



UPPSALA
UNIVERSITET

Master thesis in Sustainable Development 323
Examensarbete i Hållbar utveckling

Forest Conservation and the Hadzabe.
An integrated approach in protecting
biodiversity and cultural diversity.
Case study: Carbon Tanzania.

Sabrina Fassbender

DEPARTMENT OF
EARTH SCIENCES

INSTITUTIONEN FÖR
GEOVETENSKAPER

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Sabrina Fassbender

Supervisor: Paul Lane
Evaluator: Anneli Ekblom

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LIST OF ABBREVIATIONS

CCRO	Certificate of Customary Right of Occupancy
NGOs	Non-Governmental Organisations
PDD	Project Design Document
PFM	Participatory Forest Management
REDD+	Reduction of Emissions from Deforestation and forest Degradation
UCRT	Ujamaa Community Resource Team

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SABRINA FASSBENDER

Fassbender, Sabrina, 2016: Forest Conservation and the Hadzabe. An integrated approach in protecting biodiversity and cultural diversity. Case study: Carbon Tanzania. *Master thesis in Sustainable Development at Uppsala University*, 40 pp, 30 ECTS/hp.

Abstract:

Preventing emissions from deforestation is propagated as an effective strategy to combat climate change. At the same time forest landscapes are habitat to the last remaining traditional societies of this planet. For a long time forest conservation programs neglected the role of these indigenous communities for forest landscapes. Historical ecology pushes a change of environmental narratives towards an understanding that biocultural diversity has had and will have a significant impact on resource use and on the transformation of landscapes. A growing number of debates on global environmental justice and poverty alleviation goals call for such an integrated approach in protecting biodiversity and cultural diversity when conserving forest landscapes. Although this topic is discussed, there is a gap in scientific literature on how such an approach can actually be implemented in practise. This paper examines how the dual-objective of forest conservation and protection of cultural diversity can be achieved in practise by applying a case study of a conservation project, Carbon Tanzania. Carbon Tanzania is operating in an area in northern Tanzania inhabited by one of the few remaining hunting and gathering societies on the planet, the Hadzabe. Carbon Tanzania conservation project issues carbon credits which can be bought by companies, organisations and individuals to offset their emissions. Interviews with the different actors have been conducted in the course of the research project in order to examine how Carbon Tanzania's 'community-led project' contextualizes the dual objective of protecting forests and the Hadzabe culture. The results show that the implementation of the project is facilitated through an integrated network of different actors and organisations. Critical for the operations in the area is secured land ownership and a binding land use plan in order to protect the area from external pressure and to manage the utilization of the landscape by the different communities within the area. Payments for ecosystem services generate benefits for the local forest community and support community development. This form of 'productive' land utilization offers a path in changing development narratives for African countries.

Keywords: Sustainable Development, Historical Ecology, Community-based forest Conservation, REDD+, Carbon offsetting, Biocultural Diversity, Hunter-gatherer communities, Tanzania.

Fassbender Sabrina, Department of Earth Sciences, Uppsala University, Villavägen 16, SE- 752 63 Uppsala, Sweden.

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Summary:

Climate change has been recognised as a threat to societies all around the planet. Taking action to combat climate change has been recognised as a sustainable development goal by the United Nations. Reducing deforestation is identified as a key component in combating climate change, as forests have the capacity to store global carbon emissions, which are responsible for climate change. Programs such as the UN-REDD+ (Reducing Emissions from Deforestation and forest Degradation) intend to protect remaining forest landscapes, especially in the tropics. Those forest landscapes are home to the last remaining traditional societies of this planet. In the past, forest conservation programs neglected the role of indigenous communities for forest landscapes, which has led to conflicts often resulting in displacement of indigenous communities. This has to change if forest conservation should go hand in hand with other sustainable development goals such as reducing poverty and the promotion of just and inclusive societies. Historical ecology examines the interaction and relationship between humans and the environment throughout time. This helps to create knowledge on how present and past cultures and landscapes have been formed and shaped. There is strong evidence that in fact most landscapes, forests included, are a result of human-environment interactions. Hence, programs that aim conserving forests have to incorporate an understanding of local cultures in order to secure local livelihoods. Although, scientific literature and political debates are increasingly recognising this strong interlink of environment and local culture, little can be found on how such an integrated approach of protecting forest landscapes and the societies living in it, can be implemented in practise. This research paper is studying how such an approach could be implemented, looking at a specific case in northern Tanzania. Carbon Tanzania is a community-based forest conservation project intending to protect the local forest landscape and simultaneously empower the indigenous community living in this landscape: the Hadzabe. The Hadzabe pursue a hunter-gatherer lifestyle which is increasingly under pressure, due to land conversion for agriculture, livestock herding activities and forest degradation. The Carbon Tanzania project measures the carbon emissions stored in the local forest. Those stored emissions in the forest are translated into carbon certificates which are traded on markets for carbon certificates. This research paper is looking at a company based in Sweden eager to compensate for the carbon emissions resulting from its business activities by buying those carbon certificates. This financial stream is channelled back into the local forest community which enables improvements of livelihoods for those people. The results of this study show that for the success of this project it is critical to have secured land ownership by the local community and a land management plan in place. Further, it is essential to allow the Hadzabe community to own their own decision making-process to make sure their cultural identity can be kept. A partner network of different actors enables the bottom up integration of community needs and establishes a system that protects the local forest and culture.

Keywords: Sustainable Development, Historical Ecology, Community-based forest Conservation, REDD+, Carbon offsetting, Biocultural Diversity, Hunter-gatherer communities, Tanzania.

Fassbender Sabrina, Department of Earth Sciences, Uppsala University, Villavägen 16, SE- 752 63 Uppsala, Sweden.

1. Introduction

1.1. Problem statement

In the past and present, conservation strategies were and are formulated with the intent to protect environments believed to be pristine and untouched by humans. It is often the case that those narratives are formed by external ideas on what an intact ecosystem comprises. A number of conservation strategies have been designed disregarding human societies inhabiting these landscapes and have imposed restrictions or a complete ban of any human activity in these areas. An approach often referred to as ‘Fortress Conservation’. In reality, many ‘wildlife spaces’ are of critical importance to rural societies. These marginalized societies are now more than ever under pressure. Hence, discourses on conservation have to incorporate local communities and their needs. Whereas in the past, landscapes were portrayed as something wild and pristine and separated from people, there is growing acknowledgement of ecosystems being important to subsistence livelihoods and for maintaining cultural identity. The Sustainable Development Goals formulated during the Paris Agreement 2015 intend 50% of total forest lands in low and middle income countries to be owned or designated for use by indigenous people and local communities by 2030 (Rights and Resources Initiative 2016). In order to achieve this target, an integrated approach is required, simultaneously conserving biodiversity and cultural diversity. To practically implement such a conservation approach it is critical to seek for and apply a new understanding of environments in which society plays an integral role. This applies to all types of wildlife spaces, including forest conservation – the focus of this thesis.

1.2. Aim and research question

The aim of this research paper is to understand if and how forest conservation and protection of cultural diversity can be obtained simultaneously? To answer this I will focus on the work of a single carbon trading company, Carbon Tanzania, primarily because they work in an area of northern Tanzania often represented as ‘pristine’ and inhabited by one of the few remaining hunting and gathering societies on the planet, the Hadzabe. Carbon Tanzania is conserving forest through empowering the local forest community. Focus points of their efforts are on securing land ownership, basic law enforcement and monitoring of the conservation area. The case of Carbon Tanzania is especially interesting as it issues carbon credits which can be bought by companies and individuals to offset their carbon emissions. This applied market mechanism creates the means for community development in order to secure forest conservation and sustain the hunter-gatherer culture of the Hadzabe, as well as wildlife protection and a reduction of global carbon emissions.

In the course of this research paper an analysis will be carried out on how Carbon Tanzania contextualizes its aim to simultaneously conserve forests and protect Hadzabe culture. The project in Northern Tanzania involves a multitude of actors. My research aim is to understand in what way Carbon Tanzania’s ‘community-led project’ is a collaborative process between the different actors involved and how this facilitates achieving the dual-objective. Further, I intend to explore how particular understandings of human-environment relations influence decisions to participate in this conservation project. My research questions are:

1. ‘How is Carbon Tanzania trying to achieve the dual-objective of forest conservation and protection of cultural diversity?’
2. ‘What is the understanding and value of forests for different actors involved and what are the motives for their engagement?’
3. ‘What can an historical ecology perspective contribute to forest conservation and protection of cultural diversity?’

1.3. Outline

The outline of this thesis (Fig. 1) and demonstrates the chronological order of chapters and applied methods and findings.

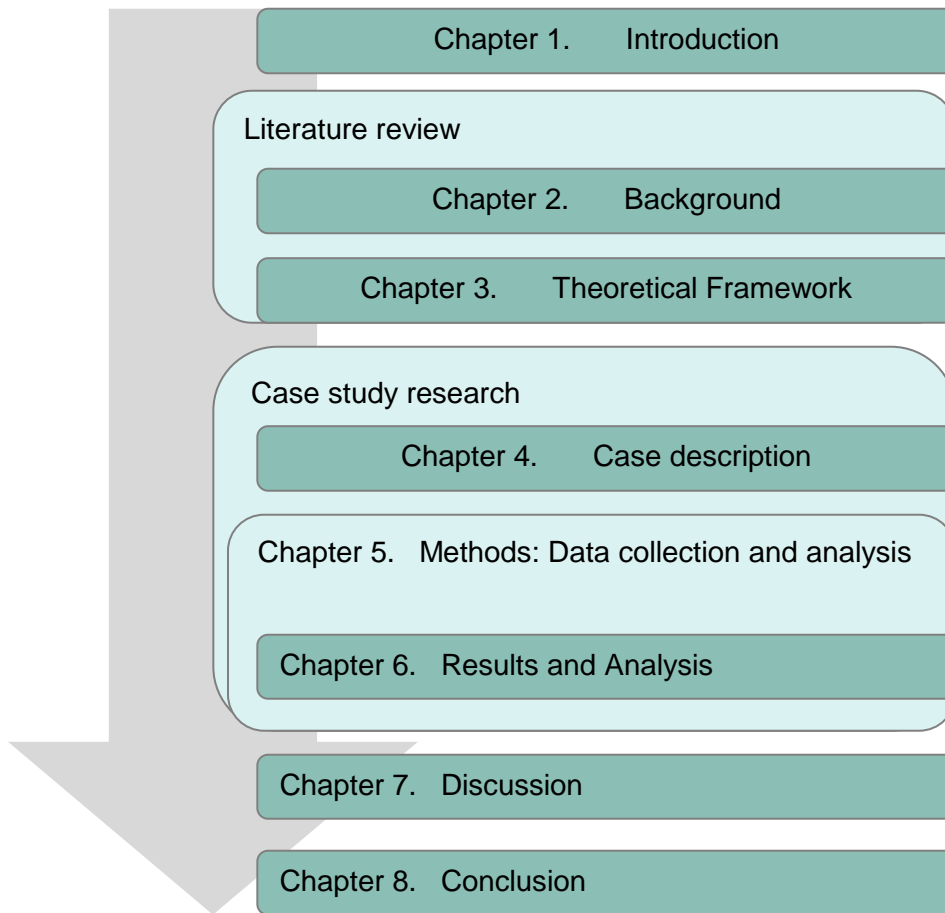


Fig. 1. Outline of paper, including applied methods.

1.4. Relevance for sustainable development

I find this topic especially relevant for sustainable development as forest conservation and protection of cultural diversity through community development financed by trading carbon credits provides an opportunity to link carbon intense societies, which to a high degree are responsible for land conversion and climate change, with marginalized communities facing difficulties maintaining cultural identity due to increasing external pressure. From a sustainable development point of view it is valuable to investigate if a project, like Carbon Tanzania, can tackle climate justice issues and offer a strategy to take responsibility for a global problem caused by the winners of globalization. Although this research paper examines a specific project linking forest communities in Tanzania and Swedish companies and therefore Swedish consumers, this case study can be seen in a broader context of how different societies are interconnected in these days of globalisation. Drawing the connection between different societies is especially important as debates in Europe about the meaning and legitimacy of the term ‘climate refugee’¹ are increasing among the civil society and within the political arena.

¹ Climate Refugee describes a person who must leave their home due to severe changes on their environment as an effect of climate change such as sea level rise or drought.

2. Background

2.1. African Dry Forests

The term ‘forest’ has a different meaning to different people related to their cultural, educational and social background. This section provides a botanical definition related to the specific geographical location in East Africa. Forests are a vegetation type consisting of woody plants, mainly trees, and canopy coverage of at least 10 percent. Dry forests appear in a climate with an alternating dry season, lasting for at least three months, and a wet season. This definition includes woodland, scrubland, savannah and wooded grassland. The popular image of forests as moist and dense evergreen rainforests is not implied in the definition above. In East Africa semi-arid dry woodland is dominated by *Acacia* and *Commiphora* species and the canopy is usually three to five meters high, infrequently taller than 10m. Other characteristic species for this type of woodland are Baobab trees or *Adansonia*. Herbivores which are abundant in this vegetation zone have a large impact, directly through physical damage and indirectly through grazing, on the structure and composition of dry forests and woodland. Fires are naturally occurring in African dry forests and woodlands, typically around the beginning of the rainy season, and have an effect on the vegetation structure. Regeneration and growth of tree species are determined by precipitation, humidity and temperature (Chidumayo & Gumbo 2013).

2.2. Biocultural diversity of African forests

The Millennium Development Goals² state the importance of conserving biodiversity to safeguard intact ecosystems and human life. Whereas in the past landscapes were portrayed as something wild and pristine and separated from people, there is growing acknowledgement of ecosystems being important to subsistence livelihoods and as connected to cultural identity. The term “cultural landscape” represents the notion of landscapes being a close and complex relationship between humans and their natural environment. However, insufficient consideration is given to different cultural perceptions of landscapes and the relevance of human-environment interaction for the planning and implementation of conservation measures (Arts *et al.* 2012). In many parts of Africa, forests are a dialogue between culture and nature which corresponds to a system of belief, perceptions and values. Particular parts of forests are perceived as sacred places by their human inhabitants and symbolize a deep connection. In fact any given culture is formed by its natural environment. Whereas, many modern societies have distanced themselves from this close link to nature, traditional societies still relate to their deep cultural connection with nature and practice rituals and pass on folk tales to reinforce this relationship. Forests are generally considered as a gift from nature and cultural taboos and customs are based on knowledge on how to use natural resources in a manner that they are protected from over-exploitation. Using modern terminology, many traditional practices and rituals promote sustainable ecosystem management (Inyang 2015). For formulating conservation strategies it is essential to understand that biocultural diversity has had and will have a significant impact on natural resource utilization and on the transformation of landscapes (Gary *et al.* 2012).

² Millennium Development Goals are adopted by the UN Millennium Declaration and “are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions-income poverty, hunger, disease, lack of adequate shelter, and exclusion-while promoting gender equality, education, and environmental sustainability. They are also basic human rights-the rights of each person on the planet to health, education, shelter, and security“, UN Millennium Project 2016.

2.3. Forest conservation

Protection of biodiversity is related to the idea of protected areas which can be broadly divided into areas designated for conservation or for resource utilization. Threats to forest ecosystems include insufficient management of protected areas, population and land-use pressures, climate change, over-exploitation of forest resources, and the introduction and expansion of invasive species (Chidumayo & Gumbo 2013). Changes in the physiology and metabolism of forests have a large impact on the quality and availability of forest goods and services, including the capacity to sequester carbon from the atmosphere (von Hellermann 2011).

Reducing Emissions from Deforestation and forest Degradation (REDD+) is a United Nations program launched in 2008. Partners are typically developing countries in Africa, Asia-Pacific and Latin America who are provided with financial compensation for national reductions in deforestation and forest degradation. Support, technical expertise and other services are offered throughout the planning and implementation of the program (UN-REDD, 2016). REDD+ is promoted as a success story in narratives about taking actions to mitigate climate change (Angelsen *et al.* 2012). Up to a fifth of global annual carbon emissions are due to land-use changes in the forest sector. Forest conversion is typically taking place due to expansion of agriculture, timber extraction or other non-forest land utilization (Karsenty *et al.* 2014). Forests in the tropics are regarded as carbon sinks of high value, but are traditionally inhabited by indigenous or non-indigenous forest communities. The mechanisms of the REDD+ program promise to deliver, beside cost-effective carbon storage and forest protection, improvements to local livelihoods and poverty reduction (Bolin & Tassa 2012; Chomba *et al.* 2016).

