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Weaving baskets and thatching roofs:

Fibrous plant products as an income source for women in the Namibian Zambezi region

Edited by the Collaborative Research Centre 228 Future Rural Africa

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Preface

Weaving baskets and collecting reeds in the wetlands is a major source of income for rural women in northeastern Namibia. As it is hard to exactly quantify income from collecting grasses and reeds and making them into basketry and mats this livelihood strategy has received little attention until now. Clara Höller and Paula Linstädter have worked for about four weeks on the topic in northeastern Namibia, conducted interviews with rural women, local experts and traders. Their thesis gives excellent insight into the deep local knowledge on grasses and reeds and their different qualities. Höller and Linstädter show that reeds and basketry are used in many contexts in the rural setting of northeastern Namibia and that there is a constant demand for these products. Women collect reeds during specific times of the year. While the collection of reeds is time consuming the production of mats from these reeds does not take much effort. Most reeds are sold at the door step directly by producers. In contrast, basketry is at least partially produced for the rapidly growing tourism market. Basketry needs more expertise and some women have gained a mastery in this craft that enables them to sell colourful and finely braided baskets at high prices. Many baskets from the region are sold at one of the touristic outlets in the region. Höller and Linstädter do well in presenting an ethnography of the entire value chain and describe the collection of reeds and grasses as well as the production of final products and subsequent sales strategies in detail. They also problematize the economic side of reed and basketry production. Reeds and grasses are freely accessible, they are open access goods. It is the availability of such open access, cost free resources that enable poor rural women to generate some income for themselves and their families. Local permit systems apparently suffice to guarantee some degree sustainable resource use and prevent the overuse of specific grasses or reeds.

Michael Bollig

Abstract

In the rural parts of the Namibian Zambezi Region, women are economically and socially disadvantaged. Because formal employment opportunities are scarce, women sustain their livelihoods by selling fibrous plant products such as thatch grasses, reeds, and palm baskets on the informal market. Previous studies have focused on the marketing of fibrous plant products, especially palm baskets, and on the crafting process itself. However, only little research has been carried out on the use and trade of thatch grasses and reeds as well as the financial significance of fibrous plant products for poverty alleviation among women living in the rural areas of the Zambezi Region.

In our study we take a closer look at how women harvest, produce and sell fibrous plant products to assess whether the generated income has the potential to alleviate poverty. During our research, we conducted semi-structured interviews with female crafters, harvesters, as well as distributers. Additionally, the most used grass and reed species were identified and categorized according to their use.

The results suggest that fibrous plants are a popular choice for income generation among women because they are widely available in the region and are better adapted to the local climate than crops, making them suitable as a financial drought coping strategy. The harvest, processing and selling of fibrous plant products is compatible with women's traditional responsibilities such as household chores and childcare as the resources are found in close proximity to the women's homes and products such as baskets or mats can be made and sold in the villages. With the income generated from selling fibrous plant products, women can support their livelihoods and even gain financial independence from men. When deciding how to spend this income, women largely prioritize their children, investing into school supplies, as well as in clothes and food for the whole family. We argue that this can help alleviate poverty among rural families.

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We would like to sincerely thank everyone that made our study possible and supported us before, during and after our fieldwork.

We firstly want to thank our Professor, Michael Bollig, for providing us with the opportunity and funding to carry out this fieldwork, supplying us with contacts on site, showing us around Katima Mulilo, lending us his equipment, and lastly for continuously supporting us with his knowledge and advice during every step of this thesis. We are extremely grateful for this experience.

We thank the University of Namibia in Windhoek and especially Romie Nghitevelekwa for the warm welcome and support. A special thanks goes to the UNAM campus in Katima Mulilo. This research would not have been possible without the help of Dr. Ekkehard Klingelhoeffer. He welcomed us from the first day on and made sure we would feel at home. Ekkehard helped us with finding a translator for our interviews, biologically identified our grass samples and gave us a much-needed crash course in Namibian grass species and their characteristics. He also connected us with his botany students Artheans, Ester, Amy, Joolokeni, Naapopye, Joyce and Trendy, leading to many wonderful and unforgettable memories we will cherish forever.

Next, we would like to thank our translator Alex Limbo for showing up within 20 minutes after being asked if he could join us on a twelve-hour trip that day since our other translator, Trendy, was sadly unable to come with us. Alex helped us with translation and navigated us through many situations we had never been in before. We greatly appreciate him taking the time to go with us and assist us on our field trips, even though he is working as a primary-school principal. We would also like to deeply thank Dr. Hauke Vehrs and his field assistant Fabian for organizing three different interviews for us in one day, and Fabian for also translating some of these interviews.

We also want to say a huge thank you to the NNF, firstly to Mareike Voigts, Frances Chase and Alice Limani Poniso for meeting with us in Windhoek and discussing thatch grass as a research topic, and secondly to the fisheries department of the NNF for very spontaneously taking us with them on a field trip so we could conduct interviews. And most importantly, we would like to thank Carol Murphy and Kaino Shilume for their immense help and for offering us rides many times. Carol met with us several times, connected us with respondents and took us to a variety of interview locations. She also discussed ideas and facts about basketry with us as she herself had researched on this topic in the past. A big thank you goes to Kaino for planning an entire field-trip day with us, driving with us to Masida and Kwandu, helping us set up and conduct our group interviews, and for also bringing so much fun and laughter into our stay.

We also want to thank Janet Matota for taking her time to give us a very detailed and insightful talk about the Mashi Craft Market and the lives of women in the Zambezi Region,

taking us to the palm forest in Katima Mulilo and coming to our rescue to drive us home when we were unwillingly stranded.

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1. Introduction and research questions

In this thesis we want to investigate the question of whether fibrous plant products are a possible and beneficial income source for women living in the rural areas of the Zambezi Region in north-eastern Namibia. The production, usage and sale of fibrous plant products is common worldwide and is especially diverse in southern Africa (Adam & Shackleton 2016: 2; Cunningham & Terry 2006). Fibrous plants have a long history in southern Africa as in many regions clay and stone are scarce and hence people need alternatives to construct houses, containers, and cultural items (Cunningham & Terry 2006: 25). Fibrous plants provide such an alternative, leading to a rich and diverse spectrum of all kinds of handicrafts and items deeply embedded in local cultures and traditions (ibid.). Products made from fibrous plants are generally created for a variety of cultural, economic, and functional purposes and are made of different species such as palms, grasses and reeds (Pereira et al. 2006: 477, 479). Nowadays, these products are often sold to locals or tourists to supply households with income (Adam & Shackleton 2016: 2; Pereira et al. 2006: 477). We chose to focus our work on the fibrous plant products derived from palms, grasses, and reeds as these are abundant in the Zambezi Region where we conducted ethnographic fieldwork in addition to the review of literature on this topic. Regarding palms, we chose to narrow our focus to baskets and give them an entire chapter as they are of particular importance for women. When looking at these plants, one quickly notices that the harvest and processing are mainly the domain of women. While there is an abundance of literature on the male-dominated domains of wildlife and tourism as an income source, literature on women's income sources is limited. Thus, the investigation of women's perspectives and livelihoods regarding fibrous plant products is a topic we want to add our findings and ideas to. As we focus on women in particular, a definition of gender is important in order to take a closer look at the specific circumstances that shape women's position in the Namibian society and economy. The concept of gender is socially and culturally constructed and differs from the category of biological sex (Angula 2010 based on Meena 1992). Gender is not fixed or universal, which means that it can change as people newly define themselves (ibid.). But in many societies people are categorized into men or women depending on their biological sex (ibid.). These categories are each accompanied by expectations and ascribed roles (ibid.). Gender is the basis for discrepancies in power between men and women and determines their differences in rights to natural resources and proneness to poverty (Watson 2006; Brody et al. 2008). Worldwide, women are the disadvantaged gender in terms of power, access to education, participation in decision-making, and rights to land ownership and resources as well as economic opportunities (Brody et al. 2008; Khumalo 2012).

