members are in danger, or they face something unknown that might be dangerous
- In those situations, they also give warning calls and the mothers and calves are put in the center of the herd so that they can be protected
- When they run, they can reach up to 60 km/h, so they are much faster than humans

- Buffaloes have very good senses, especially smell. That's why they often walk with their noses up to smell what is going on around them
- They also communicate through smell and with vocal communication, maybe you have heard them calling and grunting before?
- Buffaloes don't have territories but within a herd, they have ranks
- Highest ranked buffaloes are males, and they often walk in front of the herd to get the best grass before it is trampled
- Buffaloes don't like the heat very much so that they mostly eat in the mornings and evenings when the sun is not as hot
- Their skin is very sensitive so that they have to put on mud that works like sunscreen, so they wallow in mud to cover their skin
- During the day they often rest in the shade but when God created them, he thought of that too and made them ruminants, just as cows, so that they get grass in the mornings, but they chew on it and get all the nutrients out during the day
- In droughts herds are forced to separate because otherwise they don't find enough food and they hope to see the whole family alive again when they get back together in rain season
- If the herd separates, they have already organized a pathfinder who takes the lead of a subherd until the whole herd is united again
- Even here, even in the struggles and food shortage, God has provided a way for the buffaloes to survive
- The fewer food is available, the longer is the daily walk, in search of water and food (more exhausted and stressed in droughts)
- Just like us, the buffaloes are highly dependent on water and food and get in a bad mood when there is not enough for themselves and their young ones
- But old buffalo males (10 years or older) are in an especially bad mood, they often have painful skin problems and wounds which is why they wear lots of mud and the younger bulls have taken over as dominant bulls so that the old bulls can't mate with the females anymore and move around lonely and frustrated
- But when the rains return, buffaloes perceive it as a huge blessing too, their families can come back together and they start mating and having calves again
- During that time, they gain back their strength and sometimes males start fighting over a woman, does that sound familiar?
- When they feed, they slowly move forward and graze, especially the long grass that is avoided by other species, and get as much grass as possible that they can chew when they lay down to rest
- On the way, they leave droppings behind in piles and trample the ground, that is nourishing the soil and allows more plants to grow, so God has already taken care of fertilizing the ground
- However, if their habitat gets too small, their droppings and the trampled ground suffocate the soil

BABOONS *PAPIO CYNOCEPHALUS*



Size (with tail): male 1.5m; female 1.1m

Weight: male 30-50kg; female 15kg

Lifespan: 20-30 years

Gestation: 6 months

Food: omnivores (fruits, grass, seeds, bulbs, roots, bark, sap, mushrooms, aquatic plants, pods, invertebrates, small mammals, birds)

- Baboons are very social and intelligent animals
- They have 3 main activities during the day, finding enough food and water to eat and feed their children, playing and grooming each other to strengthen friendships and family bonds and to avoid predators
- Even here God has made the individuals dependent on each other, they live and thrive in community
- Baboons eat almost everything, but if they find something nice like fruits, they stuff as much of it in their cheeks and go back to a safe place to eat it and to share it with friends and family
- A mother only has one baby at a time and carries around with her for 5 weeks on her belly
- After 5 weeks the baby is carried around on her back
- As long as the mother or any other baboon carries a baby, they are not fought by others
- Generally, fighting is an important part in the group to establish a hierarchy
- The males show their dominance by showing their teeth but sometimes fights for ranks escalate in fights
- In each troop there is a group of dominant males who defend the females and young ones
- Mostly the males defend the females who groom him regularly and their babies
- When the defending was not successful and a baby was killed or died because of lack of food, the mother often carries the baby around for days, mourning the loss and defending it against other baboons
- The ranks between males are fought for but the ranks between females are inherited
- Females stay in the same troop their entire lives but males often change troops, looking for a troop where he can become a dominant male and mate with females
- Just as God provided houses and the skill to build them for us, he provided the trees as resting place for the baboons
- At night they climb up a big tree and place the young ones most up to protect them from predators like leopards
- If they detect danger in the tree, they call loud warning calls to alarm the family and urinate and defecate on the danger on the ground
- Baboons have such an active social life where they sit together a lot, that their buttocks are like cushions to make the sitting more comfortable
- Because they are so social, they also communicate a lot; during the time of foraging, they keep contact by an occasional ba-hoo by dominant males