Although REDD+ aims to conserve forests and forest biodiversity, 90% of REDD+ projects support plantation of exotic (alien) species such as eucalyptus and pine. The introduction of invasive species affiliated with carbon sequestration efforts is replacing indigenous vegetation and destabilizes local ecosystems and can have severe long-term environmental and economic effects (Chidumayo & Gumbo 2013).

2.3.1. Provision of financial funds

The provision of international financing resources is tied to the successful implementation of the REDD+ program and hence the effective reduction of deforestation. International financing resources are currently predominantly coming from bilateral country programmes, adding up to two-thirds of all internationally financed REDD+ activities. Besides public funding, carbon markets³ have been introduced as a mechanism to involve the private sector directly. In 2010, public sector mechanisms supplied 14.5 billion US dollars, whereas private sector mechanisms provided just 1.1 billion US dollars (Angelsen *et al.* 2012). By 2020 private sector mechanisms, voluntary and compliance carbon markets may potentially generate a larger share of total REDD+ financing. It is unclear whether market based instruments tackling environmental problems can sufficiently incorporate social justice and poverty alleviation (Karsenty *et al.* 2014). Currently a majority of REDD+ finance is going directly to the national budgets of countries such as Brazil, the Democratic Republic of Congo and Indonesia. Angelsen and colleagues (2012) point out that carbon markets could bring a transformation in forest-rich developing countries, from being development aid dependent recipients to becoming suppliers of climate mitigation as a global public good. Despite this positive outlook, it is up for debate whether global market solutions for climate change mitigation are reconcilable with poverty alleviation and development targets (Mustalahti *et al.* 2012).

³ Carbon markets supply units of carbon emissions called carbon credits to companies, countries or individual buyers and introduced as a policy instrument to regulate international carbon emissions.

2.3.2. Equity and benefit sharing

Since the introduction of the REDD+ program, the question of 'who should benefit' has become a critical component of REDD+ discourses. REDD+ strives to create additional benefits beside global carbon emissions reductions and carbon sequestration, such as protection of local biodiversity and poverty alleviation (Merger *et al.* 2011; Mustalahti *et al.* 2012). Designing the appropriate allocation of benefits and thus creating positive incentives to prevent deforestation, turned out to be a critical step for the success of the program. The REDD+ mechanism has to offer sufficient compensation to make forest conservation more lucrative than forest land conversion for agricultural production or forest resource extraction (Karsenty *et al.* 2014). Benefit sharing is predominantly discussed on a national and sub-national level as well as across countries (Angelsen *et al.* 2012). But as REDD+ operates in a specific socio-ecological environment it is vital to take the local population into account (Merger *et al.* 2011). Especially as conversion of public forest lands to conservation areas means restricted or prohibited access for local forest communities (Atela *et al.* 2015). It has yet to be determined, whether the design of a global program such as the REDD+ creates sufficient space for local needs (Mustalahti *et al.* 2012).

Although the distribution of benefits to forest communities is addressed as well, it is tied to emission reductions (Angelsen *et al.* 2012). Benefits for forest communities not only refer to monetary gains but can include a wide range of additional benefits such as livelihood improvements, employment and education. Even though the REDD+ mechanism intends to offer those benefits to affected communities, it is not guaranteed. The REDD+ program emphasizes the importance of top-down governance to ensure benefit sharing between all actors (Bolin *et al.* 2012) but in reality, Non-Government Organisations (NGOs) and state officials appear to get hold of a larger share of benefits, whereas efforts and risks are carried at the community level (Evan *et al.* 2014). Angelsen *et al.* (2012) examined several REDD+ projects in Tanzania, Brazil, Vietnam, Peru and Indonesia and concluded that only one project provided direct financial transfers to households. Benefit sharing mechanisms often fail to involve and compensate actors at the very bottom of the poverty ladder: such as forest communities. Excluding forest communities from conservation activities and benefits is likely to aggravate local livelihoods (Atela *et al.* 2015). Evan and colleagues (2014) conducted interviews with members of Amazonian forest communities in Peru. The interviewees expressed their wish that monetary benefits should be transferred directly to families and welcomed investments in community development such as education and employment for young people.

2.3.3. Land ownership

A dominant view in REDD+ discourses is that benefit sharing mechanisms should favour those with the legal claims to or rights on the land (Angelsen *et al.* 2012). Land tenure is a key reference point to define which actors have the right to cultivate and demand benefits from an area of land. In reality many small-scale forest users neither own property rights to land nor the right to extract forest products. Hence, any activity in the forest can be considered as illegal and prohibited (Angelsen *et al.* 2012). A large number of REDD+ projects operate in an environment of uncertainty, which has led to tenure issues.

Looking back in history, forest communities have faced suppression of rights and appropriation of forests at least since colonial times (Angelsen *et al.* 2012). Over time ownership and management of forest lands, which have been historically inhabited and used by forest communities, became more centrally governed by state policies supporting professional forestry or other resource extraction activities such as mining. Those outside interventions have had severe implications for the livelihoods of forest communities (Larson 2011). Converting forests into global commodities for carbon storage, as intended by REDD+ (Aicher 2014), is in fact another intrusion from outside. The increasing monetary value of forests has led to a new wave of land appropriation by public

and private investors (Mustalahti *et al.* 2012). To address sustainable forestry and poverty alleviation simultaneously, REDD+ must address the historical and present exclusion of forest communities from land tenure rights (Beymer-Farris & Bassett 2012).

For sub-Saharan African countries it is often the case that lands which have been traditionally used communally, transformed to private property under colonial administration. Colonial policies caused displacement of indigenous populations from traditional lands and reallocation to designated ‘native reserves’. This altered land access for indigenous populations, from vast areas with the possibility of shifting land utilization to concentrated areas too small to sustain the number of people residing there. Traditional lands were turned into commercially used areas for agricultural and forest goods, hunting grounds or later on declared as wildlife protectorates. After independence, a majority of land was transformed into privately owned land and even lands designated for communal use were subjected to elite capture. This historical unequal distribution of land, leaving only a few with land entitlement, persists till today and has a big impact on the allocation of benefits, as the REDD+ design favours the distribution of benefits according to land tenure rights (Chomba *et al.* 2016).

Although REDD+ has brought international attention to tenure and other rights to forest people, the transition in recognizing forest communities as eligible to hold tenure rights faces resistance on the national and subnational levels. Competing interests for forest land and products, and power relations, hinder necessary tenure reforms (Angelsen *et al.* 2012; Karsenty *et al.* 2014). The figure below illustrates regional variations in land being designated or owned by indigenous people and forest communities.

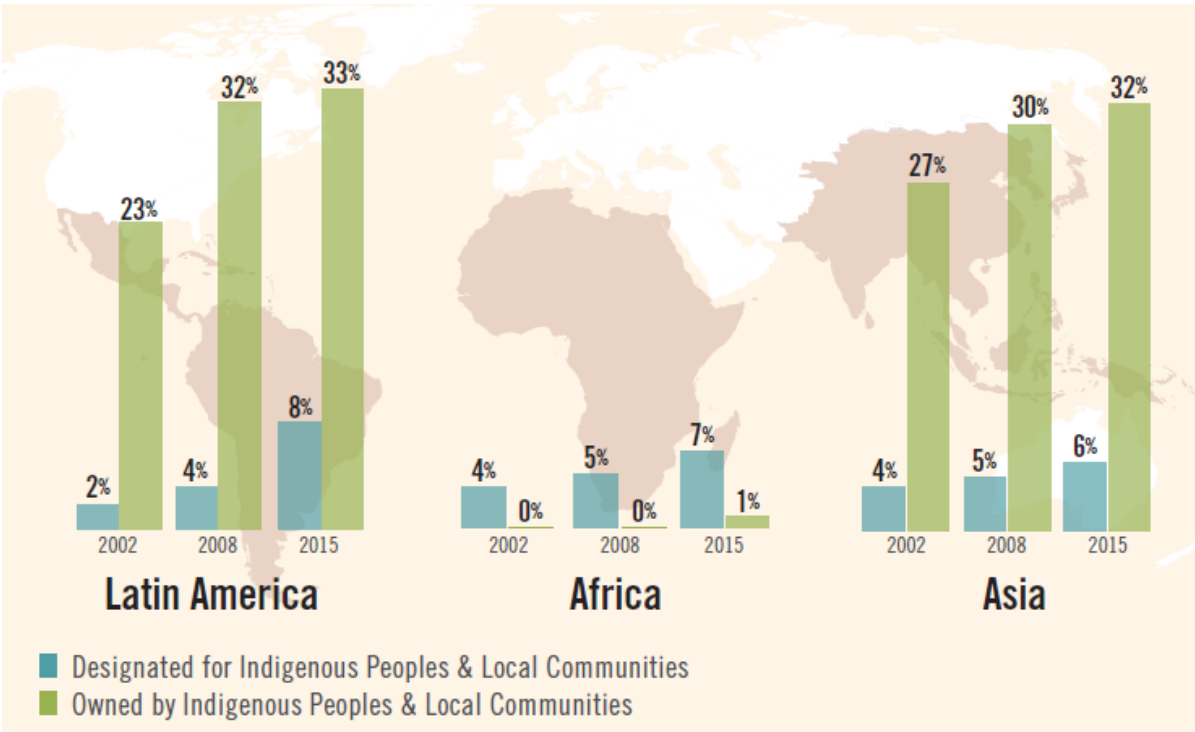


Fig. 2. Regional comparison of change in land owned or designed for indigenous people and local communities, 2002-2015; (Rights and Resource Initiative, 2016).

Overall there is evidence of a trend towards land areas being in the hands of indigenous people and local communities. While Latin America and Asia have high levels of commitment, Africa lags far behind. In sub-Saharan Africa only 8 percent of forest land is controlled or owned by indigenous people and communities.

In the countries listed in the table below, most forests are primarily public assets managed by the state, although in a few countries community-owned forests make up a significant part of the total forest cover, and in Peru privately-owned forests represent the largest percentage. In Tanzania 6% of forest lands are owned by communities and indigenous people and another 4% are designated for use by communities and indigenous people.

Country	Public (millions of ha, %)		Private (millions of ha, %)	
	Administered by government	Designated for use by communities and indigenous people	Owned by communities and indigenous people	Owned by individuals and firms
Brazil*	88.6 (21%)	25.6 (6%)	109.1 (26%)	198.0 (47%)
Peru	42.3 (67%)	2.9 (5%)	12.6 (20%)	5.3 (8%)
Cameroon	20.1 (95%)	1.1 (5%)	0.0 (0%)	0.0 (0%)
Tanzania	31.8 (89%)	1.6 (4%)	2.1 (6%)	0.1 (0%)
Indonesia	121.9 (98%)	0.2 (0%)	0.0 (0%)	1.7 (1%)
Vietnam	9.7 (73%)	0.0 (0%)	3.5 (26%)	0.1 (0%)

Table 1. Forest tenure distribution, 2008, data in millions of hectare (Angelsen et al. 2012).

The Sustainable Development Goals of the 2015 Paris Agreement intend 50% of total forest lands in low and middle income countries to be owned or designated for use by indigenous people and local communities by 2030 (Rights and Resources Initiative 2016). To date, forest communities face various challenges, which are related to the public nature of land and forest ownership. Tenure issues involve a wide range of problems such as: *i)* Lack of clarity on ownership and overlapping ownership claims, *ii)* Lack of rights and ability to protect (indigenous) land, *iii)* Conflicting land use decisions, *iv)* Poor rule enforcement, monitoring and sanctions, *v)* Failure to implement land use planning, and *vi)* Undemocratic collective land representation (Angelsen *et al.* 2012:174).

Solving tenure problems are central for REDD+ projects to be effective, efficient and equitable (Larson 2011; Beymer-Farris & Bassett 2012). Potential solutions include *i)* effective land allocation and registration, *ii)* strengthening of local and state institutions responsible for land registration, planning and tenure right enforcement, and *iii)* greater stakeholder participation when designing land use plans. (Angelsen *et al.* 2012:174).

2.3.4. Forest governance

Forest governance designates the sustainable management of forests through society and incorporates beside traditional centralised state governance new forms of governance such as policy networks, participatory forest management, markets for ecosystem-services, certification schemes, etc. (Arts *et al.* 2012).

REDD+ projects implemented through national bodies, tend to be disrupted by corruption and other governance obstacles in the public sector (Chomba 2015). Despite verbalized concessions, a vast majority of national and international policies and bureaucratic systems fail to successfully address those problems. Although REDD+ is launched on a national level, it's success is

determined by how effectively incentives are operationalised at the local level. In some cases national decentralization policies for forest management have been implemented with the aim to bridge the gap between reduction of global carbon emissions and poverty. Those policies vary in the extent of community involvement in decision-making processes and allocation of responsibilities. Hayes & Persha (2010) observed in their study that forest communities are capable of setting up effective and sustainable forest management models, but external interest hinders the effective application. Hence, the authors put emphasise on the integration of downwardly accountable organization, ideally independent from national governments, in the broader REDD+ architecture to give institutional and financial support to ultimately safeguard the rights and autonomy of local communities.

Even if benefits are intended to be distributed to forest communities, when different tenure rights are present, REDD+ favours big landowners who are compensated first and only, lastly are remaining revenues from carbon credits sales split between the community members. Although emphasis is put on actively engaging all relevant actors, in particular local communities within the REDD+ program (Chomba *et al.* 2016) current strategies fail to introduce a significant shift towards a procedure that ensures equitable forest tenure, distributional justice and hence match REDD+ “*policy with on the ground reality*” (Angelsen *et al.* 2012:160).

2.3.5. Participatory Forest Management

In recent years African states have witnessed a wave of privatization and liberalization of public resources, including nature, stimulated by economic turbulences in the West. This form of privatization, also referred to as land grabbing (Karsenty *et al.* 2014), has been depriving forest communities of their utilization possibilities of former public or traditionally commonly managed nature resources. REDD+ potentially further increases the trend towards privatization of natural resources, as its design tends to solely regard forests as carbon storage commodities. Apart from this development, African democratic governments have formulated a number of decentralisation reforms such as participatory forest management (PFM), to facilitate democratisation processes in their countries (Chomba 2015). Decentralization reforms intend forest and forest resources be collaboratively managed by local communities, often on the behalf of national or local governments and ideally incorporates collaborative development of objectives, plans and rules (Mustalahti *et al.* 2012). This form of forest governance does not only prioritise community involvement but also aims to include markets for ecosystem service and forest certification schemes. Through independent labelling and monitoring, certification mechanisms aim to ensure sustainable forest management. Payments for ecosystem services provide monetary funds for the regulation and supply of water, forest goods, carbon sequestration, etc. (Arts *et al.* 2012). Although these reforms appear equitable, effective and efficient on paper, its practical feasibility is facing various administrative and financial obstacles that hinder forest communities entering international programs of carbon sequestration and forest conservation (Mustalahti *et al.* 2012; Chomba 2015). Mustalahti and colleagues (2012) studied a case of PFM in Tanzania. Although formal rights were given to the forest community, delivery of forest conservation benefits to the local community failed and hence threatened conservation goals.

A growing number of conservation projects are implemented by external Non-Governmental Organisations (NGOs) facilitating processes to overcome those barriers for forest communities and connect them to international carbon markets (Chomba 2015). NGOs facilitating appropriation of carbon rights to forest communities could legitimize tenure rights for those communities on a national level (Karsenty *et al.* 2014). Those NGOs need to provide efficient livelihoods assets to local communities in order to facilitate local participation and hence achieve forest conservation. Livelihood assets include natural assets, such as access to forest lands, financial assets, such as improved household income, human assets, such as education and

employment, and social assets, such as land tenure and community networks (Atela *et al.* 2015:239). Fresh water access and land tenure are key assets, due to their causal effect on agricultural livelihoods and economic possibilities and determine conservation efforts. Provision of alternative income possibilities is especially important if activities such as livestock herding and agricultural practises are restricted. Trading with carbon credits tend to be a favourable alternative, although fluctuations in global carbon prices and buyers have an impact on the availability of financial assets to the community. Therefore, including designated areas for agriculture and herding within conservation areas, instead of entirely depending on carbon trading, can result in an effective diversification strategy when providing livelihoods assets. Unfortunately, carbon trading standards tend to be too stringent in order to tolerate effective livelihood improvements beside forest conservation (Atela 2015). Additionally, as indicated in the study of Chomba (2015), it is of special importance for participating forest communities to decide on what the money should be spent on according to the most urgent community needs. Investments are typically undertaken, to improve education for the community, water availability and to purchase additional food to bypass periods of food shortage. Livelihood assets are vital for the project's success and failed provision raises stress on protected forests. For instance, in the case of missing or insufficient fresh water sources accessible to the community, alternative water sources deeper in the conservation area may be exploited (Atela *et al.* 2015). Transparent decision making processes and display of land use plans, financial investments and other undertakings affecting the community are vital in order to hold all actors accountable. To ensure sustainable forest conservation on a long-term basis, globally linked projects need to allocate qualified staff on-site transferring knowledge and providing technical equipment to forest communities to regularly report the condition of the conservation area and further communicate results with all relevant local and international actors (Chomba 2015).