Poverty is one of the results of gender inequality which many women especially in rural areas face worldwide. As their access to resources and decision-making processes is more limited than that of men, it is crucial to understand how women sustain their livelihoods within these limitations (Khumalo 2012: 43-44; Nghitevelekwa et al. 2023: 360). In the context of

poverty reduction the empowerment of women plays a central role, which is why we also address the question of whether fibrous plant products can help to empower women in order to reduce poverty. Women working with fibrous plant products are known to be amongst the poorest in Namibia, which indicates that any cash source is of vital importance to them (Jones 1999: 4; Murphy & Suich 2003: 3; Murphy & Suich 2006: 9). We thus want to critically analyze the financial potential of fibrous plant products for women living in rural areas of Namibia against the backdrop of their societal role and impoverishment.

We will therefore first look at the setting in which women live in the rural areas of the Zambezi Region in order to understand the preconditions of their daily livelihoods. We will then briefly address the general extent to which natural resources can benefit rural communities, especially regarding women. After briefly discussing the methods we used to conduct this thesis, we will analyze the potential of the fibrous plant products thatch grass, reed and basketry as an income source for women in the Zambezi Region. We therefore identify the different plant species used, explain the different ways of acquiring and processing those resources with special regard to the sustainability of the resource use and investigate the different usages of the fibrous plant products. After that, we focus on the different selling structures involved in the trade with such products, and lastly we assess their economic potential for women's livelihoods. For better comparability, we have converted some N$ prices into US$ in order to have a stable currency as a reference. Afterwards, we take a closer look at the decision-making abilities women have regarding the income generated from fibrous plant products, as this has important implications on how they are affected by poverty. Lastly, we discuss the benefits and challenges of fibrous plant products as an income source for women, as well as the connection between poverty reduction and female empowerment, assessing whether fibrous plant products are suited to contribute to the economic empowerment of women, before we list suggestions for possible improvements, conclude our thesis and provide a research outlook.

2. State of research

To evaluate our research topic, we will firstly look into the existing literature on the commodification of non-timber forest products and community-based resource management with a specific focus on research that concentrates on women and the Namibian Zambezi Region as well as the value of female empowerment for economic development. This is followed by an outline of the state of research on thatch grass, reed, and basketry in southern Africa. The commodification of non-timber forest products (NTFPs) has been studied by a variety of researchers over the last decades. Ashley and LaFranchi (1997) and Turpie et al. (1999) have studied the economic value of natural resources in the Zambezi Region, with Ashley and LaFranchi (1997) individually addressing the livelihood potential of crafts, grasses, and reeds. This is followed by a series of publications that critically examine the commercialization of NTFPs worldwide (Belcher & Schreckenberg 2007), with a focus on eastern and southern Africa (Bollig et al. 2023) as well as Namibia specifically (Kamwi et al. 2020; Nakanyete et al. 2023). Lavelle (2019; 2020) published two studies that focus on NTFPs in the Zambezi Region looking into the economic benefits of the devil's claw, related policies and discussing the question of sustainability. In recent years more studies on NTFPs that specifically focus on women's involvement have been published, such as that by Nghitevelekwa et al. (2023) who investigate women and indigenous natural products in Namibia.

Since the establishment of community-based natural resource management (CBNRM) in Namibia this natural resource-management concept has been the topic of several publications (Mosimane 2003; Jones & Weaver 2012; Mufune 2015). Khumalo (2012) and Lendelvo et al. (2012) approach CBNRM with a focus on gender, depicting women's perspectives on and participation in conservation.

The focus on women's contribution to economic development was first studied by Boserup et al. (2007) in 1970. In recent years, Khumalo (2012) and Madusise (2021) investigated the income opportunities of women and their empowerment in regard to natural resources and crafts in the Namibian Zambezi Region and in Zimbabwe, respectively.

Considering the limited amount of ethnobotanical studies that focus on thatch grass in Namibia, research on Botswana (Velempini & Perkins 2008) and Zimbabwe (Mukululi 2023) can be important points of reference. Most publications about the grass harvest and trade in Namibia are based on the Kavango Regions (Pröpper 2015; Strohbach & Walters 2015; NNF 2016) with Strohbach and Walters (2015) being the the only publication that also encompasses the Zambezi Region.

In comparison to grasses, there is even less research that elaborates on the economic value of river reeds. While van Rooyen et al. (2004), Mmopelwa (2006) and Pereira et al. (2006) analyze the reed harvest and trade in South Africa and Botswana, the bachelor's thesis by Milechin et al. (2009) on the economic potential of reeds in Marienthal is the only source that focuses on Namibia.

Basketry is a more discussed topic, with a lot of research published. The time from the 1990s up until 2006 could be described as the “golden age” of research on southern African basketry. Anthony B. Cunningham and M. Elizabeth Terry are the prominent researchers on basketry in Botswana, who have published and participated in multiple works on this topic (Cunningham & Milton 1987; Konstant et al. 1995; Terry 1999), working together several times (Terry & Cunningham 1993; Cunningham & Terry 2006), and were even consulted for other basketry studies on Botswana (Bishop & Scoones 1994). Cunningham and Terry (2006) also created the only extensive comparative study on basketry in southern Africa. Additionally, Cunningham focuses on resource depletion and sustainable use of basketry materials (Cunningham & Milton 1987; Konstant et al. 1995; Cunningham & Terry 2006). Carol Murphy and Helen Suich are the only authors that specialize in basketry of the Namibian Zambezi Region, and have published numerous studies on this topic (Suich & Murphy 2002; Murphy & Suich 2003; Murphy & Suich 2006). From 2006 to 2016 there was a break in research on basketry. From 2016 onwards, new articles on basketry were published. However, they focus on South Africa (Adam & Shackleton 2016), Botswana (DeMotts 2017), Eswatini and Malawi (Thondhlana et al. 2020) and Zimbabwe (Madusise 2021; Thondhlana et al. 2020), and not on Namibia. All in all, basketry has received extensive attention in comparison to thatch grasses and reeds – however, only by a few authors, and very little literature has been published in the recent years on these topics. Therefore, we hope to contribute an update to the current state of research with our thesis.

3. Framework of the Zambezi Region

To set the frame for our research about fibrous plant products as an income source for women living in the Zambezi region and to comprehend why they choose to produce and sell these products it is crucial to recognize the social, environmental, and economic living conditions that women are faced with. We will first briefly outline the recent history of the region and describe its geographic characteristics and socio-political structure. Afterwards we investigate the distribution of land rights and management of natural resources to understand the circumstances under which women in the Zambezi Region have access to these resources. This is followed up by a summary of employment and other livelihood strategies that rural households and specifically women have access to.

3.1. Recent history of the Zambezi Region

The Zambezi Region has a history of colonialism and regional conflicts. Before it fell under the jurisdiction of the British Bechuanaland Protectorate, the Lozi Kings ruled over the Zambezi Region, which was then still called Itenge (Biewenga 2009: 41). At the end of the nineteenth century, Germany and Great Britain had a land dispute over the region, which was settled at the Berlin Conference with the region falling under German administration in 1890 (Biewenga 2009: 41; Mendelsohn & Roberts 1997: 8). It was then named Caprivi after the then Chancellor of the German Empire and General Leo von Caprivi (Biewenga 2009: 41; Mendelsohn & Roberts 1997: 8). Following World War I, the British colonial administration took control of the Caprivi again (Biewenga 2009: 41). From 1940 until 1981 the region was under South African administration, which was followed by a period of conflicts between different military and political parties involving Angolan and South African actors among others (ibid.: 42). Two years after Namibia declared its independence in 1990, the Caprivi was officially pronounced one of the Regions of Namibia (ibid.: 42). Around the turn of the millennium the Angolan Civil War affected the security situation in Caprivi, leading to a decrease in economic and social well-being (Murphy & Suich 2003). In 2013 the Caprivi was renamed and is now called the Zambezi Region (Smith 2013). Therefore, we use the name Zambezi Region in our thesis.