- That call changes when they detect anger, and he is signaling the troop to flee
- Females often have 1-3 favorite males to mate with and she mates with all of them up to 100 times when she is in heat
- Because males can't be sure who the father is, they all play godfathers to the baby, carrying, grooming, defending, and feeding it
- In the case that the mother dies, God has provided a way in this hierarchy that the young ones survive, are cared for and protected by the godfathers
- Survival is often threatened by lack of food
- During droughts baboons must forage much longer and their foraging times are much longer, leaving less time for social interactions with the troop so that the entire group is more easily stressed during dry season
- When baboons forage through tree canopies, often followed on the ground by antelopes or even civet who benefit from warning calls and from falling fruits
- By looking for food, a necessity for every animal, God has made a way to provide for his other loved creatures the food that they need even if they can't reach it themselves
- Baboons are most cautious and stressed when moving in thick grasses without a refuge and the possibility of a predator close by or when going to water
- As soon as a baboon gives alarm call, the dominant males move in that direction and if necessary, even females and younger males help defending the troop

LEOPARDS *PANTHERA PARDUS*



Size (at shoulder): male 60-80 cm; female 60-70 cm

Weight: male 35-90kg; female 30-60kg

Lifespan: 11-15 years

Gestation: 100 days

Food: antelopes, mice, reptiles, fish, small carnivores, occasionally scavenges

- Leopards are solitary and have their own territories
- Females defend their territories against females and males against males, but male and female territories can overlap
- Their territories are marked through urinating and scent- and scratch marks on trees
- Females often live with their cubs until they are old enough to find their own territories
- Because they are alone or even have to feed offspring, finding food is especially challenging for leopards
- That's why females choose their territories based on the availability of food to make sure that her children get enough to eat, males select their territory based on the availability of females to have enough children
- Leopards are specialized in stalking their prey and attacking them from a short distance, counting on surprising them, they often stalk up to 5m close to their prey before attacking and barely chase after prey
- Out of their solitary life, they are not very selective but very opportunistic and eat a wide range of other animals mostly, but not only during the night, and they also scavenge where possible
- Leopards are very elusive and secretive, having perfected the art of hiding and stalking to save energy as much as possible
- That's why they also have excellent senses
- To save more energy, they spend most of the daytime in a tree resting
- God has been very creative by drawing the pattern on the leopard's fur which allows leopards to perfectly camouflage in their environment
- He also made every individual pattern unique, just like fingerprints
- They also have whiskers which help them determining if they can pass through a gap or if it is too small for their bodies which is important for moving around at night
- 1-3 Cubs are born at once, each weighing 400-600g at birth
- They are completely vulnerable and can only open their eyes after 6-10 days
- This vulnerability and dependency on the mother strengthen the bond between mother and cubs but also puts them more at risk
- The female leopards are excellent mothers, being highly caring and very protective of their young
- The mother hides the cubs while she goes hunting, but highly stressed of them being alive when she gets back

- That's why she changes the hiding place every now and again to make sure her cubs are safe and undetected
- But often the cubs are detected by other predators so that 50% of the leopard cubs die
- The mother constantly looks out for their young and teaches them skills to survive and hunt for themselves; with 9 months they start learning hunting and with 11 months, they might have their first own kill
- Even then the mother further protects the young until they are 18 months old and she even tolerates other young ones to hunt in her territory before they are old enough to establish their own territory
- At 22 months, cubs become independent and start looking for own territory
- But the family bond is stays strong and even after years, a reunion of a mother and her offspring is friendly and welcoming
- Even when the young start having an own territory, they are occasionally seen hunting together or the mother catching prey for their offspring when they were still struggling with hunting
- To keep the relationship with family members going, to claim territory and to contact a mate, leopards have long-distance communication through different calls
- But they also communicate through scent marking on trees and through visual signs like the movement of the white tip of their tails
- To avoid other groups of predators to take over their prey, leopards store their prey in trees
- To stand a chance of survival against big groups of lions, God has equipped leopards with muscles so strong that they can carry prey as heavy as themselves to pull the prey up the trees
- And for the same reason they are also very flexible and easily adapt to their environment
- Consequently, they can feed on other animals if their preferred diet of antelopes and small mammals is not available