2.3.6. Environmental narratives

Ideally, environmental governance under a REDD+ framework has to comprehend complex forest-society-systems, integrate those local realities into a global framework and vice versa translate global frameworks to local feasible solutions (Aicher 2014). To date, discrepancy exists between global climate change narratives and local reality. Although REDD+ designers recognise the diversity and complexity of cultural forest landscapes, they aim to construct policy models that can be implemented in multiple countries. Forest communities which are part of a very particular environment are then aggregated to one representative population in the same manner as forests are subsumed into a global stock of forest hectares and carbon (Evan *et al.* 2014).

A further issue of concern is that the development of the REDD+ scheme is attached to certain environmental narratives which are supported by particular actors to legitimize particular actions (Hiraldo & Tanner 2011), such as centralization of forest management. Unfortunately, those environmental narratives often lack a solid foundation on historical facts (Beymer-Farris & Bassett 2012), but are rather based on a knowledge system, generated by research institutions in the natural sciences and economics, which are believed to have more competence to deal with uncertainty and risk related to climate change than indigenous knowledge systems. Non-science based, indigenous knowledge is scarcely represented in the REDD+ framework (Hiraldo & Tanner 2011 and Aicher 2014). According to Hiraldo & Tanner (2011) this imbalance is represented in 75 per cent of REDD+ documents.

Beymer-Farris & Bassett (2012) studied a carbon forestry project in the Rufiji Delta in Tanzania and the underlying environmental narratives. The authors observed that the REDD+ project in the Rufiji Delta underestimated the importance of forest communities and their past and present role in shaping the delta landscape. Traditional forest practises are portrayed as rather destructive and harmful to the local mangrove forests, which Beymer-Farris & Bassett (2012) regard as a

misinterpretation of traditional human-environment relationships in the Rufiji Delta. As a result, these communities face a “*shift from community-based resource management to fortress conservation*” (Beymer-Farris & Bassett 2012:332). Furthermore, the Tanzanian government expressed plans to reallocate local forest communities in order to secure forests in the Rufiji Delta for the REDD+ project. Beymer-Farris & Bassett (2012) conclude that local forest communities inhabited the delta for centuries and adapted agricultural practices to seasonal and river course changes which allowed the mangrove forests to regenerate. This practise of shifting rice cultivation and natural mangrove regeneration potentially increased local biodiversity as more animal and plant species could flourish in this patchy landscape. This counter narrative challenges the protectionist conservation paradigm adapted by national and international REDD+ representatives.

If REDD+ aims to welcome a collaborative approach between different REDD+ actors, diverse narratives and knowledge systems need to be adopted in REDD+ concepts. This will ultimately lead to a better understanding of dynamic forest-human ecosystems that REDD+ intends to capture (Evan *et al.* 2014). Establishing a narrative that forests are social landscapes formed by a local culture and essential for local livelihoods (Aicher, 2014), has the potential to generate multiple benefits for all actors. New approaches are needed, acknowledging that human-environment interactions can generate sustainable managed landscapes (Beymer-Farris & Bassett 2012).

2.4. Chapter summary

This chapter provided a definition of African dry forest, in order to get an understanding of the landscape that is intended for conservation. After this short introduction into the characteristic of the specific fauna and flora, this chapter looked into the link between humans and this particular environment. Biocultural diversity has had and will have a great impact on the composition and characteristic of these landscapes and hence should be considered into conservation programs. Finally this chapter provided an overview of issues connected to forest conservation such as land ownership, forest governance and prevailing environmental narratives shaping conservation strategies.

3. Historical Ecology – Theoretical Framework

Historical ecology examines the interaction and relationship between humans and environments throughout time. This helps to create knowledge on how present and past cultures and landscapes have been formed and shaped. Historical ecology understands itself as a framework for interdisciplinary research and gathers researchers in the earth sciences such as geology, natural science such as biology and ecology, humanities such as history and social sciences such as anthropology, archaeology and sociology in order to integrate different knowledge systems to understand human-environment interaction more holistically (Lane 2010:302-303).

Throughout history humanity has shaped and formed natural environments, which can be perceived as drastic changes, in the form of massive construction such as the pyramids of Egypt, or barely recognizable changes, in the form of past agricultural systems in the Amazon, often only revealed by accident (Balée et al. 2006:1). Balée and colleagues (2006) have argued that humans are responsible for landscape formation, modification and species selection over long periods of time but their role neither fits the picture of the noble savage, who lives in constant harmony with nature, nor that of the ignoble savage, who only uses his/her environment in a destructive manner. Conservation biologists and historical ecologists study habitat degradation and species eradication (Balée et al. 2006:9-10). Beside various cases proving the capacity of the human species to degrade ecosystems, it is important to highlight as well those cases when human activities facilitate an enhancement of ecosystems. By choosing an anthropocentric viewpoint, historical ecology can present a number of cases where humans contributed to an increase in biodiversity.

A good example is the research conducted by Heckenberger *et al.* (2007) who studied the cultural and natural landscape of Amazonia. The study gives an interesting insight into how indigenous people developed sophisticated technologies to manage the natural environment rather than restrain it. Their study demonstrated that, indigenous landscape management enhanced local biodiversity through creating bio-historical hotspots. Coming to the conclusion that the Amazon rainforest does not fit into an idealized concept of a pristine environment should not lead to the assumption that indigenous societies interact with the environment as Western societies do today. Pre-colonial agricultural practices are not comparable with those large-scale agricultural techniques applied today. The fact that Amazonian landscapes are by no means untouched by humans but historically constructed does not make them less worthy of protection. Instead, indigenous resource management should be studied and better understood and considered as interesting alternatives to imported farming techniques (Heckenberger et al. 2007:206). Those human factors should be considered when formulating conservation strategies (Heckenberger et al. 2007:205).

Historical ecology has the potential to contribute to conservation and rural development policies, by looking at a contemporary problem and tracing it back in history and hence shifting focus from a short-term to long-term perspective. Lane (2009) examined the reasons, sources, and temporal sequence of soil erosion in Kondoa, central Tanzania in order to generate information for future land use policies (Lane 2009:459). The Tanzanian district of Kondoa has witnessed severe soil erosion leading to environmental degradation and loss of productive land. A leading view for reasons for this environmental degradation has been concentrated on traditional farming activities, such as local farming, herding and iron smelting which are understood to be harmful to the environment (Lane 2009:461-62). This narrative has been persistent during both colonial and post-colonial times, and shaped political action aiming to control soil erosion (Lane 2009:481). This has led to several intervention policies in the past, such as de-stocking of cattle and planting of eucalyptus. Lately this narrative has been questioned, as short-term and long-term climatic changes and tectonic activities are possible causes for periods of particular severe soil erosion (Lane 2009:461-62). The study results show that the two main phases of severe soil erosion date

back before the colonial times and hence are unrelated to recent land use practices and raise questions about the need for the intervention policies implemented during colonial and postcolonial times (Lane 2009:467). Over the past thousand years the region has witnessed periods of increased rainfall and droughts (Lane 2009:480). Nevertheless the local population managed to adapt to those climatic fluctuations. An outlook for future policies is to use and create knowledge to better understand the causes of environmental issues in the study area and not generalize.

Historical ecology provides a holistic framework for understanding cultural landscapes. Conservation strategies are formulated on the basis of certain environmental narratives about the formation of landscapes. In the past, those environmental narratives have sometimes been short-sighted and formed through a Western perspective. Narratives for developing countries often go back to colonial times and often underlie wrong assumptions about the relationship between the local landscape and culture. Historical ecology has the potential to unfold those misinterpretations and generate an understanding of cultural landscape. Key is to generate knowledge on the role of local societies for the landscape, as historical ecology regards humans embedded in ecosystems. Special consideration should be given to local history, culture and means of living instead of projecting external ideas of ecosystem management (Lane 2009:482). Understanding the role of local communities in an ecosystem is fundamental for obtaining more sustainable nature management practices. This research paper will apply a historical ecology framework and examine a particular environment in Tanzania as a cultural landscape in order to look at forest conservation and protection of cultural diversity as correlated objectives and not separate from each other.

4. Case description

Tanzania is located in East Africa, bordering the Indian Ocean and neighbouring Mozambique, Malawi and Zambia to the south, Uganda and Kenya to the north, and Burundi, Rwanda and the Democratic Republic of Congo to the west. Agricultural land covers 39% of total land area and 40% is forest land. The annual deforestation rate (1.1%) is higher than the average (0.7%) for sub-Saharan African countries (World Bank 2009).

4.1. Yaeda Valley

The project site is allocated in the Eyasi-Yaeda basin close to Lake Eyasi in northern Tanzania.

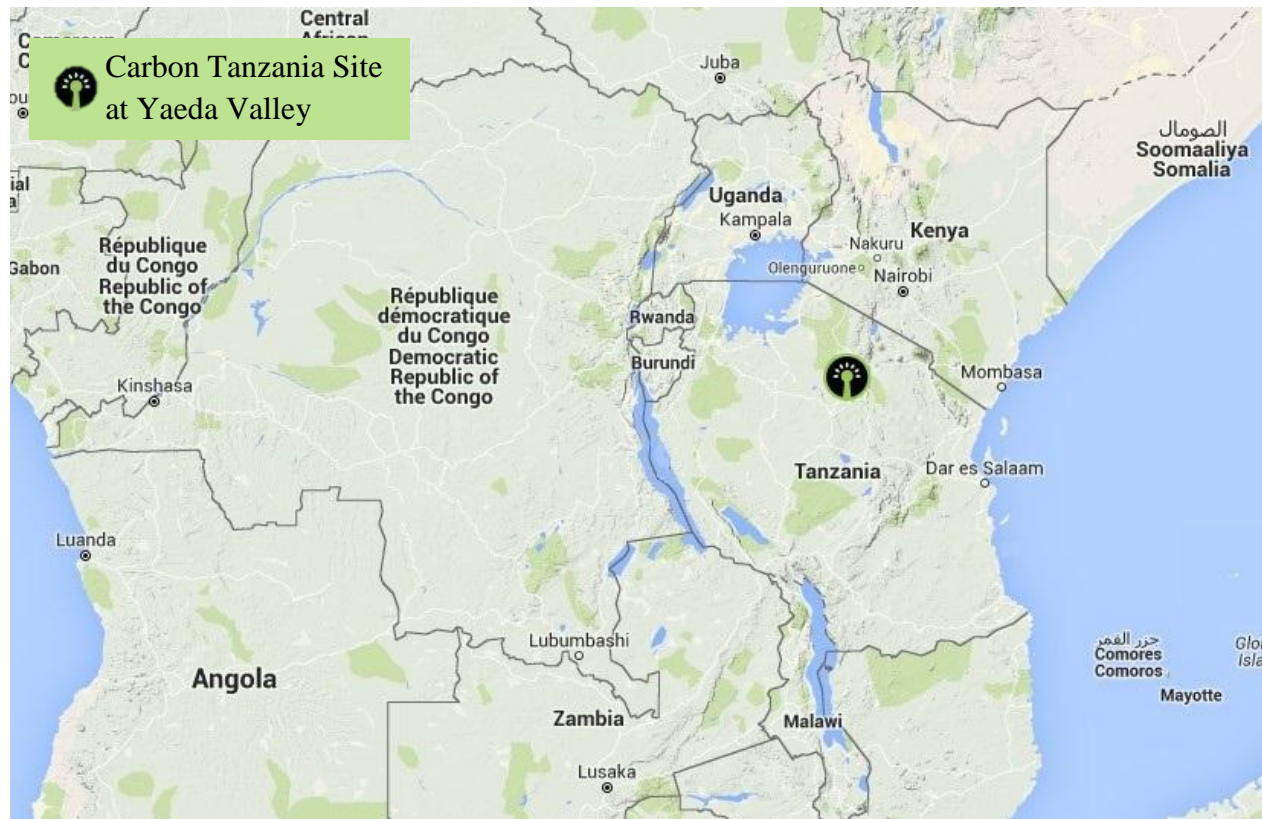


Fig. 3. Carbon Tanzania, Yaeda Valley, Northern Tanzania.

The Eyasi-Yaeda basin is located in the East African Rift valley and one of the most diverse landscapes in Africa (Madsen 2000). Renowned tourist and conservation places are located in northern Tanzania such as the Serengeti National Park and Mount Kilimanjaro National Park. The Eyasi-Yaeda basin is situated between Mbulu Highlands to the east and the Eyasi slope to the west and surrounded by important wildlife areas such as the Serengeti National Park in the north and Lake Manyara and Tarangire National Park in the West. The Basin is located in the Rift Valley which is an interesting geological zone with volcanic activity to the north. As a result, fault and parallel ridge structures with granite outcroppings are characteristic of the area. Faulting activities led to the formation of drainage basins which allowed the formation of saline lakes (such as Lake Eyasi), swamps and plain areas with fluctuating water levels. The local climate is arid to semi-arid with most annual rainfall occurring during the long rain season from February until April. The semiarid savannah vegetation zone is dominated by bush land and vast grassland. Migratory wildlife populations have been historically abundant but due to increasing human settlements, agricultural and pastoral activities in the valley, wildlife movement has decreased more recently (Armitage 1996).

4.2. Actors

4.2.1. The Hadzabe

The Hadzabe are one of planet's remaining hunter-gatherer groups who depend on the availability of local wild food. Hadzabe land covers an area of approximately 4,000 km² and is dominated by savannah woodlands with a wide range of plant and animal species, but also contains rocky hills, palm forests, scrub brush and marsh lands (Marlowe 2010). In contrast to neighbouring communities depending on agriculture (maize and millet) and livestock (goats and cattle), the Hadzabe have adapted much better to the semi-arid environment as their diet is based on many drought resistant resources. Their nomadic lifestyle puts little pressure on the environment as they do not clear large areas for agriculture production or grazing lands (Mabulla 2003). East Africa is a region rich in hominin fossils and has been occupied by humans and hominin antecedents for as long as they have existed (Marlowe 2010). Hadzabe are believed to have always pursued a traditional hunter-gatherer lifestyle and beyond that *"It is possible that prehistoric foragers used their landscape in broadly similar ways. The plant foods, water and game resources fluctuate in seasonal availability, yield and quality....such a pattern of resource availability, quality and distribution must have permitted flexible foraging economies and land-use strategies by MSA (Middle Stone Age) and LSA (Late Stone Age) foragers"* (Mabulla, 2003:50). Although there is a widespread assumption that the Eyasi Yaeda basin has been solely inhabited by Hadzabe people until quite recently, the existence of stone irrigation channels located in the northern parts of Hadzabe territory indicated the presence of settlers carrying on agricultural activities from around 1700 (Blurton 2016). In fact, archaeological research attests to an even larger history forager-farmer-pastoralist interaction across the entire area, spanning at least 1500 years (Prendergast 2010).

Today, increasing pressure from surrounding villages expanding land cultivation into traditional Hadzabe territories and external factors such as national and international economic development activities such as big-scale agricultural plantations, logging and mining have led to environmental deterioration (deforestation, increased soil erosion, runoff potential and evapotranspiration) and a shrinking of Hadzabe land (Fig. 4).