3.2. Geographic overview

The Zambezi Region borders Angola and Zambia to the north, Zimbabwe to the east and Botswana to the south (Mendelsohn & Roberts 1997: 4). It is part of the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA 2019). The Zambezi Region consists of flat land characterized by the Kwando, Zambezi and Chobe rivers, floodplains in the south-eastern areas, and woodlands and Kalahari sandy plains in the north (Mendelsohn & Roberts 1997: 5; Strohbach & Walters 2015: 14). The region has the largest diversity of plants and animals in Namibia (Ashley & LaFranchi 1997: 26; Mendelsohn & Roberts 1997: 24). Compared to the rest of Namibia, the Zambezi Region is more tropical, with warmer winters and higher rainfall

(Mendelsohn & Roberts 1997: 6; Biewenga 2009: 43). Almost all the rain falls during the rainy season between November and April, the southern-hemisphere summer (Mendelsohn & Roberts 1997: 6). The average temperatures range between 34°C and 20°C in summer and between 25°C and 5°C in winter (ibid.: 7).

In the Zambezi Region there are both sandy and clay soils and a range of soil types in between such as sandy clays, loams or clay-loams (ibid.: 16). The most common types of soil are clay-loam and sand (ibid.: 16). Around the current and former riverbeds there are higher proportions of clay (ibid.: 16). Clay forms a dense soil, which holds water better than sand (ibid.: 16). Soil with a high percentage of clay mixed with organic material is the most suitable for plant growth due to its nutritious composition (ibid.: 16). These geographical characteristics, specifically the different soil types and rivers with large floodplains, are responsible for the growth of a variety of fibrous plant species, such as grasses, sedges, reeds and palms in the region.

3.3. Socio-political organization

In 2023 Namibia had a population of roughly 3 million people, of whom 51.2% were female and 48.8% were male (Namibia Statistics Agency 2024: 5, 20). Because of the ongoing rural-to-urban migration there are now almost as many people living in urban areas (49.5%) as in rural areas (50.5%) (ibid.: 7). In the last twelve years the population in the Zambezi Region has increased by 57.2% from 90,596 in 2011 to 142,373 in 2023 (ibid.: 13). The population in the region is unevenly distributed, with most people living along the rivers, the roads, the eastern floodplains and in the capital Katima Mulilo (Ashley & LaFranchi 1997: 6; Mendelsohn & Roberts 1997: 24).

The Zambezi Region consists of the eight constituencies Judea Lyaboloma, Kabbe North, Kabbe South, Katima Mulilo Rural, Katima Mulilo Urban, Kongola, Linyanti and Sibbinda (Namibia Statistics Agency 2024: 24). The Trans-Kalahari highway runs through the region and connects it with nearby countries (Biewenga 2009: 45). Since there is no public transport and few inhabitants own a car, the population relies almost entirely on taxis (ibid.). Katima Mulilo is the capital and administrative center of the Zambezi Region (Mendelsohn & Roberts 1997: 9). It is also the commercial center and the only place with banking and a hospital within the region (ibid.: 8). The limited medical infrastructure is problematic, especially when considering that in 2002 43% of people in the Zambezi Region were reported to be HIV-positive (Biewenga 2009: 50).

Namibia has both state and traditional authorities. The traditional authorities are men, called *indunas*, who are in charge of decision-making and oversee land allocation on a village level (Kamwi et al. 2015: 211). Generally, “the power of traditional authorities is both socially-embedded and reinforced by legislation that recognises them as governing bodies for ethnic communities” (Lavelle 2020: 2).

51.8% of households in the Zambezi Region are female-headed, which is a large percentage considering the patriarchal structure of Namibian society (Namibia Statistics Agency 2016: 37). In reality, there are even more female-headed households in Namibia than officially recorded, which is caused by the high death rates from HIV and the migratory labor (Turpie et al. 1999: 243). Men often move to the commercial farms, to the mines or to the fish factories in Walvis Bay to get jobs while the women make the decisions about consumption and production at home (ibid.). But although women decide on the use of land and natural resources on a day-to-day basis, men possess the ownership and usage rights and are often the final decision-makers (Turpie et al. 1999: 243). Namibia, including Zambezi Region, has a traditionally patriarchal society that often discriminates against women and girls (Terry 1999: 34). Nelson et al. (2015) state that "common ideas and practices of state citizenship and of community membership in customary systems often reflect a male bias, where the recognition of women's rights and their right to participation is limited" (Nelson et al. 2015: 4). This means that although gender is a decisive factor in everyday life in the Zambezi Region, it hardly plays a role in legislation (Turpie et al. 1999: 243). The only regulation on the subject in the Zambezi Region is the Zambia Revenue Authority draft environmental policy, which states that women should have the same access and rights to natural resources as men, and declares women to also be protectors and managers of these resources (ibid.).

Polygyny is still normalized in Namibian culture (Edwards-Jauch 2016: 57). Rape, gender-based violence, and child abuse are widespread (ibid.: 49). While English is the official language in Namibia, siLozi is the main language spoken in the Zambezi Region and the only written one (Biewenga 2009: 49; Namibia Statistics Agency 2016: 37). Most of the elderly people speak little or no English (Biewenga 2009: 49). Apart from that, the Zambezi Region comprises several different spoken languages such as chiFwe and Mbukushu among others.

The Zambezi Region has a high unemployment rate with very few formal employment opportunities (Biewenga 2009: 46, 70). Compared to the national average of 28.1%, the Zambezi Region has a high unemployment rate of 31.9%, with female unemployment being even higher at 37.3% (Namibia Statistics Agency 2015: 70). Employment and other livelihood strategies of people living in the region are further discussed in section 3.5. "Employment and other livelihood strategies in the Zambezi Region".

The Zambezi Region has poverty levels above the national average (ibid.: 107). The Namibian Statistics Agency defines any person as poor who is "not able to spend at least N$520.80 per month on basic needs", while any person that could not spend at least N$389.30 is considered severely poor (2016: 105). Poverty is not only based on lack of money but also on the environment being suboptimal for food production, the lack of education and other skills as well as governmental issues such as corruption (Biewenga 2009: 1). In Namibia an esti-

mated “ 25.1 percent of rural households are poor, compared to 8.6 percent for urban households” (Namibia Statistics Agency 2016: 106). People in rural areas often have limited access to sanitation and electricity (Pröpper 2015: 252).

Overall, the literacy rate in the Zambezi Region is 82.7% for women and 89.3% for men (Namibia Statistics Agency 2016: 68). During the last century more men than women attended school in the region (Mendelsohn & Roberts 1997: 14). Women born before 1937 were very unlikely to receive any formal education but in the years that followed numbers of school-attending women started rising consistently (ibid.). Since around 1980, the school-attendance rates of women and men have been similarly high, with 95% of children attending school in 1991 (ibid.). 59.7% of Zambezi households have a primary school within one kilometer, while another 32.1% have access to a primary school within five kilometers (Namibia Statistics Agency 2016: 67).