HYAENAS CROCUTA CROCUTA



Size (at shoulder): 85cm

Weight: male 60kg; female 70-80kg

Lifespan: 20 years

Gestation: 16 weeks

Food: young large antelopes, generally mammals, birds, fish, reptiles, vegetable matter, carrion, garbage

- Hyaenas are very good hunters and opportunistic scavengers
- Unlike any other predator, they eat almost all parts of the prey including bones and prey
- God created them with the extremely important task to clean the environment and prevent diseases
- Because they eat bones, their droppings are white and full of calcium
- Sometimes the leopard tortoise eats the dropping to get the high calcium content for the bony shells
- That shows how much God has created hyaenas, their prey, the tortoise and everything else around them in a sensitive balance where everyone has their purpose and everything is used
- When the natural prey that God has intended for them becomes rarer, they also look for other food, sometimes walking up to 70km per night
- Hyaenas are territorial and live in clans that are (different to many others) dominated by a female
- Generally, are all females more dominant than the males
- The hyaena life mostly happens around the communal den of the clan which is often an old aardvark or warthog hole and tunnel system
- But even though they live together, they don't have a strong community, and everyone has to take care of themselves and their offspring (high competition and no help if needed during the hunt)
- Because the females are dominant, mating takes very long with the submissive male often being too shy to come close and mostly being bitten by the female just after mating
- The births of hyaenas are often extremely difficult and painful, especially the first time because of a very long birth canal
- Females give birth to 1-4 (mostly 2) cubs at a time
- The cubs are born with their eyes open but blind and weigh 1 ½ kg
- After birth the cubs drink milk from the mother for around 1 ½ years
- While the clan is foraging or hunting, the cubs spend their time in the tunnels within the den and only come out to drink milk until they are 1 ½ years old
- By doing that, God has provided a way for hyaenas to feed their young relatively safe and avoid bringing meat to the den which would get the attention of other predators
- But they still change their dens every few months
- When the food is scarce, the adults often walk long distances to get food for their babies, leaving the cubs behind for up to 5 days so that many cubs die

- Of all mammals hyaenas have the richest milk
- Female inherit their rank in the clan from the mother but males fight for it so that sons of the most dominant female who gets the most and best meat and produces the richest milk have also higher chances of being higher ranked males
- Hyaenas are also blessed with excellent senses that enable them to hunt successfully and also recognize a struggling individual in a herd of prey even at a distance at night
- They sometimes hunt together but are also able to hunt alone, but are often joined by more hyaenas during the hunt
- Their hunting strategy is mostly to chase a herd, identify weak prey and run them to exhaustion to eliminate the weak and sick animals
- That is a way how diseases are naturally avoided
- When they have a kill, there is a high competition for food but they don't necessarily fight for it but compete in eating as much and as fast as possible
- So that they often climb underneath and on top of each other to reach the kill
- Because hyaenas are territorial, they patrol and mark the boundaries
- There is a bond between mothers and daughters who stay in the same clan and territory but males move to other clans when they are around 2 years old
- They have a very low position in the clan, not being allowed closed to the cubs, having to participate in the hunts and often being bullied by the young ones
- Hyaenas are very vocal animals, they have 11-14 different calls for communication that are commonly used and express greetings between close relatives, excitement over a kill, impatience while waiting to get to a kill, threat to bite an attacker, readiness to defend their offspring, submissiveness
- Raising their hair on the back and the tail to appear bigger is often a sign of competition against other hyaenas or lions