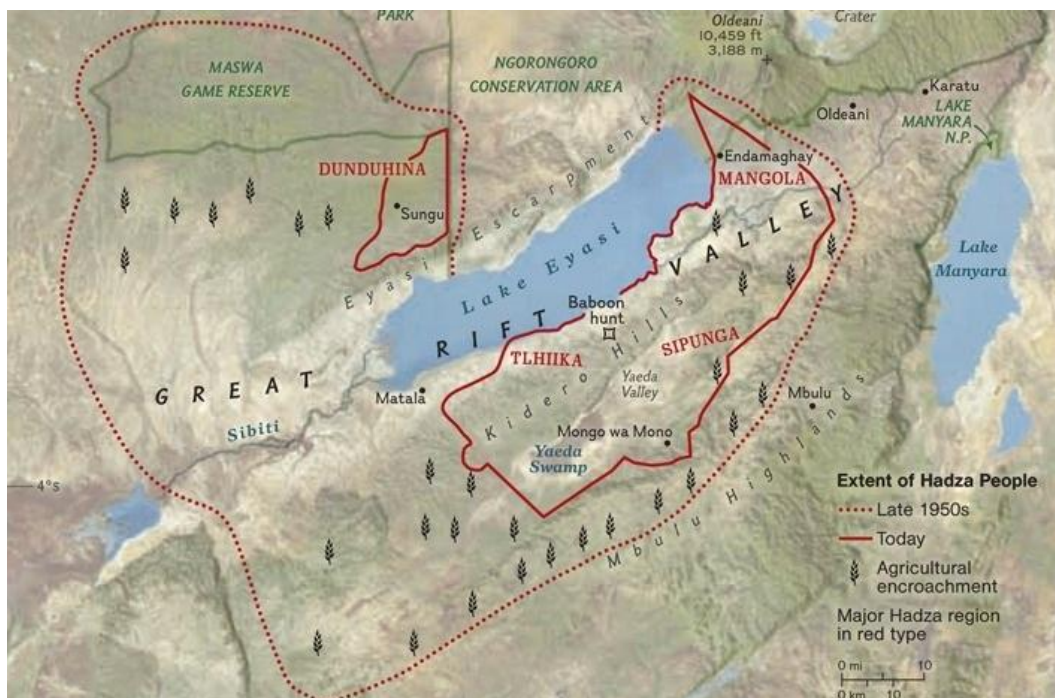


Fig. 4. Extent of Hadzabe territory, 1950 and today. (UCRT, 2007).

This endangers the long-term livelihood strategies of Hadzabe hunter-gatherer communities (Madsen 2000). Hadzabe currently number around 1,000 to 1,500 individuals (Madsen 2000; Marlowe 2010), with estimates of 300 to 400 individuals still pursuing their traditional nomadic lifestyle exclusively depending on hunting and gathering wild foods. The remaining Hadzabe population live semi-nomadic lives, engaged in some other activities for example in agriculture (guarding fields of neighbouring villages in return for food or cultivating some small fields of maize as wild food sources are diminishing) and tourism (Marlowe 2010).

Before and after Tanzania declared independence in 1961, governmental bodies, missionaries and other organisations have repeatedly attempted to sedentarize Hadzabe communities into permanent settlements and abandon traditional hunter-gatherer practices in order to fit into modernization efforts throughout Tanzania. Mainstream development doctrines give little space for “under-developed” and “primitive” hunter-gatherer lifestyles, which leads to a further marginalization of Hadzabe communities (Madsen 2000). Nomadic lifestyles of hunter gatherer communities are still predominately viewed as inferior to agriculture and pastoralism (Armitage 1996) and Tanzanian land legislations clearly favour land management supporting a sedentarised, agricultural economy. Such narratives pave the way for land appropriation by outsiders. Colonial governments completely discounted the tenure rights of Hadzabe people, an attitude sustained by Tanzanian successive democratically elected governments which have all neglected tenure rights of minority populations. Displacement of minority populations often implies abandonment of their traditional lifestyle. *“As it has been seen elsewhere, once people lose their land it is not long before they lose everything else: their language, their heritage, identity, children, culture and all too frequently their lives”* (Madsen 2000:8). The Hadzabe are not only alienated from their traditional lands due to majority interest, but as well by other displaced minorities searching for new land. Minority groups fight each other over marginal lands as they are equally vulnerable to poverty as a result of landlessness (Madsen 2000).

4.2.2. Carbon Tanzania, Yaeda Valley

The conservation area is located in the Yaeda Valley, northern Tanzania and home of the Hadzabe. The area includes important wildlife corridors for endangered elephants, lions and other populations. Carbon Tanzania is conserving forest through empowering the indigenous forest community, the Hadzabe. Focus points are securing land ownership, basic law enforcement, and wildlife monitoring. Carbon Tanzania is a social enterprise founded in 2010 and is pioneering in a market based approach to conserve community owned forests. Forests are important resources for both local livelihoods and the global ecosystem. Carbon Tanzania believes, through securing local livelihoods with this project, the global ecosystem also profits simultaneously. Deforestation can be prevented and global carbon emissions reduced. The forest conservation project is certified by the Plan Vivo foundation (Carbon Tanzania).

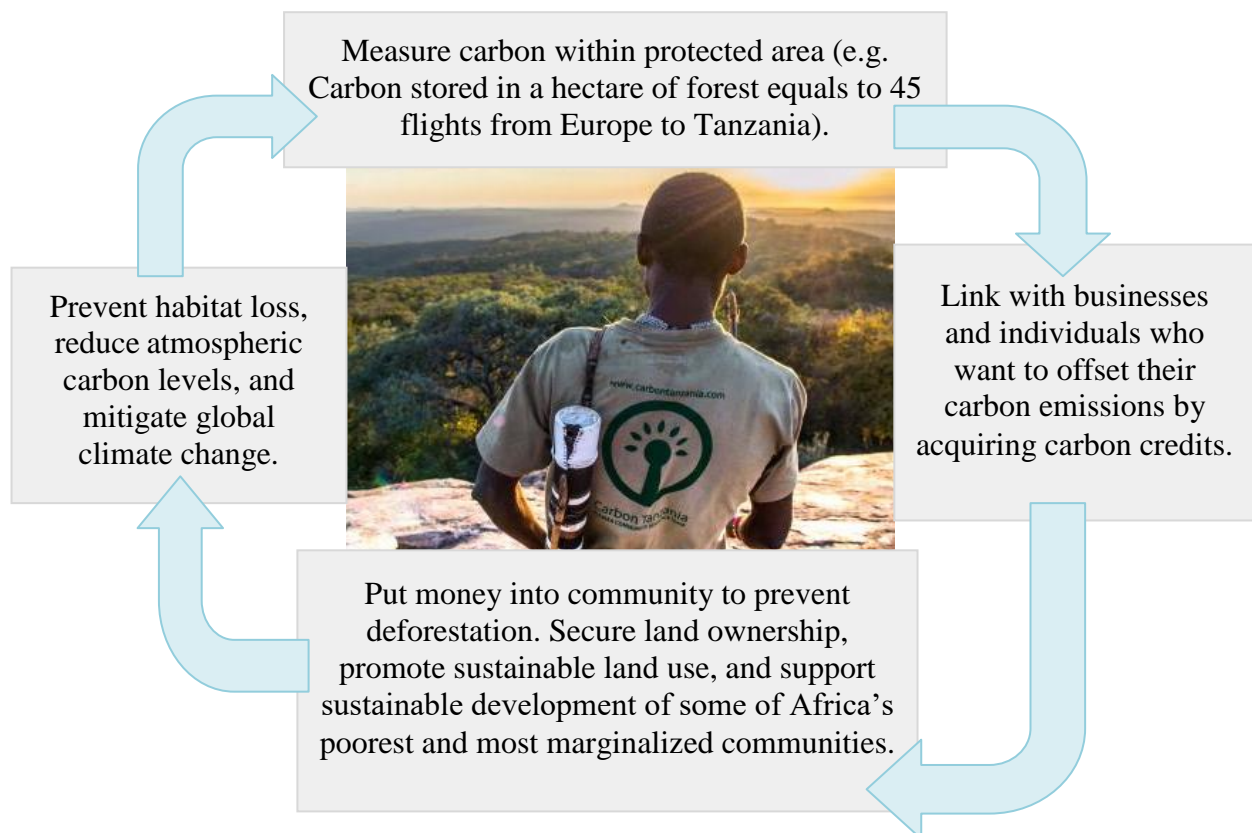


Fig. 5. Schematic Diagram of Carbon Tanzania's conservation model. Picture: Carbon Tanzania (2016).

The project is currently operating in two areas which belong to Domanga and Mongo wa Mono village. This year the project is extending to Yaeda Chini village (Yaeda Chini II). The project area consists of a highly heterogeneous society with different communities, speaking different tribal languages and leading different lifestyles (pastoralists, farmers and hunter-gatherers). I could categorise four main communities living in the area: *i*) Hadzabe, which is the smallest population, *ii*) Barbaig (pastoralists) which is the biggest population, *iii*) Wanyiramba (farmers) and *iv*) Iraqw (farmers). All of them have their own language but communicate in Swahili with each other.

The lifestyle of the Hadzabe community in Yaeda Valley varies. Some are scattered all over the landscape maintaining a very traditional way of life, living in shelters made of grass, shifting the location in short intervals and depending solely on wild food sources. A significant number of Hadzabe live in permanent settlements in the villages of Domanga and Mongo wa Mono with some maize fields to complement wild food sources. Some few Hadzabe can be found as well in Yaeda Chini village (for example due to intermarriage with other communities) where pastoralists and farmers are the predominant population.

4.2.3. Plan Vivo

Plan Vivo is an Edinburgh based foundation certifying projects that enable local communities and small-holders to sustainably manage their land, enhance ecosystem services and biodiversity protection. Founded in 1994, Plan Vivo is a pioneer in community based nature conservation and connects rural communities in developing countries with international donors and thereby creates alternative income streams for these communities which improve their livelihoods. Participation and ownership of local communities and small-holders is the central element of the Plan Vivo Standard (Plan Vivo). Plan Vivo cooperates with projects where the community holds a certificate

of land ownership. Further, Plan Vivo requires well documented processes in order to guarantee community involvement during all stages of the project.

4.2.4. ZeroMission

A Stockholm based company advising Swedish companies in carbon offsetting to reduce their climate impact. Carbon offsetting is achieved through acquiring carbon credits from Plan Vivo certified projects such as Carbon Tanzania. ZeroMission's clients include a number of well-known Swedish companies such as Arvid Nordquist, Saltå Kvarn, Max Hamburgare and Fritidsresor (ZeroMission).

4.2.5. Arvid Nordquist

The Swedish company is a leading supplier of food, coffee, wine & beers in Sweden, Denmark, Norway and Finland and a client of ZeroMission. Arvid Nordquist has built up a reputation for social responsible and environmental friendly products. Many Arvid Nordquist's products are visibly labelled as 100% carbon compensated (Arvid Nordquist). Arvid Nordquist's sustainability goal is to offset those carbon emissions which they cannot reduce in a sufficient manner along the value chain.

4.3. Chapter summary

This chapter provided an overview of the project site at Yaeda Valley and the communities living in the landscape. Beside the Hadzabe, three other communities pursuing other lifestyles than foraging live at Yaeda Valley. In order to operate a community-based forest conservation project based on carbon trading Carbon Tanzania cooperates with different actors. The Plan Vivo Foundation is a well-established standard for community-based projects. Plan Vivo certificates are then traded by a Swedish carbon trading company ZeroMission. Clients of ZeroMission, such as Arvid Nordquist acquire such carbon credits to offset carbon emissions caused along the supply chain.

5. Methodology and Methods

5.1. Introduction

This thesis presents a case study analysis of the forest conservation project “Carbon Tanzania”, using historical ecology as the theoretical framework. Qualitative case study research has its origin in anthropology and sociology (Creswell, 2013). Historical ecology draws methods from various disciplines including anthropology and sociology. Applying qualitative case study analysis is consistent with historical ecology as the theoretical framework. A case study is used to exemplify theories, principles or abstract ideas and provide a tangible illustration for the reader (Cohen, 2011). “A case study is a specific instance that is frequently designed to illustrate a more general principle; it is ‘the study of an instance in action’” (Cohen 2011:253). Case studies can make theoretical statements, nevertheless this ‘instance in action’ is bound to temporal, geographical and institutional settings. Hence, its interpretation is largely dependent on its bounded system (Creswell, 2013) and generalizations should be done cautiously. Therefore, the researcher has to balance between uniqueness and generalization when extracting and interpreting results (Cohen, 2011). Critical to any case study is the selection of information. The researcher studies the features of an individual unit – a person, a community or an institution. This can involve multiple sources of information: observations, interviews, audiovisual material, documents, artefacts and reports (Creswell, 2013). This research paper will access sources of information through interviews, documents and reports for the purpose of the case study analysis, and the specific methods used are outlined in the next section.

5.2. Methods

Methods are the range of approaches applied to gather data, which is the basis to answer the posed research question (Cohen, 2011). In order to answer the research questions of this thesis, I applied case study analysis introducing Carbon Tanzania’s conservation model and conducted semi-structured interviews with different actors involved in the conservation project. I also applied qualitative content analysis to extract and analyse the data from the interview process and collected documents.

5.2.1. Data collection: Semi-structured interviews

In order to gather the views of different actors on the topics of concern I conducted semi-structured interviews. Conducting interviews is a method of qualitative research and applied in various social sciences and therefore fits into the theoretical framework. Applying interviews as a method for data collection, contrasts with the concept of data being external to individuals and rather supports the understanding of humans being embedded in the data generation process. During the process of an interview, knowledge is created through human interaction. An interview is often structured as a question based conversation and facilitates the exchange of views on the particular field of research (Cohen, 2011). Through this process the researcher explores the interviewee’s opinion about the phenomenon of interest in respect to how the interviewee frames and structures his/her responses. This interpersonal transaction is inevitably biased, which needs to be recognized and controlled by the interviewer. Although a systematic procedure and retaining objectivity are advocated, various irrational factors contribute to the interviewing process. Hence interviews inevitably differ from one to another. Therefore the multitude of factors influencing the outcome of an interview must be taken into account (Cohen, 2013). A semi-structured interview guide provides the researcher with a clear set of instructions and can supply dependable and comparable qualitative data. A vital step before conducting interviews is to select the participants on the basis of their experience related to the field of

research (Longhurst, 2010). I picked different actors representing different interest groups involved in the project starting with the Hadzabe forest community, the forest conservation organisation Carbon Tanzania, partners such as Plan Vivo and ZeroMission and carbon credits buyers as Arvid Nordquist. The purpose of conducting interviews for this research paper was to gather information on the motives underlying participation in forest conservation and accessing interviewees' perceptions on why this is important to them. As Carbon Tanzania is an international project, actors from various nations and cultural backgrounds are involved, which is why I decided to formulate general key themes for the interviews but adapt the questions to the specific setting if necessary. I tried to include individuals of different gender and age in my research study.

<i>Actors</i>	<i>Role for Project</i>	<i>Interviewees</i>
The Hadzabe and neighbouring communities (Iraqw, Barbaig, Wanyiramba).	Local Community	Six individual and four group interviews including village representatives, traditional guards and villagers from Hadzabe community and the other communities living in Yaeda Valley. All interviews were conducted at Yaeda Valley.
Carbon Tanzania	Forest conservation organisation	Interview with Marc Baker, founder and director of Carbon Tanzania. The interview took place in Arusha, Tanzania.
Plan Vivo	Certification and Quality control	Interview with Matteo Bigoni, Program Manager at the Plan Vivo Foundation. The interview was facilitated through Skype.
ZeroMission	Carbon credits reseller	Interview with Jenny Blomberg who is responsible for marketing and events at ZeroMission. The interview was held in Stockholm, Sweden.
Arvid Nordquist	Carbon credits buyer	Interview with Erica Bertilsson, Marketing Manager at Arvid Nordquist. The interview took place in Solna, Sweden.

Table 2. Interviewed actors.

After talking to the coordinators of Carbon Tanzania and planning the visit to Yaeda Valley, I decided to prepare group interviews as well. As Hadzabe villages often consist of few houses or grass huts and people sit together in a group, if they are not foraging, it is rather difficult to talk to individuals separately from each other. Hence group interviews were more workable than individual interviews in many instances. Secondly, a group interview incorporates multiple views on the studied phenomena and hence produces richer data. A limitation of group interviews is a dynamic where certain members of the group tend to dominate the conversation. Due to the cultural context at Yaeda Valley, elderly people would be given precedence when answering interview questions. Group leaders, which are typically men, would often be regarded as more competent to share opinions and views. Table 2 lists the interviewees representing the different actors.