3.4. Land rights and resource allocation

During the colonial era land was divided by skin color into privately owned land for white people and areas allocated to black people called homelands or tribal lands (Mendelsohn et al. 2012: 3). After Namibia declared itself independent in 1990 white-own private lands were turned into commercial farms while homelands were renamed communal land (ibid.). On commercial farms as well as in urban areas the land is privately owned, compared to the communal land in rural areas, which belongs to the state but where communities and individuals have usage rights (Jones 1999: 14; Mendelsohn et al. 2012: 3; Pröpper 2015: 255). The number of inhabitants is fairly evenly distributed between both land-tenure systems as about half of the Namibian population lives on freehold land, mainly in cities, and the other half on communal land (Mendelsohn et al. 2012: 3). State-controlled areas encompass state forests, national parks, game reserves and different agricultural projects while the primary use of communal land is subsistence farming (ibid.: 8). Commercializing communal land and its resources is discouraged because it is designed for livelihoods based on subsistence and not for the utilization of the land for the acquisition of capital (ibid.: 7-8). Because everyone living on communal land has access to all its resources there is tough competition, and the environment can end up being exploited (ibid.: 9). On communal land outside of conservancies and community forests, people are required to get harvesting permits issued by traditional authorities who have the right to decide about the use of the land (Lavelle 2020: 3; Mendelsohn et al. 2012: 7).

When looking into the usage of natural resources it is necessary to consider the setting in which people can get access to these resources. Since 1996 community-based natural resource management (CBNRM) has been established on communal land in Namibia in the form of conservancies and community forests to provide people with usage rights over wildlife and forest resources to encourage their interest in the sustainable use of these resources (Ashley

& LaFranchi 1997: V; DeMotts 2017: 371; Khumalo 2012; Jones & Weaver 2009: 223; Nghitevelekwa et al. 2023: 358; Mbidzo et al. 2021: 4; Milechin et al. 2009: 32).

While conservancies and community forests overlap in large parts, their responsibilies differ, with conservancies having a focus on wildlife while community forests manage the use of timber and non-timber forest resources (Jones & Weaver 2009: 224; Lavelle 2020: 2; Mufune 2015: 123; Murphy & Suich 2006: 3). The money that conservancies make comes largely from international visitors paying for photographic tourism and conservation hunting (MEFT/NASCO 2023: 58). In contrast, community forests generate their income mainly from the sale of hardwoods and also from non-timber forest products such as marula, mopane and devil's claw (MEFT/NASCO 2023: 50; Murphy & Suich 2006: 3). In conservancies, members have to be legally registered to gain usage rights to wildlife, while in community forests anyone with traditional rights to an area can harvest and use the resources of the forest (Lavelle 2020: 2; Mbidzo et al. 2021: 8). Both forms of CBNRM aim to encourage economic development, local governance and community involvement to reduce poverty (Jones & Weaver 2009: 223; MEFT/NASCO 2023: 7). In her dissertation, published in 2012, titled "Women's views on conservation-based income generation and women's empowerment in Kwandu Conservancy in Caprivi, Namibia" Kathryn Elizabeth Khumalo provides a more detailed analysis of the benefits and challenges that come with CBNRM with special regard to women's participation.

3.5. Employment and other livelihood strategies in the Zambezi Region

Informal employment is the number-one form of employment in Africa, comprising 85.8% of total employment (Madusise 2021: 62). Thus, in most countries in Africa, "the informal sector continues to contribute enormously to employment creation while the growth of employment in private and public sectors has almost stagnated" (Madusise 2021: 62). This also applies to the Zambezi Region, as there are few formal employment opportunities and people must rely on agriculture, cattle, piecework, CBNRM benefits and the utilization of natural resources to meet their needs (Adam & Shackleton 2016: 3; Khumalo 2012: 280). Because one option rarely suffices, many people apply not one but several livelihood strategies (Ashley & LaFranchi 1997: III). This livelihood diversification is the essence of the sustainable livelihood approach. This approach describes how poor rural communities deal with their vulnerability –which is due to institutional, environmental and personal factors, such as gender, age and health – by utilizing their skills, accessible assets and available natural resources to follow as many livelihood strategies as possible in order to survive (Ashley & LaFranchi 1997: IV; Biewenga 2009: 23; Kamwi et al. 2015: 209).

Rural households are in a constant need of cash to cover school fees for their children and buy food, cattle and other products (Khumalo 2012: 160; Pröpper 2015: 260). In Namibia 44% of employment takes place in the non-agricultural informal sector (Madusise 2021: 62). The main sources of income for Zambezi households are salaries and wages (45.5%), cash

remittances (18.4%), pensions (14.8%), subsistence farming of crops and livestock (10%), non-agricultural business activities (8.1%) and other means of income (3.3%) (Namibia Statistics Agency 2015: 41). But these numbers encompass the rural and the urban areas of the Zambezi Region and do not show that unemployment is much more widespread in rural areas (Mufune 2015: 129). In rural areas pensions and wages pensions supply cash income to only 15-20% of households, with most of the employment coming from government jobs in schools or clinics, NGOs and touristic enterprises (Ashley & LaFranchi 1997: I, 23). In the following we will briefly describe the different livelihood strategies of households in the rural areas of the Zambezi Region.

As many households do not have access to formal employment, subsistence farming is the fundamental activity of most rural households, accounting for 40-60% of the livelihoods of rural people (Ashley & LaFranchi 1997: 17; Biewenga 2009: 23). Crop cultivation for the most part is the responsibility of women. The main cultivated grains are maize, *mahangu* (pearl millet) and sorghum, which are supplemented with some vegetables and legumes (Ashley & LaFranchi 1997: 11; Khumalo 2012: 280). One disadvantage of agriculture is that on nutrient-poor sandy soils with low water retention crops are especially susceptible to drought, and pests as well as wild animals further reduce the already low yields (Ashley & LaFranchi 1997: 13; Nghitevelekwa et al. 2023: 359). Most of the time a household cannot produce enough cereals to meet its own consumption needs, which means that the food deficit must be compensated through other strategies, namely the sale of NTFPs and crafts, as well as money from pensions and other forms of (self-)employment (Ashley & LaFranchi 1997: I; Biewenga 2009: 23; Murphy & Suich 2003: 7).

Livestock in the Zambezi Region primarily consists of goats, cattle and poultry, with cattle being the predominant livestock (Adam & Shackleton 2016: 3; Ashley & LaFranchi 1997: 17). Cattle can produce meat, milk and cash, but are mainly valued for plowing, transportation, cultural value and as a reserve to be sold during hard times (Ashley & LaFranchi 1997: I, 18-20). Traditionally, men own the cattle and are responsible for plowing (ibid.: 17). Cattle are unevenly distributed in the Zambezi Region, with a small percentage of people owning large herds of over 200 heads, while most households own far fewer than ten cattle and many female-headed households own none (ibid.: IV, 17). Because many female-headed households and young families do not own cattle or have cash jobs they have no stable income or reserves (Ashley & LaFranchi 1997: III-IV; NNF 2016: 11).

Another common income source is piecework, which is paid work for others; this can include preparing a field for farming, herding cattle, repairing and building houses, or domestic labor as well as working in shops (Ashley & LaFranchi 1997: 25; Khumalo 2012: 118). Payment varies from the usual N$5-10 a day to N$10 a week, or is received in the form of goods such as beer or maize (Ashley & LaFranchi 1997: 25).

People living in the Zambezi wetlands also engage in a lot of fishing, which is a culturally important activity and generates income as well as food (Ashley & LaFranchi 1997: 33-34; Mmopelwa 2006: 334). However, droughts lead to a decline in fish stocks and commercialization displaces traditional ways of fishing (Ashley & LaFranchi 1997: 33-34).

Wildlife and tourism provide collective income from levies, fees and profits through CBNRM (ibid.: III). They also create regular and occasional jobs, and additional income from the sale of natural resources (ibid.: III). The construction or repair of a lodge represents another source of income for the local residents as it requires building materials such as poles, grass and reeds as well as piecework labor for the construction (ibid.: 36). In addition, tourists and touristic accommodations purchase home-produced products like food and crafts (ibid.: 36).