HIPPOS *HIPPOPOTAMUS AMPHIBIUS*



Size (at shoulder): 1.4-1.65m

Weight: male 1600-3200kg; female 1400kg

Lifespan: 35-40 years

Gestation: 8 months

Food: unselective grazers

- Hippos live in a harem, one male with several females and their offspring
- The male is territorial and therefore defends his females against other males
- To demonstrate their dominance, males open their mouths wide to show their big tusks
- While those tusks are also used to fight, two competing males often scatter dung and urine with their tails on each other to avoid the often-deadly fights
- The males are very grumpy and often aggressive so that the females are extremely protective of their calves and don't let anyone come close
- In the water, hippos are gregarious, are close together and enjoy the community but as soon as they are foraging on land, they are more solitary and aggressive towards each other
- Most of the time, hippos spend in water where they also save a lot of energy and have to eat less than expected
- Because God has created them for this specific habitat, the eyes, nostrils and ears are on one line on the top of the head, enabling the hippos to stay with their whole bodies under water while seeing, hearing, smelling and breathing
- If they go under water, they can close ears and nostrils to prevent water from getting in
- They can stay under the water like that for up to 6 minutes before they have to come up to breathe again
- Most of that time, they don't swim but walk and jump on the bottom of waterbodies
- Hippos mostly come out at night to feed on grasses or in the early morning hours to heat up
- But their home is the water so that they immediately run back to water when they feel threatened
- Though they look clumsy on land, they can run up to 36 km/h
- They are also created with a very sensitive and unique skin so that they can easily dehydrate, or the skin dries out and cracks
- That makes them highly water dependent and prevents them from moving too far from water
- To protect the skin from the sun, God has created a unique red fluid instead of sweating which protects the skin against sunburn and water loss
- That is especially useful during droughts when some waterbodies dry up
- Though breeding is not seasonal, most calves are conceived during dry seasons to have the births in rain season and ensure enough food supply for the offspring
- The males smell for females that are in heat and then chase them in the water, where they mate

- Before they give birth, females are especially aggressive and isolate from the rest of the herd to protect the calf from the aggressive bull that often attacks and kills newborn calves
- The calves are mostly born in shallow water and weigh 25-55kg, where they can stand and there they learn to swim within minutes
- They drink the milk under water while closing nostrils and ears
- After 10-14 days the mother rejoins the group with the calf but often fights the bull if he comes too close
- Though there are no strong bonds between hippos, there are strong ties for the first years between the mother and the calf
- When the calves are 1 month old, they start grazing
- With 8 months, they are weaned
- Because they lose heat so much quicker than adults, they often bask on the mothers back
- But they are also more threatened by dehydration so that the mothers caringly drip saliva on the calves that are exposed to sun



The workshop for Farming God’s Way (FGW) stretches over several days. During the workshop the participants learn different skills and farming methods from experienced Eden Thriving staff. This will be conducted at the FGW demonstration plot which will be established at the same location as the tree nursery. As mentioned during the sermon, the FGW demonstration plot acts as a well-watered garden, a place where God’s goodness is shown,

and the effectiveness of the new farming methods presented to community members who are invited to adapt the methods in their own fields. Based on the book *Farming God’s Way Trainer’s Reference Guide* by Dryden (2009) and the workshops conducted at Creation Stewards International in Kijabe the following topics will be covered:

- Biblical basis for agricultural stewardship based on Sorley (2009)
- Establishing a Well-watered garden
- Making a Teren rope
- Preparing the field
- Compost making
- Soil restoration
- Field-Implementation (Tools, inputs, seeds, laying out the field, planting, permanent markers, rotation & alternative crops, extension and discipleship)
- Pest- and disease management

Additionally to those topics concerning Farming God’s Way, the congregation will also be encouraged to plant chili plants to produce their own chili paste against baboons raiding their crop fields.