The following key themes were included in the interview guidelines: *i)* understanding of forest landscapes *ii)* role of forest communities for forest conservation, *iii)* land tenure rights and allocation of benefits *iv)* project partners *v)* financing of conservation project and *vi)* cooperation with national and sub-national governmental bodies.

For this research paper I conducted, with the assistance of the local project manager at Yaeda Valley Isack Bryson Magombe, six individual interviews and four group interviews at Yaeda Valley. For these interviews I had questions prepared in English and Isack Bryson Magombe

translated the set of questions into Swahili. Interviewees would respond in Swahili and Isack Bryson Magombe immediately translated back into English. This way I had the chance to react, if more clarification through follow-up questions were necessary. The process of translating back and forth was very time consuming, luckily all participants were patient enough to cooperate until the end of the interviews. The interview with Marc Baker from Carbon Tanzania was held in English and conducted in Arusha, northern Tanzania. Unfortunately I couldn't meet Matteo Bigoni from Plan Vivo in person, which is why the interview was held via Skype. The interviews with Jenny Blomberg from Zero Mission and Erica Bertilsson from Arvid Nordquist were both conducted in English and held in Sweden, Stockholm and Solna respectively. The interviews lasted between 45 to 120 minutes. Fortunately, all interviewees agreed to be recorded during the interview process, which simplified the qualitative data analysis as I could produce transcripts of the recordings by using Express Scribe Transcription Software Pro.

5.2.2. Data analysis: Qualitative content analysis

Analysing qualitative data can take many forms, depending on the type of data being used and the research aim. Therefore, there is no one particular approach that covers all studied phenomena in social science (Denscombe 2010). The concept of qualitative data analysis implies some kind of transformation from the collection of the data into an understandable and insightful analytical text (Gibbs & Flick 2007). In my interview processes I focused on central key issues of community, value of forests and project cooperation. To extract the information from the conducted interviews I applied qualitative content analysis. Applying this empirical research method provided me with a framework of rules to analyse, systematise and draw conclusions from communication, in this case semi-structured interviews, and written text (Mayring 2010). The primary source of qualitative data in my research is based on semi-structured interviews with different actors involved in the project (see section 5.2.1.). Secondary sources of qualitative data in my research were collected from documents containing information on project design, main objectives, project activities and project partners.

The aim of the qualitative content analysis is to identify *i)* the understanding and value of forests for the different actors *ii)* stated objectives of the conservation project and analyse if and how these objectives have been achieved and understand how the cooperation between the different actors works in practice. This analysis is necessary to answer the research questions of this thesis. When applying qualitative data analysis I have followed the process described by Mayring (2010). According to Mayring (2010) the analytical process contains eight steps: (1) specifying the data material, (2) analysis of the data creation process, (3) characteristics of the data, (4) orientation of analysis, (5) theoretical context of contemplated research question, (6) determination of concrete analysis technique, (7) conducting the analysis and (8) compilation of results and interpretation

(1) Specifying the data material:

The purpose of the first step it is to determine which type of data material the analysis is based on. The relevant data set for this research paper is based on transcripts generated from fifteen interviews conducted both in Sweden and Tanzania, which are described more in detail in the section above and collected documents such as Carbon Tanzania's Project Development Description, REDD+ technical specification document; Plan Vivo's Annual Report 2014-2015; written text on ZeroMission's and Arvid Nordquist's sustainability reports for 2015.

(2) Analysis of the data creation process:

When analysing the data creation process it is key to accurately describe who and under which circumstances the data has been produced. Semi-structured interviews have been conducted with ZeroMission in Stockholm (Sweden), with Arvid Nordquist in Solna (Sweden), with Plan Vivo

via Skype in Uppsala (Sweden) and London (UK), with Carbon Tanzania in Arusha (Tanzania) and with individuals and groups of the Hadzabe community and additionally with individuals representing the Iraqw, Barbaig and Wanyiramba community in Yaeda Valley (Tanzania). As the different stakeholder groups included in my research operate in very different environments it is important to not separate the data from the social context.

(3) Characteristic of the collected data:

The third step describes in which medium the data is available. As mentioned above I recorded the interviews. Later I transcribed the recorded interviews and saved them as word files. Non-verbal (facial expressions and gestures) and paraverbal (volume of speech, speech rhythm, pitch of voice) aspects of communication are not part of the analysis. Collected documents and maps of the research area are available in pdf files.

(4) Orientation of analysis:

To understand conclusions and results based on the collected data it is important to mention how the analysis is directed. The theoretical background of the study is to examine human-nature relationships and specifically the role of local forest communities within those landscapes. Further, the interviews are based on subjective perception of interviewees on the issue and subjective motives to participate in the project.

(5) Theoretical context of contemplated research question:

The theoretical background of the study is to examine human-nature relationship and specifically the role of local forest communities within those landscapes. Assuming nature is part of cultural landscapes, where humans take an active role in shaping them, protecting forests has to come hand in hand with protecting those cultures. With the stated questions within the interviews the research aims to find out if cultural integrity is supported in the community-based approach to forest conservation in Yaeda Valley.

(6) Determination of concrete analysis technique:

The sixth step specifies concrete analytical techniques and a model of analytical procedure. Mayring (2010) differentiates between three primary forms of data interpretation: summary, explication or structuring. Summarising content analysis aims to substantially reduce the data to the most essential points. Explicating content analysis is aiming for the opposite of the summarising content analysis and complements unclear text section with additional data material. Structured content analysis filters specific aspects of the gathered data material or assesses the data according to specified criteria. In the context of this research paper I decided on structured content analysis as the appropriate analytical technique. On the basis of deductively constructed categories such as value of forests, land ownership, land use planning, community involvement and carbon markets, relevant passages were coded with the program QDA Miner Lite.

(7) Conducting the analysis:

In this step the relevant passages are organised into the respective categories and structured according to their main emphasis and relevance. This structuring simplifies evaluating the results.

(8) Compilation of results and interpretation:

Finally, the extracted results are interpreted in regard to the research question.

5.3. Delimitations

The interviews conducted at Yaeda Valley were conducted in Swahili, with the assistance of the Carbon Tanzania's project manager at Yaeda Valley, Isack Bryson Magombe, who translated the answers back into English. Due to this intermediate step, the translation work of Isack Bryson Magombe, information potentially got filtered prior to my data recording. Nevertheless, this step

was necessary as I unfortunately do not possess the required linguistic skills to communicate directly with the interviewees at Yaeda Valley. I am more than confident that Isack Bryson Magombe has tried his utmost best to pass on the information in its original context and comprehensiveness, which provided a good data base for this research paper.

Another aspect is the selection of interviewees at Yaeda Valley. Although members of the Hadzabe community live spatially distributed across the landscape at Yaeda Valley, most of the community members live concentrated at the two main villages of Mongo wa Mono and Domanga. Hence the selection of interviewees is biased as an encounter with people living in one these two concentrated areas is more likely, than an encounter with groups and individuals of the Hadzabe community living outside these concentrated areas. Being conscious of this circumstance, I was eager to look for interview partners living outside the main villages. Considering the given timeframe for my data collection, I had to balance between allocating time for searching interview partners and generating a sufficient amount of data through the actual interview process.

5.4. Chapter summary

This chapter introduced the applied methods for the case study analysis. Semi-structured interviews with different actors involved have been conducted in order to collect data on the functionality of the conservation project, Carbon Tanzania. Qualitative content analysis has been applied to extract relevant results from the acquired data.

6. Results and Analysis

This section contains the results and analysis of the conducted interviews and secondary data sources such as documents and reports of the different organisations involved in the carbon trading scheme and forest conservation project. This section contains selected extracts of interview sequences in order to support the findings. Following interviews are cited in this section:

- i) Group interview with a sub-village of Mongo wa Mono. As Isack Bryson Magombe and me were on our way for a group interview to Mongo wa Mono we unexpectedly met a group of Hadzabe living within the village lands of Mongo wa Mono, therefore forming a sub-village of Mongo wa Mono. A man called Gudo introduced himself as the leader of this sub-village.
- ii) Group interview with members of the Hadzabe community at Domanga village.
- iii) Individual interview with Mr. Naftal, former chief of Hadzabe community living close to Yaeda village.
- iv) Individual interview with Jeremias Shabady, a pastoralist of the Barbaig community also living at Yaeda village.
- v) Marc Baker, founder and director of Carbon Tanzania, who was interviewed in Arusha.
- vi) Individual interview with Matteo Bigoni, program manager at the Plan Vivo Foundation. The interview was hold in Sweden respectively London and facilitated through Skype.
- vii) Individual interview with Jenny Blomberg, Marketing Manager at ZeroMission. The interview was conducted in Stockholm at the office of ZeroMission.
- viii) Individual interview with Erika Bertilsson, Marketing Manager at Arvid Nordquist, the interview was conducted in Solna, Sweden at the headquarter of Arvid Nordquist.

6.1. Biocultural value of the landscape

Biocultural diversity refers to the notion that environmental diversity and cultural diversity are interrelated and coevolved. Biocultural value than, constitutes that ecosystems imply biological and cultural values that can vary largely. This subchapter examines how the ecosystem at Yaeda Valley is understood, valued and utilized differently by various actors, depending on lifestyle and cultural connection.

6.1.1. Value of forest

“The Hadzabe eat everything, they eat everything they can. There is no such thing as peaceful existence in nature. We [as Carbon Tanzania] know that. But of course internally within their culture they have a great deal of respect for the environment. From their perspective forest conservation is their life. Without their land they are a zero, they cease to exist” (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). For Hadzabe, the forest in Yaeda Valley provides the basis of life and consists of many different trees, plant species and hosts wild animals which altogether provide a large variety of wild food sources. *“There is a big connection between life and land. From the land is where we get our forest conserved. From the forest is where we get our basic needs, fruits, roots, meat and honey. Land is very important”* (Gudo, leader of sub-village of Mongo wa Mono, March 30th, 2016, translated from Swahili). The forest provides water in form of rivers and spring water, materials to build a shelter during night time and rain and plants for medical use. The forest is their home. Hadzabe have a deep knowledge about the particular landscape and where and how to access different wild food sources, such as

climbing up a specific Baobab tree to get honey, and visit “*special trees that are used for worship and special hills that are visited for spiritual purposes*”(Group interview at Domanga village, March 31st, 2016, translated from Swahili). It is undisputable that Hadzabe have a cultural and spiritual connection with the landscape at Yaeda Valley.



Fig. 6. Dry forest in research area at Yaeda Valley.

Although other communities in Yaeda do not directly depend on the wild food sources the forest offers as their primary food consumption is based on agricultural cultivation and livestock herding. Nevertheless those communities have experienced that an intact forest ecosystem at Yaeda Valley improves the overall productivity and fertility of land in the Valley and provides especially their cattle with water and food as they are allowed to enter the forest with the cattle during the dry season. “*In previous year, before the introduction of the land plan use, the forest was not well developed, even the pasture for the livestock was not available, because people would let their cattle graze everywhere. So in previous times there was even no pasture....After the introduction of the land use plan, and now with the conservation area the forest has improved and even grass is now available for our livestock.*” (Jeremias Shabady, pastoralist in Barbaig community, March 29th, 2016, translated from Swahili). The forest provides other than food related benefits to these communities. “*We cut small branches of the tree [to create an enclosure] for the livestock to prevent animals like hyena to attack the livestock and as well prevent the livestock to get out at night and get lost. Some people, especially older people know how to use special types of trees as a source of medicine to treat diseases.*” (Jeremias Shabady, pastoralist in Barbaig community, March 29th, 2016, translated from Swahili). Benefiting from these ecosystem services is a motive for communities other than Hadzabe to support forest conservation.

“Degraded ecosystems are much more likely to be impacted than ecosystems that are intact....if people continue living there, cultural existence in the local landscape in the context of climate change [means that] protecting ecosystems is absolutely critical for them.”(Marc Baker, Director of Carbon Tanzania, March 25th, 2016).

For Plan Vivo, forests are central in preserving biodiversity and ecosystem services which “*provide different benefits for local communities*” (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016). When put into the context of climate change forests have a role in combating climate change: “*It is important to prevent [global carbon] emissions by preserving them [forests]*” (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016).

From the interviews with ZeroMission and Arvid Nordquist in Sweden, it became evident that the central feature of forests is carbon sequestration and hence forests offer a climate change mitigation strategy. Carbon sequestration is linked to the commitment to compensate carbon generated along the supply chain of various business activities. According to ZeroMission,

forests are the world's carbon sink and hence investing in forests is an effective strategy to mitigate climate change. Additionally, *"forests have so much value beside carbon, value for the people, value for biodiversity"* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016). Investing in forests is *"natural for us [Arvid Nordquist] because we work with agricultural products"* (Erika Bertilsson, Marketing Manager at Arvid Nordquist, April 14th, 2016) and offers an alternative to offset carbon emissions generated along the supply chain. Further, both interviewees in Sweden mentioned that forests have an important recreational value for the Swedish society.

6.1.2. Value of grassland

The landscape in Yaeda Valley doesn't comprise a large continuous forest but rather an alternating forest- and grass landscape. Grassland attracts game which in turn is an important wild food source for the Hadzabe. *"The grass land is for building traditional houses. Another use is [its function as] a pasture for wild animals to graze and for us to get the meat"* (Group interview with members of the Hadzabe community at Domanga village, March 31st, 2016, translated from Swahili). During the interviews, older Hadzabe mentioned that in previous times an adequate amount of game was migrating through the grass plains as Yaeda Valley is located south of Serengeti and Ngorongoro, both areas inhabited by large populations of game. Today, grassland is designated as grazing areas for pastoralist communities in Yaeda. Although the forest area is protected, Hadzabe have difficulties finding enough wild food sources, they mentioned that often a month can pass without meat and that they face difficulties finding enough game in the area.



Fig. 7. Grass plain between forest areas used as grazing areas for livestock.

6.1.3. Meaning of being Hadzabe

"From a global perspective they are the last remnant of a clean connection between humanity and its environment. From my conservation biology brain perspective, they are a critical component in reminding and informing us that we are part of the environment." (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). The Hadzabe community numbers approximately 1400 people, living in different groups scattered around the landscape. A smaller number still pursue a traditional hunter-gatherer lifestyle foraging for wild food sources and shifting their camps according to food availability. When asking this group how their identity as Hadzabe and how their livelihoods are linked to the forest landscape in Yaeda, they answered that altering and giving up this traditional hunter-gatherer lifestyle means giving up being Hadzabe. *"If we change the lifestyle we cannot be the Hadzabe because we then lose the traditional culture"*. (Gudo, Leader of sub-village of Mongo wa Mono, March 30th, 2016, translated from Swahili).



Fig. 8. Group of Hadzabe, still pursuing a traditional hunter-gatherer life.

A large number of Hadzabe now live in permanent houses in the villages of Mongo wa Mono and Domanga and carry out some small-scale farming activities to complement wild food sources. Posing the same question to this group of Hadzabe, elicited the answer that being Hadzabe is where your origins and roots are. *“Yes we can change our lifestyle and still be Hadzabe. Because Hadzabe is a tribe name. To be Hadzabe is a natural thing. You can’t change, even if you go to Europe...If your ancestors find out that you change your tribe, you will be beaten by those ancestors. So you will still be a Hadzabe”* (Group interview at Domanga village, March 31st 2016, translated from Swahili). Cultural identification with the forest and the importance of continuing to be Hadzabe is related to the current lifestyle of different members and groups of the Hadzabe community. The set-up of the Carbon Tanzania project in accordance with the Plan Vivo standard, intends to grant sufficient autonomy for the local community to integrate their needs and vision on how they want to lead their lives. *“They [, the Hadzabe,] can make their own decision on how they want to develop their own culture”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016).



Fig. 9. Group of Hadzabe living in permanent settlements in Domanga and Mongo wa Mono.

6.1.4. Recent history of forest at Yaeda Valley

When asking about forest stories, Hadzabe would refer to stories they have heard from their parents or grandparents or recall their own memories from childhood. Taking the age of the interviewees into consideration, I estimate that the narratives go back up to 100-120 years. Before independence, hence when Tanzania was still under colonial rule, large parts of the forest were cut down. The most frequently mentioned reason for it seems to be the attempt to destroy the habitat of tsetse flies in order to combat human sleeping sickness and animal trypanosomiasis, in order to allow agricultural and pastoralist activities. After the forest cover had been reduced,

Yaeda Valley faced a drought persisting for several generations. Only in the last two to three decades, especially since establishing the protection area, has the forest recovered to a satisfactory level, water availability improved and land has become lucrative for other communities migrating into Yaeda Valley.