Natural resources that are harvested and that can be eaten, utilized or sold include wood, leaves, bark, roots, tubers, fruits, nuts, grasses and reeds as well as animal products (ibid.: 26). Wood provides energy and construction material, but can also be sold for cash or used to barter (ibid.: 26-27). In contrast to firewood collection, which is a woman's task, the wood for poles is generally harvested by men and requires the felling of trees (Ashley & LaFranchi 1997: 27; Khumalo 2012: 382). Men also create wooden carvings (Suich & Murphy 2002: 5). But timber is limited because frequent fires discourage the growth of large trees and create dense thickets of fire-resistant shrubs (Mendelsohn & Roberts 1997: 16). Areas prone to flooding are also uninhabitable for most woody plants because such plants do not tolerate inundated roots (ibid.). In addition, the cutting of timber is restricted and requires a permit. That means that people living on sandy soils or within flood-prone areas, who have few alternative sources of income apart from natural resources, often resort to selling grasses and reeds as they have adapted to these conditions. Coarse grasses are able to grow on nutrient-poor sandy soils, while reeds thrive in wetlands (ibid.). Kamwi et al. reported that in their study respondents named reeds and grasses as the third most important forest product after wooden poles and firewood (2015: 217). Some natural resources are not only sold as raw products but further processed into crafts. These include baskets made from palm leaves and grass that are traditionally made by women and primarily sold to tourists. But because poor rural households rely on the environment for food and income, they are hit hard by changes in climate (Kamwi et al. 2015: 208). Climate variability and ecosystem degradation endanger the livelihoods of rural communities with limited cash-income sources relying on agriculture, natural resources and products derived from these (NNF 2016: 3-4). In the event of shocks such as irregular rainfall, drought, fire, food shortages and floods, important coping strategies are piecework, food aid from the government, borrowing from relatives, wild food harvesting, and the selling of timber or firewood (Kamwi et al. 2015: 219-220). In summary, the livelihood strategies of Zambezi households include salaries, cash remittances, pensions, crop and livestock farming, piecework, fishing, and collective income from CBNRM as well as the sale of wood and non-timber forest products.

4. Economic importance of non-timber forest products

As we are looking at fibrous plant products as an income source, it is crucial to understand the economic potential of these products. Fibrous plant products are among the so-called non-timber forest products. The term non-timber forest products (NTFPs) refers to “any resources or products that are collected from the forest ecosystem to be used at the household level or marketed, and some of them are deemed important for social, religious and cultural purposes” (Kamwi et al. 2020: 1). These forest resources include plant products such as grasses, reeds, roots, fibers, wild fruits, and nuts among others, as well as wild animals, birds, fish or insects and their products such as honey, meat or silk (ibid.). NTFPs are also called indigenous natural products, which are defined as products derived from plants that grow naturally and that contain parts that are used for cosmetic, nutritional, or medicinal purposes (Kamwi et al. 2020: 2; Nghitevelekwa et al. 2023: 357).

Since the 1990s the economic value of NTFPs has been increasingly recognized (Mukululi et al. 2023: 2; Nghitevelekwa et al. 2023: 358; Pereira et al. 2006: 478) as “the majority of the world’s rural people are highly dependent on the use of natural resources and services for their livelihood” (Kamwi et al. 2020: 1).

Income generation from NTFPs is also a topic that has been discussed extensively by researchers and is widely regarded as a very important means of livelihood for rural people living in poverty (ibid.: 5). Several authors including Adam and Shackleton (2016), Ashley and LaFranchi (1997), Belcher and Schreckenberg (2007), Kamwi et al. (2020), Lavelle (2020), Mukululi et al. (2023), Nghitevelekwa et al. (2023) and Pereira et al. (2006) have commented on this, concluding that NTFPs are often among one of the very few or in some cases the only income source for rural households. For example, Kamwi et al. found that impoverished households with unemployed people, and people without formal education, depend the most on the use and sale of NTFPs for subsistence and income generation, since employed people earn salaries to sustain their livelihoods (2020: 3, 4-5). Kamwi et al. also revealed that the money generated from selling NTFPs is equally used to finance education and to cover basic household needs (2020: 4). Adam and Shackleton showed that NTFPs can contribute between around 20% up to 50% or more to the total income of rural households (2016: 2). The income generated from NTFPs can reach up to N$2,000 a month, with an average of N$500 a month (Kamwi et al. 2020: 5).

Thus, there is hope that the trade with NTFPs could help to alleviate poverty in these rural communities (Nghitevelekwa et al. 2023: 358). Rural communities often rely on agriculture as their main livelihood strategy but as dryland agriculture only yields marginal returns, they have to diversify their livelihood strategies by supplementing their income with the cash received from the trade of natural resources to meet their basic needs (ibid.: 363, 367-368). Lavelle also highlights that NTFPs are an important livelihood strategy as small-scale farming is under threat due to the changing climate (2020: 1), and Ashley and LaFranchi argue that

NTFPs can be used as a buffer against droughts (1997: III). Impoverished crafters are a particularly vulnerable group, who in most cases only have very few sources to earn their livelihoods, with NTFPs being one of the only income sources accessible (Adam & Shackleton 2016: 4; Khumalo 2012: 154; Nghitevelekwa et al. 2023: 361).

In Namibia NTFPs are harvested and collected either from communal land, community forests or open rangelands (Nghitevelekwa et al. 2023: 357). NTFPs are mostly sold in the rural villages themselves (Kamwi et al. 2020: 4). The second most common selling location is the informal market comprising roadsides and cuca-shops; less commonly NTFPs are sold at formal markets (ibid.). In 2022 indigenous plant products generated N$1,270,597 in Namibia (MEFT/NASCO 2023: 21). The Namibian government supports the commodification of indigenous natural products with the aim to combine conservation and development efforts in rural areas (Khumalo 2012: 12-15; Nghitevelekwa et al. 2023: 358). It is believed that communities have an interest in ensuring sustainable forest management if they can benefit culturally and financially from the protected areas (Kamwi et al. 2020: 1; Khumalo 2012: 12-15; Mukululi et al. 2023: 2).

However, a more intensive commercialization of NTFP carries the risk of overexploiting the resources; hence, to secure a long-term supply, sustainable resource management is necessary (Ashley & LaFranchi 1997: V; Belcher & Schreckenberg 2007: 10; Kamwi et al. 2020: 5; Nghitevelekwa et al. 2023: 364-365). Centralizing NTFP markets could also increase constraints on harvesters, as additional taxes and fees would minimize financial benefits and could lead to increased illegal harvesting as well as corruption in order to avoid the fees (Lavelle 2020: 4).

5. The role of NTFPs for women's empowerment and poverty reduction

Having discussed the economic importance of non-timber forest products for the livelihood diversification and income generation of poor rural households, we will now turn our attention to women's position in this context. Rural women, who are one of the most vulnerable groups in Namibian society, are primarily responsible for the harvesting and processing of NTFPs (Nghitevelekwa et al. 2023: 369, 371). Yet women rarely participate in later parts of the supply chain, which are dominated by men (ibid.: 369). There are several factors that limit women's income opportunities, which we will discuss briefly. Generally, these comprise "poverty, culturally-defined gender roles, a predominantly-male traditional authority structure, and impediments to education" (Khumalo 2012: 395). During the colonial period, the market economy was introduced in Namibia (Nghitevelekwa et al. 2023: 359). The basis of this economy was wage labor performed by male migrants, and women were excluded from this economy (ibid.: 359-360). This labor division is still evident today. The colonial politics lead to men having easier access to land, cash and jobs compared to women (Khumalo 2012: 370; Nelson et al. 2015: 5). This in turn requires many women to marry men who can increase those women's access to cash, goods and property (Khumalo 2012: 52, 370). Women often have to sacrifice their own aspirations, rights and power in decision-making in order to gain a sufficient supply of basic goods that are more easily accessed by men (ibid.: 370). Additionally, women are culturally assigned responsibility for providing for the household and for taking care of their family as well as the community (ibid. 368-369). Khumalo (2012) investigated women's societal roles in Kwandu conservancy in her dissertation titled "Women's views on conservation-based income generation and women's empowerment in Kwandu Conservancy in Caprivi, Namibia". She found that women in the Kwandu Conservancy described the main characteristics of a "real woman" in their community as: being able to meet material need of their household by engaging in respected income-generation strategies, being educated, working hard, having good and caring relationships with others, and lastly being good mothers and wives to their husbands, who they have to satisfy (Khumalo 2012: 368). Factors like marriage often determine a woman's access to material goods and land as well as status within a community (Khumalo 2012: 369; Nelson et al. 2015: 5). Due to food scarcity or other issues, in the Kwandu area women accept marriages that are characterized by violence or unfaithfulness in order to gain access to basic goods for them and possibly their children (Khumalo 2012: 369). In doing so women have to accept a "tradeoff between autonomy and a subsistence guarantee" (Khumalo 2012: 370). Through economic and social transformations, such as market integration, job opportunities and better education, some change has occurred in this system, for example that unmarried women can be socially respected as long as they are able to sustain their livelihoods (ibid.: 372). Women's responsibilities are mainly household-based and include childcare, meal preparation, laundry, cleaning, collecting needed resources such as firewood or water and harvesting the fields (ibid.: 192). Men's tasks are construction work for the house,