APPENDIX VII – IDEAS FOR ACTION THAT THIS PROGRAM IS BASED ON
(FOOTNOTES IN THE RESULTS SECTION)

1. It is therefore crucial to create a feeling of being valued and heard among local communities.
2. This shows the importance of creating positive encounters and experiences with wildlife which is otherwise mostly negatively associated.
3. Incorporate chili fences with bells.
4. Incorporate living walls.
5. It is necessary to enhance ecosystem connectivity, community engagement and conservation benefits for community.
6. Considering local cultures and traditions that influence daily lives.
7. It is helpful to find out belief systems and social norms in place to build upon them rather than starting anew.
8. Taking people's beliefs seriously is crucial even if they disagree with the researcher's beliefs.
9. Suggested to lower the threshold for people by providing alternatives to their current, negative behavior.
10. Aiming to create direct experiences that oppose the current negative attitudes.
11. Recommended that the belief system that gives identity is kept and broadened.
12. Empowering and encouraging people so that they gain self-confidence and feel able to implement a certain behavior.
13. Helpful to combine sharing knowledge with practical experiences.
14. Identifying social leaders of a society or community who can help norms to emerge.
15. Choose a social leader who imparts knowledge on community.
16. Starting topics of program with creation aspect that is not heavily influenced by negative attitudes.
17. Creating experiences and positive memories.
18. Exposing people to awe-inspiring situations.
19. Creating space where sense of awe towards nature and its creator can be developed.
20. Motivating actions out of awe and appreciation rather than desperation and bitterness.
21. Having approach of telling stories, making biblical stories relatable in daily lives.
22. Considering implementation of program by accepted local church leaders.
23. Important not to neglect human concerns like skill teaching or empowerment.
24. Creating a sense of meaning.
25. Introducing idea of stewardship.
26. Including God's creation in songs, prayers, sermons, practical engagement in church.
27. Considering emphasis of certain denomination and using that to make creation care relatable and meaningful (icons in orthodox church, St. Francis in catholic church).

28. Orienting oneself on the concept of the Land Ethics.
29. Create a demonstration plot to prove effectiveness of different farming methods to farmers.
30. Adjust to specific traditions for each denomination.
31. Creating safe enclosure for livestock during the night.
32. Supporting naturalistic, symbolic, aesthetic, humanistic and ecologicistic-scientific worldviews.
33. Presenting God worshipper, cosmic humility and stewardship worldview.
34. SDG's
35. Creating FGW demonstration plot within Nyakinyua to show farming method and effectiveness.
36. Effective idea to support families to send children to school and relieve financial pressure.
37. Creating an understanding of their own worth and an appreciation for the place they live in.
38. Keeping the sermon short.

Hello, my name is Svenja. Thank you for taking part in this interview. The aim of this interview is to understand how a church outreach for environmental education, implemented by your pastor in collaboration with Eden Thriving, might influence the attitudes of participants towards nature and wildlife. I am especially interested in your own view on the natural environment. There are no right or wrong answers because I am interested in hearing about your own views and experiences.

Your participation in this study is voluntary and you are allowed to withdraw at any moment. That is why you can withdraw up to two weeks after our interview in case you change your mind.

When you are ready, I will start audio recording the interview. It will be anonymous and confidential.

Are you ready to start?

QUESTION 1

Firstly, I would like to know a bit about your background. How would you describe the place where you live?

How does a normal day look like for you?

QUESTION 2

Please, can you tell me how often you go to church and how often you have participated in the creation care sermon series?

What motivates you to go to church services?

QUESTION 3

May I know how you benefit from the things that grow and live in nature?

Thank you.

QUESTION 4

Do you discuss nature related topics and conflicts with church members or your pastor?

QUESTION 5

I would now like to talk more about your views on nature and wildlife.

What is the first thing that comes to your mind when you think about baboons? How would you describe your feeling towards them?

Can you tell me where that feeling comes from? Have you ever encountered baboons yourself?

What is the first thing that comes to your mind when you think about hyaenas? How would you describe your feeling towards them?

Can you tell me where that feeling comes from? Have you ever encountered hyaenas yourself?

Is there other wildlife that you have encountered?

QUESTION 6

Can you describe in your own words what the creation care program was about?

What did you learn from it?

Do you feel that the creation care program has changed anything in your view about nature and wildlife?

Thank you for that.