6.2. Land ownership and Land use

6.2.1. Land ownership

The Tanzanian Land Act 1999 designates three categories applicable to land management: general land, village land and reserve land. Reserve land typically comprises national parks and game reserves, owned by central government and designated to protect landscapes and wildlife. General land is owned by central government who can authorize all activities (infrastructure projects, gas pipelines, industrial farming, etc.) on that land. In reality, general land is not an empty space but is inhabited by people, very often marginalized communities. Village land is officially owned by the village which then holds community and customary rights. In the past, Tanzanian authorities, before and after independence, tried to establish permanent settlements to be utilized by Hadzabe, with the aim to offer services such as education and health services, which is of course easier when people are gathered in permanent settlements. It has been mentioned that central governments often do not understand the way of the traditional Hadzabe lifestyle. Today, Hadzabe enjoy legal support by national government through the Tanzanian Land Act. Although game hunting is prohibited throughout the country, the government allows the Hadzabe to hunt game in order to sustain their hunter-gatherer culture. The Hadzabe community holds a certificate of ownership, which is officially approved by the government, but must be renewed every 33 years. This legal document is important to prevent others intruding into the land. It is the first case in Tanzania where a minority group, owns the land completely and land use has been designated as Certificate of Customary Right of Occupancy (CCRO). In 2011, the Hadzabe were granted a CCRO for an area of 20,790 ha which is designated for solely traditional use by Hadzabe. *“Resource and land ownership are critical, because we have to work directly with the people utilizing the environment”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). Although the area is protected forest land, it is classified as village land under the Tanzanian Land Act 1999 so as not to be mistaken for nationally designated protected areas such as above mentioned national parks or game reserves.

6.2.2. Land use planning

From the interviews with Hadzabe leaders in Yaeda Valley, Plan Vivo and Carbon Tanzania it became evident that the critical component for all operations around forest conservation in Yaeda Valley is an explicit and binding land use plan. The land use plan at Yaeda Valley has been developed by the Ujamaa Community Resource Team (UCRT). UCRT supports different ethnic groups in northern Tanzania to improve their livelihoods through controlling and sustainably managing their lands. Hadzabe represent a declining proportion of people living in the Yaeda Valley. Hence land used by Hadzabe to sustain their lives is under pressure to be converted for other purposes such as agriculture. Through the work of UCRT community land boundaries are clearly defined under the CCRO, which is important to protect the area from utilization from communities outside Yaeda. *“Land use planning is critical, because a village is able to quickly understand what it means for a landscape to be sustainable for them in their community and in their culture.”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). As Yaeda Valley is inhabited by different ethnical groups pursuing different lifestyles, the area is categorized into three different land use areas: protected forest land for traditional use by Hadzabe, grazing areas

for pastoralist communities and village land for housing and farming which is primarily inhabited by communities other than Hadzabe (Barbaig, Wanyiramba, Iraqw).

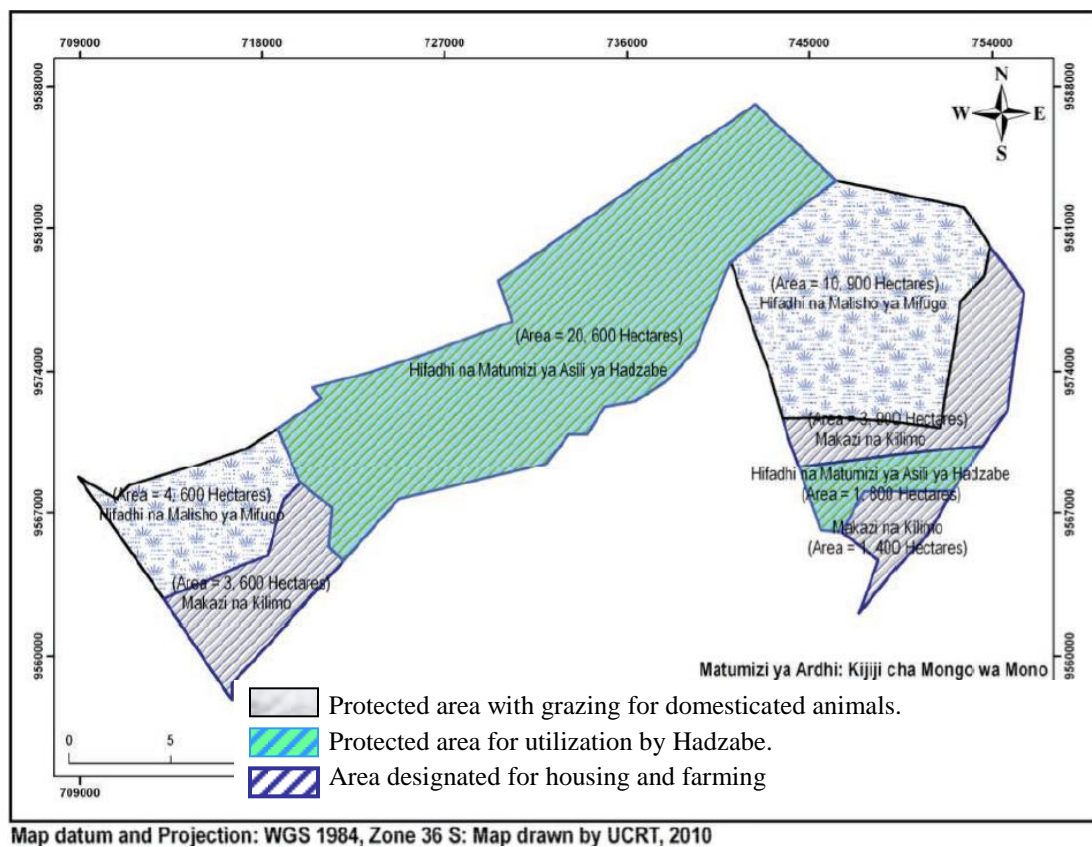


Fig. 10. Yaeda land use plan (Carbon Tanzania & Ujamaa Community Resource Trust 2015).

In order to enforce the land use plan, it has to be transparent and accessible to the people of different communities. Inside the village house at Mongo wa Mono is a land use plan displayed using symbols to declare the different land use zones (Fig. 11). Using symbols is advantageous as reading and writing is not a skill obtained by every person living in Yaeda Valley. Individuals can report to the village government if the land use plan is not followed. Additionally traditional guards are patrolling and reporting if any land use conflicts arise. The land use plan provides the legal framework for the village government to protect the land accordingly and react in case conflicts arise. If necessary, UCRT is mediating the land use conflict resolution process. In the context of Carbon Tanzania, land use planning is essential when engaging in any ecosystem service payment. The land use plan provides the basis for legally secured ecosystem service payments.



Fig. 11. Land use plan using symbols, Village house in Mongo wa Mono.

6.3. Community-based forest conservation

Carbon Tanzania and Plan Vivo promote community-based forest conservation as the only way to go. *"We believe that there wouldn't be a sustainable forest conservation project without participation of the local community. They [local community] have to be involved from the beginning until the end of the project"* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016). The following section examines how the term 'community-based' is actually contextualized in the project.

6.3.1. "We are equally interested in protecting the trees"

When looking at Carbon Tanzania as community-based forest conservation it is important to describe the initial situation. The community had an interest to protect the forest before project initiation. The Hadzabe and other communities witnessed in the past how forest degradation effects water and food availability and decided that preventing forest degradation is important for securing their livelihoods. When interviewing a member of the Hadzabe community who was involved in the contract arrangement with Carbon Tanzania, he mentioned that after Carbon Tanzania approached the Hadzabe community, they concluded that Carbon Tanzania's conservation goal matched with their community interests and therefore agreed to sign the contract with Carbon Tanzania. Quote from interviewing Mr.Naftal, former chief of Hadzabe community: *"We [Hadzabe and Carbon Tanzania] are equally interested in protecting the trees"* (March 31st, 2016, translated from Swahili). The interest in forest conservation in the Hadzabe community contributed largely to Carbon Tanzania's decision to get active in Yaeda Valley. *"The Hadzabe are of course a major part of that [forest conservation project in Yaeda Valley] because for them, sustainably managing their land, is what they want to do. They are hunter-gatherers, they depend on it. You don't need to sell them ecosystem services. They are the ultimate ecosystem service consumer. So that was a big plus, obviously"* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016).

6.3.2. Decision making process

The local village government has the authority to enforce the land use plan. As soon as violations of the land use plan are reported to the local village government, either by the traditional guards or inhabitants of Yaeda Valley, the village government can take actions, resolve the land use conflict and pass sentences if necessary. Sentences are typically in the form of compensations to the affected party by the party that has disrespecting the land use plan. Compensations can be, for example, in form of cattle that are transferred from the owner to the community fund or to an affected individual. The decision making process is in form of a village gathering. Village gatherings are open to anyone who has the interest to attend such a meeting. Village gatherings are organised as discussions between the people attending the gathering. Any results from the gatherings have to be summarized in a protocol and approved by the attending villagers through a signature or thumb print (Fig. 12). Carbon Tanzania incorporates the local culture of decision making in the design of the forest conservation project. During the interview with Marc Baker from Carbon Tanzania, he mentioned: *“It is their land and their process”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). Carbon Tanzania’s role is to inform about the consequences of a decision for example: Allocating money from the community fund to increase the number of traditional guards will decrease the money available to the community for other activities such as buying food for the dry season. When a decision has been made, Carbon Tanzania verifies that a sufficient number of people attended the village gathering, which can be testified through the village meeting protocol. A local project manager is representing Carbon Tanzania at village meetings and collects the protocols which are later passed on to Carbon Tanzania. This way Carbon Tanzania is able to document the process. This is especially important as the project in Yaeda Valley is certified by the Plan Vivo Standard, which is supporting community-based projects only. Plan Vivo demands a well documented process which is essential to ensure community involvement. *“They [, Carbon Tanzania,] have to submit to us a PDD, Project Design Document. And the PDD goes through a peer reviewed process. It is a group of experts, forestry experts, academics, also field workers that have outstanding experience in community-based forest projects.....then the actual project activities have to be validated by an external body, what we call the valuator. It is a very robust process for us to be able to say yes, this project actually complies with the Plan Vivo Standard”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016).

MAHUUHURIO YA MUKTANO WA HADHABA - KIJITI CHA YAEDA CHINI TAREHE 21/03/2016 SAA 8:00 MCHANA:		
	JINA KAMILI:	GHEO
1.	PAULO TIMOTHEO	M/KITI
2.	AMOS G. BUAY	KATIBU - VEO
3.	MUSSA D. MASHAU	MWANANCHI
4.	JEREMIA G. DINA	-do-
5.	ISAHNI ISANI	-do-
6.	LAZARO GEDA	-do-
7.	JUBAS NADA	-do-
8.	MARIKO MANONGA	-do-
9.	BARIKIEL BURU	-do-
10.	JULIETH HABYE	
11.	KWASLEMA DADOY	
12.	DANI SAQWARE	
13.	UHURU SABA	
14.	LIDAMETO GINAN	
15.	NEHEMIA DWAGWE	
16.	SINO GIDABWARA	
17.	REHELI LOITHY	
18.	DAMBADAY HUMAY	
19.	JOSEPH SEMBO STIMA	

Fig. 12. Village meeting protocol.

The majority of the interviewed people of the Hadzabe community articulated that they experience a good support by the village government but a rather weak support by the district government. The district government is the next higher jurisdiction. Land use conflicts arising with communities outside the jurisdiction level where the land use plan is applied have to be solved on a higher jurisdiction level, which is the district government. Communities from neighbouring wards, where it is the case that no land use plan is in place, repeatedly enter the conservation area and even move border markings. It is rather difficult for the local government to take action as this land use conflict involves individuals outside of their geographical area of authority. As mentioned above, the village government can only sanction forbidden activities of villagers within the own ward. Although this issue of neighboring wards not respecting the boundaries is reported to the district government, so far little or no actions have been seen from the district government, even though the Tanzanian Land Act 1999 obliges the protection of traditional land. Also, the Hadzabe community have previously decided to pay little amount to the district government to protect the land use rights from intruders entering Yaeda Valley. As the Hadzabe community has missed adequate actions from the district government when land use conflicts arise, they decided to freeze the payments and rather reallocated the money for other purposes.

6.3.3. Benefit allocation

According to the Plan Vivo Standard sixty percent of the revenue from the carbon credit sales has to be transferred to the community. *"Local communities should have the largest share of the benefits, whether they are tangible or intangible"* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016). Twice a year, typically at the beginning and at the end of the dry season, Carbon Tanzania's project developer and head of sales meet with the community in Yaeda Valley and announce the amount transferred to the community. On community level it is then decided on how the money is spent. The decision is made within the community meeting, where everybody has to agree on the allocation of the money. Carbon Tanzania is informed about

the decision and pays the money into separate bank accounts the Hadzabe have signatures for. The money is used for: *i*) paying the traditional guards to safeguard the conservation area, *ii*) health care (fund to pay cost for hospital treatments), *iii*) education (scholarships for students from families who cannot effort the cost for secondary education) and *iv*) purchasing food in case of limited availability of wild food sources for example during the dry season. *“The remaining forty percent of the revenue from carbon credits sales which is not allocated on community level is split between twenty percent marketing and sales and twenty percent into monitoring, which is Isack”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). Isack Bryson Magombe is the local project manager at Yaeda Valley, employed by Carbon Tanzania. *“Depending on the country the government wants some percentage of the revenue from the sales in the shape of tax. So typically these are three actors that would benefit from the project”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016).

6.3.4. Whole landscape approach

For both Plan Vivo and Carbon Tanzania it is clear that when talking about conservation you have to look at the whole landscape from an ecological, cultural and political perspective. *“It is an holistic approach, in terms of conservation, in terms of biodiversity, in terms of ecosystems and communities,... we believe that there wouldn’t be a sustainable forest conservation project without a participation of the local communities”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016). Plan Vivo projects also support tree planting for agro-forestry projects. When talking to Marc Baker from Carbon Tanzania he explains that supporting tree plantations in a landscape like northern Tanzania where large herbivores eat up tree seedlings within couple of hours contain no value for conservation. *“One battle we had when talking to people was the whole tree planting thing. Why planting trees? We are talking about landscapes, ecosystems supporting wildlife and people. Planting trees is totally irrelevant in these landscapes. It is a very uneconomic way of engaging in landscapes. These landscapes are shifting all the time”* (Marc Baker, Director of Carbon Tanzania, March 25th, 2016). The Carbon Tanzania project is based on the cultural knowledge of the local landscape. Indigenous knowledge of the landscape for conservation is a key aspect for the success of the project. *“Traditional knowledge [of the landscape] has a very big role. Not only how to manage the land but also in order to be able to keep their culture”* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016).

Ignoring the presence of other communities in the area, in this case farmers and pastoralists beside hunter-gathers, in the project design potentially creates land use conflicts. Hence the different land use strategies of communities living in such a landscape must be incorporated in the design of such a project. A key aspect of Plan Vivo projects are clear and stable land tenure rights. Projects have to undergo a risk assessment to examine how secure land ownership is for participating communities in the current socio-political landscape, *“there has never been a case where we have implemented a Plan Vivo project soon after a conflict of where there is a civil war or other conflicts”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016).

6.3.5. Issues

During the interviews in the villages of Mongo wa Mono and Domanga the Hadzabe community mentioned some concerns which are summarized in table 3.