plowing, burning of bushes, cattle herding and earning cash (ibid.: 196). Male and female activities mostly take place at and around the house; however, women's tasks have to be completed daily whereas men's tasks are partly seasonal (ibid.: 198). Therefore, men engage in wage labor more often as women are more confined to the house (ibid.: 208-209). Because of this gender-divided labor, women engage in cash-generating activities that are compatible with their spatial restriction, and such activities include the sale of NTFPs such as reeds and thatch grass and, even more importantly, crafting (Adam & Shackleton 2016: 9; Bishop & Scoones 1994: 1; Madusise 2021: 69). With these activities women are able to rely on common-property resources they can access and their traditional skills in making fibrous-plant products in order to generate cash income within the context and constraints of their ascribed gender roles.

The lack of formal skills is another constraint women face that stems from gender roles as well as the division of labor. The use of NTFPs and production of crafts is a key livelihood strategy and income source in regions where there are few employment opportunities and people lack formal education or other formal skills (Thondhlana 2020: 14). The crafters from the Zambezi Region are from the middle- to low-income group in Namibia, characterized by having only very few or no livestock (Murphy & Suich 2003: 7). Suich and Murphy also argue that rural communities in the Zambezi Region have very limited options for cash-income generation because formal employment is scarce and not accessible for many inhabitants due to a lack of formal education and the remote location of the villages (2002: 24). This is especially true for most elderly women as they often did not attend school when they were young, either because there were no schools near their homes or because they had to help their families (Khumalo 2012: 229, 235). Disabilities and old age also hinder people in acquiring formal jobs and sometimes formal education (Terry 1999: 193-194). Therefore, multiple informal cash-generating activities corresponding with household responsibilities such as crafting are undertaken by women to sustain their livelihoods (Murphy & Suich 2003: 20).

An additional hardship rural women face when engaging in livelihood strategies is that of institutional obstacles. CBNRM, also called community-based conservation, started in Zimbabwe and Namibia in the late 1980s (DeMotts 2017: 370). CBNRM initiatives aimed to shift the financial incentives rural communities derived from poaching to enable them to generate income through tourism, depending on the wildlife (DeMotts 2017: 370-371; Khumalo 2012: 15). In this way the focus on CBNRM was and still is mainly on sustainable wildlife management and wildlife-tourism enterprises (DeMotts 2017: 371; Khumalo 2012: 15). Since decisions on sustainable wildlife management, tourist guidance and trophy hunting are all activities predominantly performed by men, women often get left out when it comes to financial benefits from CBNRM and participation (DeMotts 2017: 371; Lendelvo et al. 2012: 34). Even though women use natural resources such as NTFPs frequently, their extensive knowledge about them is often overlooked so that they do not receive many benefits from them (DeMotts 2017: 371, 380). DeMotts argues that "much of women's work and expertise remains invisible or

excluded, even in the context of projects aimed at enhancing the same resources about which women have significant knowledge" (2017: 371). This exclusion leads to further inequalities stemming from men dominating the decision-making and women's perspectives and knowledges being overlooked and ignored (DeMotts 2017: 371-372). But even within this context women organize themselves in informal networks to monitor their resources, teach sustainable harvesting techniques and achieve better access to markets (ibid.: 372). A study by Lendelvo et al. about women's participation in the Namibian CBNRM program found that women are more likely to participate in CBNRM when they are satisfied with the benefits they receive through the program (2012: 37). In general, women prefer to engage in activities that match their interests and culturally assigned tasks (Lendelvo et al. 2012). These areas include agriculture, health, cultural preservation and the management of crafts and resources (ibid.: 32).

Even though women face many difficulties and obstacles when engaging in income-generating activities, they can be and need to be economically empowered. In the following paragraph we will address aspects of women's empowerment and how it is connected to improving the livelihoods of rural households. Khumalo defines empowerment as the "movement from oppression to liberation, a process whereby a person's awareness of alternative gendered power relations and ability to exercise choice (power) are enhanced" (Khumalo 2012: 374). Women's disempowerment is based on culturally ascribed gender roles and gender-specific responsibilities that place women in a more restricted role than men (ibid.: 386). Economic participation is seen as one possible way to empower women (ibid.: 74). As women are in a constant need for cash to sustain their livelihoods, income generation is an important aspect of economic empowerment (ibid.: 74). But as Khumalo points out, income generation encompasses many other aspects besides the earning of cash (2012: 25). For women's economic empowerment it is important to look at the control women have over their earnings and the general access they have to income opportunities (Khumalo 2012: 74). Khumalo highlights that women can experience empowerment in one domain that is important to them while at the same time lacking power in other aspects (2012: 375). This means that some women who engage in the sale of crafts, for example, and earn an income from this, are economically empowered in the sense that they can exercise choice and gain confidence, skills and beneficial relationships to others even when they lose the control over their money to their husbands (Khumalo 2012: 74). Often "earning income does not guarantee its control" (Khumalo 2012: 76) but even then, women can still experience empowerment. However, employment and making decisions about one's own earnings is a crucial factor that can allow women to choose relationships and marriage more freely, as they do not necessarily depend on men for access to resources such as land, food and cash (ibid.: 373). It is absolutely essential to keep in mind that economic participation is only a part of empowerment and that women can only be fully empowered when they have control and choice in all other aspects of their lives, including control over their bodies and health, equal access to land and jobs, societal respect equal to

that of men, and decision-making power at household and political level (Khumalo 2012: 79, 389; Madusise 2021: 57-59). Patriarchy needs to be challenged in order for women to be equal to men (Khumalo 2012: 79). However, we want to clarify that not every man oppresses the women in his life and that many men also see the necessity of, and benefit for themselves from, the empowerment of women. At the same time, it is essential to acknowledge that a gender inequality exists in the Namibian society and worldwide, leaving women more vulnerable and with fewer opportunities.