QUESTION 7

In the sermons, the pastors talked about the Scripture Genesis 2,15 "The Lord God took the man and put him in the garden of Eden to work it and take care of it." But it is also said in Genesis 1,26-28 that humans are called to rule over the animals and the plants. How do you understand this scripture?

How does that influence your daily life?

QUESTION 8

Can you describe in your own words what Genesis 1 and 2 are about? How does knowing that affect you?

[Can you describe in your own words what the creation story is about?]

QUESTION 9

Does your belief in the Christian God influence your view on nature and wildlife? What of the natural world seems to you as a blessing from God? What might seem like a punishment? Why?

Thanks.

We have come to the end of the interview. Research has shown that seeing everything around us as God's creation can help us to appreciate it. However, this has not been the focus in many churches. Therefore, I want to understand possible effects of the creation care program. And that's why your honest opinion and experiences are very important and valued.

Before we go, do you have anything else that we haven't talked about yet, but that you would like to share with me?

Thank you very much. Your time and answers are highly valued and appreciated.

Hello, my name is Svenja. Thank you for taking part in this interview. The aim of this interview is to understand how a church outreach for environmental education, implemented by you in collaboration with Eden Thriving, might influence the attitudes of participants towards nature and wildlife. I am especially interested in your own observations of your congregation before and during the program. There are no right or wrong answers because I am interested in hearing about your own views and experiences.

Your participation in this study is voluntary and you are allowed to withdraw at any moment. That is why you can withdraw up to two weeks after our interview in case you change your mind.

When you are ready, I will start audio recording the interview. It is anonymous and confidential.

Are you ready to start?

QUESTION 1

Firstly, I would like to know for how long you have been pastoring in this church?

QUESTION 2

Could you tell me a bit about the values of your denomination and of your church? Do you have a formulated vision that you could share with me?

QUESTION 3

Can you describe in your own words what the creation care sermon series was about? What did you learn from it?

QUESTION 4

You know your congregation better than most other people. What is your impression of their reaction towards the program?

Have you seen any differences in their behavior?

QUESTION 5

Have church members consulted you concerning their own interaction in nature after the creation care program?

QUESTION 6

After implementation of this series about creation care, are you planning to involve those teachings more in your sermons?

Thanks.

We have come to the end of the interview. Research has shown that seeing everything around us as God's creation can help us to appreciate it. However, this has not been the focus in many churches. Therefore, I want to understand possible effects of the creation care program. And that's why your honest opinion and experiences are very important and valued.

Before we go, do you have anything else that we haven't talked about yet, but that you would like to share with me?

Thank you very much once again. Your time and answers are highly valued and appreciated.

PUBLICATION BIBLIOGRAPHY

- Care of Creation Kenya (Ed.): Fireless Cookers. Honor God as a good steward of cooking resources and save money at the same time. Kijabe.
- Carnaby, T. (2017): Beat about the bush. Exploring the wild - the comprehensive guide. First edition. Johannesburg: Jacana.
- Dryden, G. W. (2009): Farming God's Way Trainer's Reference Guide. 1st ed.
- Emmett, M.; Pattrick, S. (2012): Game ranger in your backpack. All-in-one interpretative guide to the lowveld: Briza Publications.
- Estes, R. (2012): The behavior guide to African mammals. Including hoofed mammals, carnivores, primates. 20. anniversary ed. Berkeley: The University of California Press.
- Hine, G. (2016): Guiding Skills Learner Manual.
- Russel (2022): Beekeeping. Creation Care Training. Creation Stewards International. Kijabe, 2/2/2022.
- Sorley, C. (2009): Farming that brings glory to God and hope to the hungry: Creation Stewards International.
- van den Heever, A.; Mhlongo, R.; Benadie, K. (2017): Tracker manual. A practical guide to animal tracking in southern Africa. Cape Town, South Africa: Struik Nature.
- Vivien (2022): The fireless cooker. Creation Care Training. Creation Stewards International. Kijabe, 2/2/2022.
- Wightman, K. E. (2013): Good Tree Nursery Practices. Practical Giudelines for Community Nurseries.

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