Issues	Explanation
<i>Water and food availability</i>	Availability of spring water is decreasing with increased livestock herding in the area. Water availability is under pressure due to irrigation systems for onion plantations in the neighbouring ward ⁴ and recently installed domestic water supply infrastructure available only at Yaeda Chini.
<i>Information on Carbon trading activities</i>	According to the contract, Carbon Tanzania agreed to present an annual report on carbon selling activities at the end of each year containing quantities of sold carbon credits, the market price for which carbon credits have been traded and information on price fluctuations. Some villagers claimed that this hasn't happened so far and insist that this should be done in future. During the discussion in Mongo wa Mono village, it was mentioned that in 2015, 24 tons of carbon was available for sale. But only 16 tons were sold. The villagers want to be informed why the remaining eight tons haven't been sold. In both villages it was mentioned that Carbon Tanzania promised annual revenues of 100 million Tanzanian Shillings. This annual revenue has not been achieved so far.
<i>Education on carbon sequestration</i>	Traditional guards and some other villagers acquired skills to measure above ground carbon stored in trees. They wish to receive education on the mechanism behind carbon sequestration. Questions such as: How do trees store carbon? Why are carbon gases harmful? How is carbon sequestration in the forest in Yaeda important in a global context? How is carbon "harvested"? How do carbon markets work? The village discussed about appointing one to three village representatives to acquire the necessary training to sufficiently understand the mechanism behind carbon sequestration in forests and carbon markets. They wish to cooperate with Carbon Tanzania to receive the adequate training.
<i>Role of Carbon Tanzania</i>	Some villagers questioned the role of Carbon Tanzania and mentioned the possibility to organise carbon trading independently. They wish to be better informed about Carbon Tanzania's activities and question the possibility of achieving better results from carbon selling and hence payments for the village.
<i>Payments of traditional guards</i>	In Mongo wa Mono villagers wonder why traditional guards are solely paid from community funds and not partly through Carbon Tanzania's office as Carbon Tanzania profits equally from the efforts made by traditional guards to safeguard the conservation area.
<i>Training for traditional guards</i>	Some people interviewed mentioned that the wild guards have difficulties handling people who enter the people who enter the conservation area. Patrolling in the conservation area is risky for traditional guards due to illegal poaching activities. Two years ago a guard was killed while trying to arrest poachers armed with firearms. It was mentioned that it would be beneficial for the guards to obtain professional training. Academies to undergo such training exist in Tanzania as Tanzania has many national parks and conservation areas employing professional guards.
<i>Missing support from district government</i>	Five percent of the community fund is paid to the district government but the community concluded that this is not useful as they didn't see any direct support for their issues, for example when villagers from neighbouring wards enter the protected zone and the district government didn't respond to it.

⁴ Ward is the next administrative level after district government

<i>Infrastructure</i>	Problem of adequate transportation between villages. Villagers and traditional guards wish to travel faster between villages and to location of arising land use conflict. This would improve the work of guards to observe the area and react faster. Improvement of communication between villages and traditional guards is requested as area covers big distances and from time to time travelling to different areas is difficult for example during raining season
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Table 3. Issues mentioned during interviews in Mongo wa Mono and Domanga.

6.4. Conservation as a business model

In order to understand the model of forest conservation and carbon trading in this particular case it is essential to describe the role of all actors involved, their motives and the cooperation between them.

6.4.1. Carbon Tanzania

Carbon Tanzania is creating a link between international carbon markets, providing financing sources for the project, and a very rural community in northern Tanzania, the Hadzabe, who then use the payments for the provided ecosystem services, for community development. Carbon Tanzania as a business model is a very cost-effective option to simultaneously protect the environment, secure livelihoods of marginalized communities and offer improvement in services such as health care, education and food security. According to Carbon Tanzania, 100 000 USD are allocated at community level to provide those services. In order to do so, Carbon Tanzania cooperates with a number of organisations such as Plan Vivo and ZeroMission.

6.4.2. Plan Vivo

Plan Vivo is a standard for community based ecosystem service payments. In order to be certified as a Plan Vivo project, Carbon Tanzania has to follow a set of requirements. The Plan Vivo Standard comprehends principles on clear and existing land tenure rights, engagement of and creation of quantifiable benefits for the local community through performance based incentives corresponding with local needs and priorities, protection of local biodiversity and interdiction to introduce invasive species, generation of ecosystem services. Plan Vivo requests transparent and periodic monitoring, reporting and payment mechanisms to ensure the listed requirements are met by project partners. Local governance structures must predate project initiation and support by the project. Potential risks to the provision of ecosystem services must be determined and mitigation strategies defined within the project design. Plan Vivo does not promote their projects, as a Standard Plan Vivo believes staying independent emphasises credibility and *“secondly we don’t want to sort of benefit one project over the other”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016). Result based payments on ecosystem services creates the means for community development. Plan Vivo argues that quantification of nature and assigning a specific dollar value to biodiversity and ecosystems is challenging and open for discussion. Simultaneously Plan Vivo reasons that *“we live in a world that is dominated by the private sector. If you don’t engage with the private sector there is very little you can achieve and the way that you engage with the private sector is through market based mechanisms”* (Matteo Bigoni, Program Manager at Plan Vivo, March 14th, 2016).

6.4.3. Zero Mission

ZeroMission is a carbon trading company and promotes Plan Vivo projects to Swedish businesses. ZeroMission typically matches carbon sequestration projects with the specific type of business. *“We look at the clients and their business and what they have in common with the*

project” (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016). Common interest could be having part of the business operating in the same country as the project. *“Carbon offsetting and calculating is a way of realizing how you as a company affect climate change”* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016) and is an effective strategy for taking responsibility for emissions generated in all sorts of business activities. Compensations for carbon emissions from business activities can reach from simply compensating for business travel but ideally incorporate the whole supply chain. According to ZeroMission the market based approach of carbon offsetting is *“corresponding to something within the company. You know that you got a way of reducing your impact on the environment for example by offsetting ten tons of your generated carbon emissions. This is often a door-opener for even more activities”* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016). Demonstrating the carbon footprint of business activities has encouraged companies to switch to less carbon intensive products. *“It’s a trigger, it is enabling better things to happen”* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016). Creating additional benefits within Plan Vivo projects such as improving livelihoods is an important selling point in promoting these projects to clients in Sweden, *“but sustaining cultures and the way of living, isn’t something we [ZeroMission] stress so much”* (Jenny Blomberg, Marketing Manager at ZeroMission, March 10th, 2016).

6.4.4. Arvid Nordquist

Arvid Nordquist is purchasing carbon credits in order to take care of their carbon emissions generated throughout the supply chain from growing coffee until the roastery. According to the interview with Erica Bertilsson, Marketing Manager of Arvid Nordquist, securing the value chain and pushing sustainability efforts is the base for new quality branding at Arvid Nordquist. New brand awareness amongst consumers for eco-labelling provides Arvid Nordquist with a competitive advantage. A growing number of consumers, especially in Europe want to be better informed about sustainability efforts connected to the products. *“We have always been a quality brand but to secure our whole value chain and I think everyone [at Arvid Nordquist] realized this was the new quality”* (Erika Bertilsson, Marketing Manager at Arvid Nordquist, April 14th, 2016).

In 2010 Arvid Nordquist was appointed to supply Max Hamburgare. Max Hamburgare has been a client of ZeroMission for many years. After getting informed about Max Hamburgare’s engagement, Arvid Nordquist expressed interest in calculating their own emissions along the whole supply chain as they previously only had collected data on the emissions generated in the local coffee roasting factory in Sweden. The calculations revealed that eighty percent of the emissions actually occur during cultivation of coffee. After this new insight Arvid Nordquist made the decision to expand its sustainability goals to the whole value chain, as they have been previously only set for the roaster in Sweden. *“But the problem was to become hundred percent sustainable certified over night, because of the established supply chain. We set our goals on how to decrease our emissions and for the emissions we cannot do anything right now, we carbon compensate.”* (Erika Bertilsson, April 14th, 2016). Besides taking care of environmental risk along the supply chain, social risk is another important component of the sustainability efforts.

The decision to carbon compensate *“was not a push from the consumers at all, it was a complete internal decision made by us [and] actually helped us much more than we thought. We have had a fantastic development on the market since we started off in 2011”* (Erika Bertilsson, Marketing Manager at Arvid Nordquist, April 14th, 2016). When deciding on how to compensate for the carbon emissions Arvid Nordquist decided that engaging in forest projects is a logical consequence as core business activities are in agriculture. *“We felt that trees were natural for us because we work with agricultural products. It felt a bit right, because we take the coffee and we*

bring back the trees” (Erika Bertilsson, Marketing Manager at Arvid Nordquist, April 14th, 2016). Additionally Arvid Nordquist emphasised that criteria for investing in a project are transparency, provision of a good amount of information in order to be communicated in the media.

When comparing this type of sustainability strategy to other cooperate social responsibility strategies it was pointed out that committing to such a project is a long-term decision. *“I think if you donate you can do it one year and you skip it the next year. But we cannot do that, we are in it for a long-term and we communicate it as a value of our product so if we suddenly decide to skip it we would need to change all packaging material and everything. That would cost more than we would probably save for not doing it. So I think this is an advantage for the project and for the environment but it is less flexible for us. But I think at least, I mean when I ranked these different values, I ranked firstly, taking responsibility for business activity and I think if you only do donation that is not taking responsibility for your business activities.”* (Erika Bertilsson, Marketing Manager at Arvid Nordquist, April 14th, 2016).

6.4.5. Motives to engage in community-based forest conservation

The figure bellow (Fig. 13) summarizes different motives which have led to the engagement in forest conservation of different organisation interviewed for this research paper. Carbon Tanzania ranks ‘protecting hunter-gatherer lifestyles’, ‘promotion of pro-poor development’ and ‘climate change mitigation’ as the top three factors. For Plan Vivo it is ‘climate change mitigation’, ‘protecting traditional societies such as hunter-gatherers’ and ‘biodiversity protection’. ZeroMission positions ‘climate change mitigation’, ‘taking responsibility for business activities’ and ‘promotion of global economic justice’ on the upper end of the list. Arvid Nordquist ranks ‘taking responsibility for business activities’, ‘climate change mitigation’ and ‘protecting biodiversity’ as the top three factors. ‘Protecting hunter-gatherer lifestyles’ becomes less important the less familiar the actor group is with the local landscape. Whereas ‘protecting biodiversity’ and ‘climate change mitigation’ are ranked quite similar by the different actors.

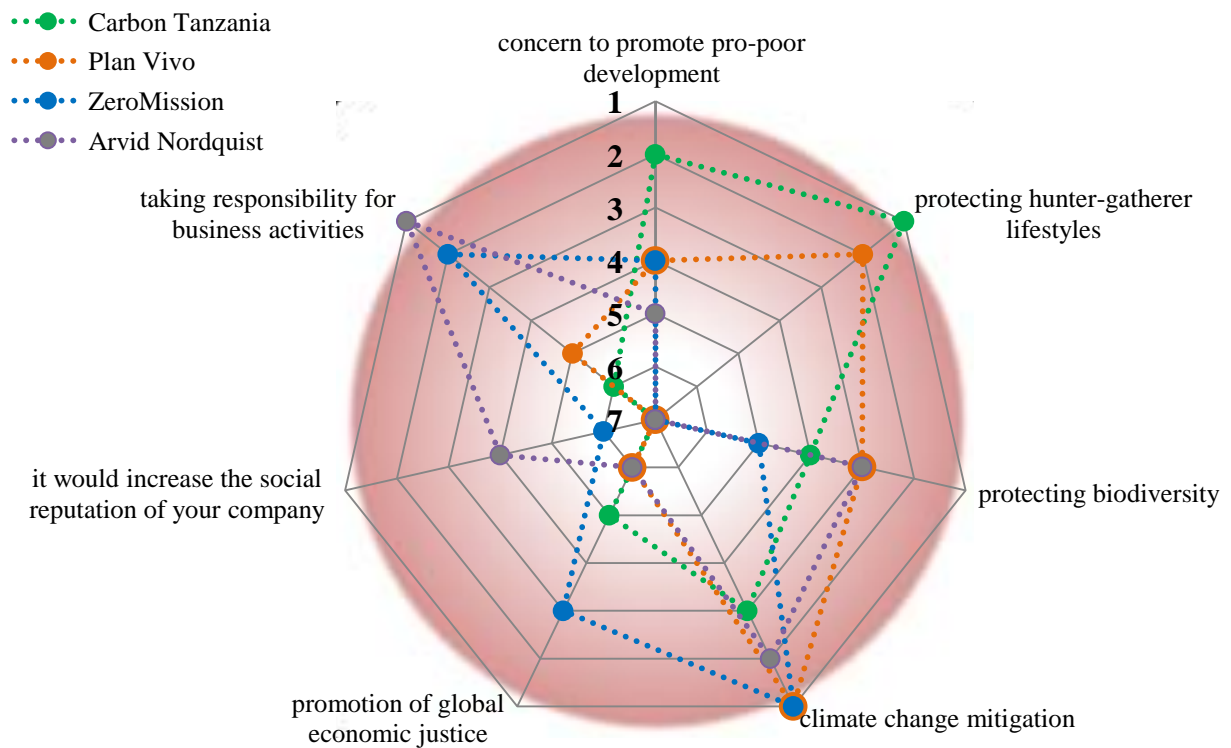


Fig. 13: Ranking of factors that have led to the engagement in forest conservation, (1) being the most important and (7) the least important factor.

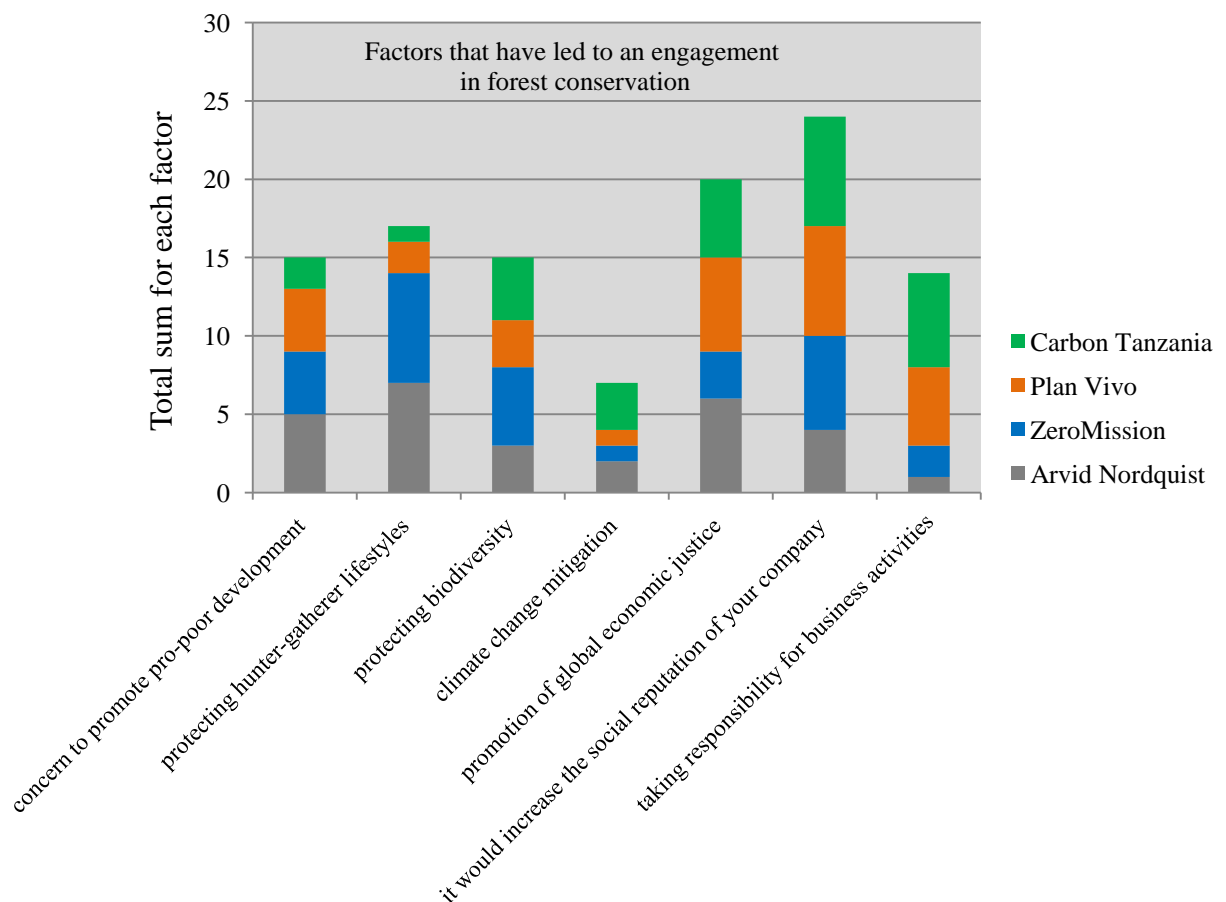


Fig. 14. Total sum for factors that have led to the engagement in forest conservation.