But coming back to the point of economic participation, it has been emphasized that the economic empowerment of women, by the means of engaging in income-generating strategies, can be a "prerequisite for sustainable development" (Madusise 2021: 59). Sustainable development must incorporate environmental, economic and social perspectives to ensure longevity, which means that resources are not used at the expense of future generations (Madusise 2021: 60; Milechin et al. 2009: 20). Sustainable economic development goes hand in hand with the reduction of poverty. Women's economic empowerment is widely said to be "fundamental to women's ability to move and stay out of poverty" (Madusise 2021: 58). In Namibia poverty exhibits a gender difference as female-headed households are more often affected by it (19.2%) than male-headed households (15.8%) (Namibia Statistics Agency 2016: 106). Additionally, 11.7% of female-headed households in Namibia are severely poor while 9.9% of male-headed households fall into the same category (ibid.). Development projects aiming at improving the livelihoods of women, for example by improving women's economic empowerment, are "widely acknowledged as a direct way to alleviate poverty" (Murphy & Suich 2003: 7). The empowerment of women is not only a crucial point in reducing poverty worldwide, but it is also proven that the income generated by women is often reinvested in their children, leading to increased economic security and better opportunities for future generations (Madusise 2021: 60). This is in line with Duncan Thomas' study on urban households in Brazil which suggests that, if resources are managed by the mother, the positive effect on household and child health increases, so that children are 20 times more likely to survive compared to if the resources are managed by the father (1989: 19). Women are also more likely to invest in daughters than fathers are (Thomas 1989: 19) which means that empowering women financially will have positive effects on the next generation of women. Besides this aspect regarding child welfare, access to education is another crucial point in reducing poverty. The fact that many women living in rural areas lack formal education is detrimental as this "lays a foundation for the intergenerational transmission of poverty" (Adam & Shackleton 2016: 4). Access to education leads to higher chances of being employed, thereby reducing dependency on other people or the state, and also to increased household well-being (Khumalo 2012: 398). But as Khumalo (2012) and Madusise (2021) emphasize, education also encompasses informal education, which is the only form of education available in areas without access to formal education (Khumalo 2012: 398; Madusise 2021). Informal education includes, for instance, learning

basket-weaving skills from other members of a community, thereby achieving empowerment and creating an income-generating opportunity (Madusise 2021: 65).

Because of the above-listed hardships, namely cultural gender roles affecting the access to land and resources, household responsibilities, and the lack of formal education and job opportunities, women in rural areas of the Zambezi Region engage in different livelihood strategies to achieve income diversification, which is a key household strategy to combat poverty in rural areas (Terry 1999: 33). One means by which women can supplement their livelihoods within the context of these limitations is the use and trade of NTFPs. NTFPs are present in remote areas, are often one of the very few resources accessible to women, and their usage and trade are often compatible with women's culturally ascribed roles and household responsibilities. The sale of NTFPs can thereby lead to the economic empowerment of women and offer them the chance to participate in the economy (Nghitevelekwa et al. 2023: 360, 371).

6. Methods and approach

For any field research it is important to acknowledge that the researcher's perspective is always influenced by several factors and, despite all efforts, can never be solely objective (Gewirtz & Cribb 2006: 142, 147-148). As educated, white female researchers from Europe these aspects of our identities influence our perception of the world as well as the way other people see us. Our background, appearance and status as researchers put us in a position of power (Schlehe 2003: 137) which we were aware of throughout the entirety of the research. We always tried to reflect on our behavior and to remain aware of our position and impact. While our appearance and gender might have excluded us from certain male-dominated contexts, it helped to provide access to others as we were not perceived as a threat; instead, several people decided to help us.

In accordance to the Ethics Statement of the American Anthropological Association, we informed the participants of our interviews beforehand about the purpose of our study as contributing to a thesis at a university in Germany. We assured them that they would not receive direct and personal benefits from their participation and that their participation was voluntarily, that they could terminate the interviews at any moment and did not have to answer questions they did not want to answer. After being given verbal consent for this, we asked if we could audio record the interviews to later transcribe them. All participants gave us their verbal consent to use their statements and to record the interviews. We did not hand out a written consent form because given the language barrier, we did not want to put the respondents into the position of having to sign a form that they might not fully comprehend. This was especially important when we conducted interviews without the help of a translator who could have informed the respondents in their native language. However, we made sure, that even when English was not the respondents' preferred language, they understood what they had agreed to. As we did not know any of the respondents prior to meeting them for the interviews and we did not engage in political debates, no conflict of interest emerged. We tried to be as objective as possible; however, we acknowledge that the way we perceive the world does influence our topics, questions and opinions, even when we constantly reflected on our positions as researchers and on the values and biases we brought into the field (Gewirtz & Cribb 2006: 142, 147-148). This is especially true regarding our focus on women, as we do believe in basic feminist principles, namely that "feminist social theory has been concerned with understanding fundamental inequalities between women and men and with analyses of male power over women. Its basic premise is that male dominance derives from the social, economic and political arrangements specific to particular societies" (Jackson 1998: 12), and we want to transparently clarify this. Yet we believe that the carefully reflected use of a feminist perspective can also help to point out inequalities and power relations, in particular when women's roles and lives are the focus of a study and when gender does influence certain aspects of a topic by creating differences. In the same way that our perceptions are formed by our past

experiences and beliefs, those of our respondents are also shaped by their experiences and beliefs.

6.1. Field approach

The idea for the topic of our study resulted from consultations with our Professor Michael Bollig. He suggested to focus on non-timber forest products, and we found out that grasses and reeds are both harvested during the time period during which we had planned to conduct the research. In addition to the grass and reed bundles that line the roads, baskets are another plant product that is very visible in Namibia. As basketry is a female domain, this helped to narrow down our focus on women's part in the harvest and sale of non-timber forest products. During our research we stayed at the Vocational Training Centre in Katima Mulilo. As our study focuses on the rural areas of the Zambezi Region, we had to find means of transportation as we did not have a car. Several workers of the Namibia Nature Foundation took the time to drive us to interview locations, and Kaino Shilume even participated in carrying out the group interviews in Masida Community Forest and Kwandu Conservancy. To access the field, Prof. Ekkehard Klingelhoeffer from the University of Namibia Campus in Katima Mulilo, and Carol Murphy, who is a researcher and works for the NNF, helped us to establish contacts with other people who supported us during our research as well as with possible respondents. The selection of informants was partly prearranged via connections and partly random.

6.2. Choice of methods

Our methods included direct observation of the basket-weaving process and of grass being harvested, which the respondents demonstrated to us during our interviews. We also utilized semi-structured interviews and group interviews, as well as personal communications with local UNAM students, NGO workers and the researchers Mary Elizabeth Terry and Carol Murphy. Semi-structured interviews were the basis of our research because the guideline helps in the comparison of the results (Schlehe 2003: 126-127). We used group interviews as a method to gain a broad overview of a topic and people's knowledge about it. We also used the method of pile sorting to create a ranking of the most used types of grasses and reeds. We were not able to conduct participatory observation at the harvest sites of reed and thatch grass due to distance and time constraints. After returning to Germany, we conducted two additional hour-long semi-structured interviews via Zoom with NGO workers. Afterwards we transcribed the interview audio recordings ourselves, analyzed the results and conduced an in-depth literature review.

6.3. Semi-structured interviews

Semi-structured interviews were our most frequently applied method. We conducted eleven of these interviews in total, for which we prepared separate interview guidelines for our topics reeds, thatch grass and basketry. Regarding the first two topics the questions were very similar and structured in the same thematic blocks of identification and properties, harvest, usage, selling structures and financial contribution so that we would be able to compare results easily. To motivate the respondent to talk freely we formulated open questions instead of closed ones (Sökefeld 2003: 150). Whenever we noticed a lot of input from the interviewed person in regard to a specific question, we asked follow-up questions (Schlehe 2003: 127). We later added some questions we came up with in that situation into our interview guideline for the subsequent interviews. The interviews we conducted took approximately 30 minutes except for the group interviews in the conservancies, which took between 90 and 120 minutes.

In addition to these guideline interviews we received a lot of information through personal communications with local UNAM students, NGO workers from the NNF and IRDNC and the researchers Mary Elizabeth Terry and Carol Murphy. We also conducted an unstructured interview with Janet Matota, who works for the IRDNC. About half of our interviews and personal communications were the consequences of spontaneous trips and meetings while the other half were planned beforehand. Because we had a lot of support from the NNF staff and individual people we were often taken along with someone, and asked the people on site if we could interview them.