To understand the driving motives behind this project on an aggregated level, I added the number (rank) given to each factor by the different actors (Fig. 14). Factors ranked as a top priority were graded 1, on a sliding scale to 7 – being the factor ranked lowest. The lower bars (Fig. 14) indicate those factors regarded as most important by all actors. ‘Climate change mitigation’ has been the driving motive for actors to get engaged in a forest conservation project as it is offering an effective method for carbon sequestration. Further back on the second place is ‘taking responsibility for business activities’. Followed closely by ‘protecting biodiversity’ and ‘concern to promote pro-poor development’ which both scored the equal total sum.

6.5. Chapter summary

This chapter comprises the results of this research project which are based on the conducted semi-structured interviews and on the qualitative content analysis. The results show that the forest landscape at Yaeda Valley has major importance to the livelihoods and cultural identity for the Hadzabe community. Equally, traditional knowledge of the particular forest landscape is essential for the forest conservation project. The Plan Vivo Standard ensures a bottom up integration of local communities and their needs into the process of the project. Land ownership and a binding land use plan are critical components for community-based forest conservation at Yaeda Valley. The allocation of the funds resulting from ecosystem service payments for carbon sequestration effort at Yaeda Valley is decided by the community. The funds are used for health, education, employment and food security. The interviewed buyers of carbon credits are engaging in carbon offsetting in order to secure their supply chain. Looking at the motives to engage in community-based forest conservation ‘protecting hunter-gatherer lifestyles’ becomes less important the less familiar the actor group is with the local landscape, whereas ‘protecting biodiversity’ and ‘climate change mitigation’ are ranked quite similar by the different actors.

7. Discussion

7.1. Conserving landscapes

In regard to the research question: ‘What is the understanding and value of forests for different actors involved and what are the motives for their engagement?’ The case of Carbon Tanzania is an example of how various actors can benefit from a multitude of services from the same ecosystem, in this case a forest, although their value and understanding of forest landscapes varies. Hadzabe and other communities in Yaeda Valley likewise, depend on ecosystem services provided by their immediate environment. Hence Hadzabe cannot be regarded separately from their land. Businesses consuming ecosystems services such as carbon sequestration do not depend on the provision of carbon sequestration services from a specific ecosystem, just ecosystems in general. However, when connecting projects to specific business activities, as ZeroMission is purposefully doing, is creating a relationship between ecosystems and carbon credit buyers located far away from these ecosystems. Establishing such a relationship potentially leads to a longer-lasting commitment.

While interviewing individuals in Yaeda Valley, several interviewees mentioned that in previous times large areas have been deforested but that the forest cover has recovered in recent years. The project at Yaeda Valley is a good example that forest vegetation can recover if proper measures are taken. Biodiversity is essential for Hadzabe as it implies a greater variety of wild food sources. During the rainy seasons pastoralists are allowed to enter the forest area which drives away the game Hadzabe hunt. Furthermore, the protected forest area cannot attract sufficient game for Hadzabe to hunt in order to complete their diet. Adding a sufficient area of the grass plains located between and next to the forest areas to the conservation area designated for Hadzabe use only, might be a necessary step in order to provide enough food sources to attract a larger number of herbivores.

In the context of biodiversity conservation and carbon sequestration, forests are frequently considered as the superior form of landscapes. Discussions around landscape restoration seem to focus disproportionately on planting trees. A holistic landscape approach has to examine such measures in context of local ecosystems and additionally consider the role and value of other vegetation types such as grasslands equally. Landscapes continuously change throughout time. Forests expand into savannah and vice versa which is why figures on deforestation can vary. Hence quantification of forest stocks for carbon markets is challenging. During the interview process with Jenny Blomberg from ZeroMission and Matteo Bigoni from Plan Vivo a new Plan Vivo project in Mongolia was mentioned. The objective of this project is carbon sequestration through improving grazing management practices aiming to protect biodiversity and improve local livelihoods. Of course, I am not familiar with the technicalities of this project, but it might be considered to improve the management of the grazing areas at Yaeda and hence to secure grazing areas for wildlife.

7.2. Cultural diversity and community-based project

In regard to the research question: ‘How is Carbon Tanzania trying to achieve the dual-objective of forest conservation and protecting cultural diversity?’ it is largely due to a good functioning partner network specialised on different aspects of this complex objective. Although Carbon Tanzania has been operating in Yaeda Valley for a relatively short time (since 2010) land use planning has been in place before. The presence of a land use plan and established village councils and decision making processes are fundamental to the activities of Carbon Tanzania. Looking through a Western perspective, the decision making process within communities and village governments apply to models of direct democracy which can be found in only a few

places on the world, Switzerland being an example. The organically grown political structure at Yaeda facilitates the integration of the cultural context within the process of the project. Cultural integrity of Hadzabe and self-determination are respected within Carbon Tanzania and supported by the Plan Vivo Standard. Nevertheless members of the Hadzabe community wish to expand their knowledge and ownership of the process. This became evident during the interviews with Hadzabe members, who mentioned that they want to receive a training to learn about the functionality of carbon sequestration and carbon markets.

Protecting cultural diversity is important. Loss of traditional lifestyles goes hand in hand with loss of knowledge about resilient strategies to a local environment and reduces the capability to adapt to climate change. The case study of the Hadzabe is a good example on how a society can survive in a resource scarce environment.

Though a good legal framework for land use management and protection of community land is in place, enforcement of those laws is often lacking, especially outside the village government jurisdiction. The expiration of the certificate of land ownership in approximately 20 years constitutes a future risk. Without a legal document, intrusion of external communities and activities may be difficult to prevent.

As the society in Yaeda Valley is heterogeneous in many ways, conflicts arise naturally. The main reason is that land is scarce. The one common denominator is that all communities depend on land for their daily survival. While interviewing it became clear that a great number of people pursuing agricultural or pastoralist lifestyles are aware of how important forest conservation is to prevent drought and improve water availability. But as land is increasingly under pressure, land use rules are repeatedly neglected.

7.3. Combining traditional and scientific knowledge

Indigenous knowledge is scarcely represented in the REDD+ framework and sustainable forest management is portrayed as something to be taught to local communities, which implies a very strong top-down approach in policy making. The case at Yaeda shows that traditional and scientific knowledge do not have to conflict with each other but rather complement each other. Using indigenous knowledge about local biodiversity and ecosystem functioning can be applied successfully within a project. Although it is important to mention that indigenous and traditional knowledge does not imply sustainable resource management. One reason could be that through colonialization people were displaced from their traditional lands and hence abandoned both the lifestyle and knowledge of their ancestors. Scientific knowledge provides the technical implementation of this result based payment mechanism. Above ground carbon content in the forest is measured and vegetation changes are monitored. Based on this carbon credits are issued and traded. The Hadzabe community mentioned that they wish to acquire more knowledge on the carbon sequestration process. Furthermore, community members wish to obtain information on the functionality of carbon markets. This indicates that more knowledge transfer from project developer to the local community is required to sufficiently link local realities with global carbon trading mechanisms.

7.4. Carbon sequestration as a business model

The case of Carbon Tanzania provided as interesting mechanism to provide the means for community development for an indigenous hunter-gatherer society. Monetary benefits on community level beside payments for traditional guards, are used for education, health care and food security. Trading carbon credits generates provision of improved ecosystem services and direct improvements of local livelihoods. Services in education, health care and food security are

traditionally development aid objectives. In the African context, rural development is connected to using land productively which leads to in many cases to land conversion for agricultural and timber production. This mainstream development doctrine gives little space for ‘under-developed’ and ‘primitive’ hunter-gatherer lifestyles. ‘Harvesting’ carbon from an intact forest ecosystem, generating the means to invest in community development can lead to a counter-narrative about ‘inferior’ regarded land use systems. Carbon trading schemes can be a great financial source for rural development and forest conservation and must not contradict social justice and poverty alleviation, if developed under a set of requirements and supporting a bottom-up approach as applied by Carbon Tanzania and the Plan Vivo Standard. This could lead to a shift from development aid dependency in those countries to provision of global climate change mitigation strategies in future and can if carefully applied, benefit rural communities.

The ethical concerns on quantifying nature have been mentioned from different actors involved. Despite this criticism, ecosystem service payments provide a way to integrate conservation and protection of cultural diversity through livelihood improvement into a dominant capitalist system and engage the private sector in ecosystem improvement and rural development. In the developed world large parts of the public and private sphere are commodified already, so why prevent it when it comes to enabling rural development in other parts of the world?

In respect to the research question: ‘How is Carbon Tanzania trying to achieve the dual-objective of forest conservation and protecting cultural diversity?’ it is interesting to demonstrate how Carbon Tanzania is addressing this objective. The REDD+ mechanism is effective in providing financial funds for the project. As seen in the background study, REDD+ targets community involvement, but in practise does not provide a set of rules and measures on how to achieve that goal successfully in practice. In the case of Carbon Tanzania, the favourable combination of different measures in place and cooperation with different actors, such as UCRT and Plan Vivo enabled project development and community participation. Looking at this case might give an idea as to what has to be considered when developing such a project, aiming to address forest conservation and protection of cultural heritage, but adjustments to specific geographical, ecological, and socio-economic situation are indispensable as projects of this type have to be tailored to the local culture and landscape in order to be effective.

7.5. Historical ecology and cultural landscapes

Is an understanding of the historical past of a landscape needed to formulate effective conservation projects? What insights are gained from an historical ecology perspective? Historical ecology aims to better understand how landscapes have been formed and the role of humans in these specific landscapes. The term cultural landscape offers an interpretation of human civilisation as integral parts of their natural environment. This change of narrative, leaving behind a worldview that considers society and the nature as separate from each, could benefit policies on protecting ecosystems and the people and cultures part. In regard to the question: ‘What can an historical ecology perspective contribute to forest conservation and protection of cultural diversity?’ the findings of this paper indicate that achieving this dual-objective is possible and a proper understanding of how local society and their natural environment coevolved facilitates the process of properly integrating these two objectives into conservation programs. Knowledge about cultural landscapes has to form the base for the formation of any development that intends to benefit nature and humans, equally. Historical ecology can offer such a perspective on landscapes. Interdisciplinary research within the field of historical ecology comprising paleoecology, archaeology, geology and other disciplines helps to reconstruct the formation of the landscape and the role of human societies for this process. Persisting environmental and development doctrines applying a very generalizing approach need to be challenged and exchanged for strategies and policies that fit local realities. Of course it is important to discuss

what the term ‘traditional’ implies and how far back in time a culture has to go in order to be considered as traditional. Typically discourses in academia, politics and economics take a Western perspective which has already divided the world into developed and under-developed. Alternatively, landscapes have to be considered in a local context which implies the study of the ecological and cultural history. This provides a basis to formulate future development goals matching local realities. Further the interdisciplinary approach of historical ecology, leaving traditional knowledge hierarchies behind, could facilitate the inclusion of indigenous knowledge in debates on climate change mitigation strategies, forest conservation, biodiversity protection and livelihoods improvement.

In the case of Carbon Tanzania historical ecology could be used to study how far back the coexistence of different tribes at Yaeda Valley pursuing different lifestyles such as hunter-gatherer, farming and livestock herding reaches. As different studies, briefly mentioned in the background study indicate, archaeological sites in the larger area indicate a history of even larger forager-farmer-pastoralist interaction across the entire area, spanning at least 1500 years. Such a study could indicate how different communities utilized the landscape in different manners and if these activities were competing or complementing each other. The findings potentially add additional information for land use planning in the area.

7.6. Limitations

During the group interview at Yaeda Valley it was generally easier to have both men and women participating within a smaller group, as spatial separation is almost impossible due to most group members living together in a small area. The bigger the group and settlement, a majority of men participated. In this case older men would predominately speak, as elders are much respected in Hadzabe culture.

While conducting interviews in Yaeda Valley, the biggest barrier was the language as I was neither able to speak the local Hadzabe language nor Swahili. Therefore I depended on translation through the local project manager, Isack Bryson Magombe. Hence, first data has been already interpreted and potentially distorted through the translation process.

Another limitation is the circumstance that I could not arrange interviews with clients that invest in Carbon Tanzania directly through carbon offsetting. Nevertheless, Arvid Nordquist is a big client of ZeroMission. I decided that for the purpose of my research study it was sufficient to interview Arvid Nordquist in order to understand the role of carbon credit buyers in the network and their motives to engage in carbon offsetting.

Although the research paper intends to include all stakeholders involved in the carbon sequestration scheme, the final consumer of carbon compensated products and hence clients of carbon compensating companies are missing to close the circle and connect civil societies in Sweden and Tanzania. Interviewing consumers such as buyers of Arvid Nordquist coffee could have added important insight how carbon sequestering companies can differentiate themselves to non-carbon companies and how important Swedish consumers consider mechanisms that compensate for carbon intense consumption patterns and secondly promote social responsible business activities.

It would have been interesting to investigate if all those activities around carbon offsetting, forest conservation and protection of hunter-gatherer lifestyles matter at all for the end consumer. Due to the scope of my master thesis I was not able to incorporate the consumer perspective into my research but I would definitely be eager to investigate this last link in future. In the context of my research I find it especially important to adequately inform and incorporate both ends of such a mechanism, the people living at Yaeda Valley and the society in Sweden and support decision

making processes starting bottom up.

7.7. Meaning for sustainable development

Strategies that promote ecologically and socially sound land utilization are key themes of sustainable development. Result based payments for ecosystem service that engage the private sector, especially in the so called developed world can be an effective mechanism in counterbalancing the unidirectional relationship of economic development and climate change and can create alternatives for carbon emitters to take responsibility and tackle environmental and social justice. Protecting cultural diversity and knowledge encompassing resilient strategies to adapt to a transforming environment are valuable for our modern societies to adapt to climate change.

8. Conclusion

The aim of the thesis was to understand if and how forest conservation and protection of cultural diversity can be obtained simultaneously. To answer this I focused on the activities of a single carbon trading company, Carbon Tanzania, primarily because they work in an area of northern Tanzania often represented as ‘pristine’ inhabited by one of the few remaining hunting and gathering societies on the planet, the Hadzabe. Carbon Tanzania is tackling this task through a well established partner network operating with the aim to generate co-benefits for local communities and actors eager to get involved in effective climate change mitigation strategies. The results of the thesis show that key factors for the project to operate are land ownership by the local forest community, the Hadzabe, and a well defined land use plan within the area for all communities, including farmers and pastoralists, living at Yaeda in order to establish sustainable land management rules. Although land ownership is secured and utilization defined, a land use plan does not prevent conflicts from arising but rather provides an appropriate room to manoeuvre and act in case land use conflicts arise. The organically grown political structure and decision making process at Yaeda facilitates the integration of the cultural context within the process of the project. Cultural integrity of Hadzabe and self-determination are respected within Carbon Tanzania forest conservation project and supported by the Plan Vivo Standard. The case of Carbon Tanzania was especially interesting for the research paper as it issues carbon credits which can be bought by companies to offset their carbon emissions. The carbon trading mechanism offers an opportunity to engage the private sector and enables community development. In the African context, rural development is connected to using land productively which leads to in many cases to land conversion for agricultural and timber production. This mainstream development doctrine gives little space for ‘under-developed’ and ‘primitive’ hunter-gatherer lifestyles. ‘Harvesting’ carbon from an intact forest ecosystem, generating the means to invest in community development can lead to a counter-narrative about ‘inferior’ regarded land use systems. The carbon trading mechanism possibly can lead to a change of narratives on how land has to be used in order to count as productive. This case study provides a practical example on how forest conservation and protection of cultural diversity can be achieved. For such projects to be effective it has to be tailored to the local culture and landscape. Hence it is recommended to regard every single conservation project in a local context and refrain from any kind of generalizations. Creating an understanding that culture and nature are coevolving and hence adapt the notion of cultural landscapes can lead to better strategies in protecting ecosystems and the biological and cultural diversity these ecosystems contain. This is important if we want to keep this planet prosperous in future.

Acknowledgement

I want to thank the people of Yaeda Valley, the Hadzabe and all the other communities living there, for their hospitality and patience when answering my long set of questions and for giving me the opportunity to learn about their culture. To Isack Bryson Magombe, without his help and efforts translating back and forth during the interviews this research project could not be undertaken, for teaching me how to ride a motorcycle and to his lovely family who hosted me during my stay at Yaeda Valley. To Mark Baker, founder of Carbon Tanzania for enabling this trip to Yaeda Valley in the first place and his confidence in a young student doing research in Tanzania. To my supervisors Paul Lane and Anneli Ekblom, who stimulated and challenged me during the process of creating this thesis.

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