6.4. Group interviews

Group interviews were a method that we had not specifically planned to include in our research but that happened spontaneously. However, we came to appreciate it as a very effective way of hearing many people's opinions on one topic, as each meeting was attended by 15 to 17 people.

Our first interview took place after a village meeting and we decided to utilize the situation to gain an initial understanding of whether our question guideline worked and whether the research approach was chosen correctly in view of the actual circumstances on site. After we talked to the conservancy manager and the natural resource manager about our topic, we were able to talk to 16 women. During the interview the respondents demonstrated different harvesting techniques to us. As a challenge we noted that some people repeatedly answered our questions while others remained more silent. Answers given in a group also tended to be shorter compared to when a person was questioned alone. To counteract this phenomenon, we set up the next group interviews differently. We started by asking each person for their name and then continued to address every person directly, so as to receive a multitude of answers instead of one communal answer. We realized that this led to very different results from what were originally the same questions. For example, when we asked a group of women

if they decided by themselves about the usage of their earned money, the collective answer was “yes”. However, when asked individually a lot of women noted that they decided together with their husband or that they had no husband and therefore decided alone.

On other occasions in Masida Community Forest and Kwando Conservancy it was very useful to interview a larger group because the participants were able to complement each other’s knowledge. The main objective of these group interviews was the identification of grasses used by respondents. For this purpose, we brought four grass samples that we had received from Dr. Ekkehard Klingelhoeffer with us and asked the conservancies beforehand to bring samples of the grasses that they harvest. We then asked questions about the origin of the names, the properties of the grasses, their preferred soil type and possible usages. Another request we had made beforehand was that at least half of the interview participants should be female, as we had planned a gendered focus on our research topic. However, this gender balance did not transpire, as in both locations only about a quarter of participants were women. This did not come as a surprise considering administration and participation in conservancies are male-dominated fields in Namibia. Nevertheless, it impeded and reduced the inclusion of the female perspective in our research, at least in regard to the prearranged group interviews in the conservancies.

Generally, group interviews provided an effective way of creating an overview of a topic and hearing a variety of opinions, and are therefore especially recommended during the beginning of the research (Schlehe 2003: 130). Limitations of group interviews include the fact that more dominant voices tend to overshadow others (ibid.) and therefore it is important to supplement group interviews with focused individual interviews to hear opinions that differ from the consensus.

6.5. Pile sorting

During our group interviews we also used the method of pile sorting. After we asked the people to identify the grass types, the soil they grow on and their usage in Masida Community Forest and Kwando Conservancy, Kaino Shilume from the NNF suggested to give each person five small stones to place on the ground next to their five preferred kinds of grasses. The people then each chose their preferred and most-used types grasses, and in the end we were able to rank the grasses according to people’s preferences. This pile sorting therefore quickly offered insight into the value of certain grass types for the local communities.

6.6. Translation

Translation has the potential to significantly increase the quality of an interview in the case of a language barrier between the researcher and the respondent. In our case we were very lucky to be working with Alex Limbo, who spontaneously agreed to work with us. During our research he was highly professional as he had previous translation experience and was very eloquent.

He is the principal of a private elementary school in Katima Mulilo and is also committed to engaging the youth in nature conservation. In many cases he proposed to ask questions that he thought could contribute to the research which were always valuable additions. He also supported us and helped us to navigate social interactions.

Originally we had planned to work with a female translator who is a student at UNAM Katima Mulilo but as her studies took place in the morning and went on until the early afternoon, we had to look for a new translator, since this was the only possible time period to conduct interviews given that we were reliant on the transport of others during their working hours. A female translator might have provided better access to the perspectives of women who might prefer communicating with a female translator rather than a male translator. In patriarchal societies like Namibia however, a male translator has the advantage of lending legitimacy to the research, especially considering that he was the only man in our group.

7. Thatch grass

The climate in the Zambezi Region allows for the growth of a wide range of grasses. Many of these grasses have been utilized by residents for various purposes and are often in their entirety referred to as thatch grasses after their popular usage for roofing. Many grasses can be used for thatching but some are preferred over others for this purpose, hence people do not always differentiate between the terms “grass” and “thatch grass”. Our aim in this research was to identify the types of grasses that are commonly used in the region, and to find out what they are used for and which ones are sold. After identifying the grasses, we will look into harvesting practices and whether there is a need for sustainable usage and what form this might take. The section about selling structures lists the average price for a grass bundle and the marketing setting for grass trade, and explains the implementation of harvesting permits. Subsequently the last section presents the income value of grasses and explores how the revenue of grass sale is implemented on household level.

7.1. Identification and properties of grasses

In the following table (table 1) we will identify the grass types that respondents mentioned to us in Masida Community Forest and Kwandu Conservancy, as well as their biological properties and the soil types they are commonly found in.

Latin name & English name	Masida (indigenous name and origin of name)	Kwandu (indigenous name and origin of name)	Properties	Soiltype
Hyperthelia dissoluta Yellow thatching grass	*Bosho* The name stems from the technique used to build courtyards: “there will be part of it which will face upwards, there will be part of it which will face downwards. So that difference in how they make it is what they call ‘bosho’” (Masida 20.09.2023)	*Mutengenyi* (also called *Mutenge/Kateng e/Katengenyi*) It is simply a name; they do not know of a meaning	Perennial grass, 2-3 m tall, straight and unbranched culms, occurs widespread and along the roads in high densities in the Zambezi as well as the Kavango Regions (Strohbach & Walters 2015: 30).	Clay soil (m), sand soil (k)

Latin name & English name	Masida (indigenous name and origin of name)	Kwandu (indigenous name and origin of name)	Properties	Soiltype
Cymbopogon caesius Broad-leaved turpentine grass	*Namanunka* The name refers to the characteristic smell	*Namanunka* The name refers to its significant smell that ladies are said to like a lot	Perennial grass, 1.5-2 m, broad-leaved culms, contains a strongly insect-repellent essential oil, grows in abundance in the southern parts of the Zambezi Region and along roads (Strohbach & Walters 2015: 23).	Clay, sandy and loamy soil, alongside the river (m, k)
Heteropogon contortus Speer grass	*Kachila mende* "It is called kachila mende because of the trust they have in it once used for thatch. There is no fear that maybe there will be some raindrops" (Masida 20.09.2023)	*Katondo* It is simply a name; they do not know of a meaning	Perennial grass, up to 0.8 m long, occasionally 1.2 m (Müller 2007: 34). Straight, sometimes branched culms, is found in high densities and widespread beside the roads in the Zambezi Region (Strohbach & Walters 2015: 28).	Clay soil, along the river, swamps (m, k)
Aristida adscensionis Annual bristlegrass	*Muraranyati* "Unyati" means "buffalo", which like sleeping and feeding on this grass	*Mboke* "Mboke" means thorn. The grass has many thorns, hence the name	Annual grass, 0.6 m tall, straight and branched culms, has spiny seeds that stick to clothes and sometimes pierce animal skin (Müller 2007: 108)	Loamy soil (m), forest, swamps (k)
Juncus kraussii (Assumed)	-	*Mumbuwa* "Mumbuwa" means "hiding place" in the local languages. Wild animals hide in this grass		Along the river, loamy or clay soil
Setaria verticillata Bur bristlegrass	-	*Kanamulama* It sticks to one's clothes and this sticking is called "Kanamulama"	Has spikes/thorns (is a burdock) (k)	Areas people stayed, low fertility soil, fields, along roads

Latin name & English name	Masida (indigenous name and origin of name)	Kwandu (indigenous name and origin of name)	Properties	Soiltype
Eragrostis pallens Broom grass	-	*Muxhova-xhova* The name is adapted from their elders	Perennial grass, 1.5-1.8 m tall, straight, and unbranched culms, widespread but in low densities in the Kavango but also occurs in the Zambezi Region (Strohbach & Walters 2015: 26).	Forest, bush (k) Sandy soil (NNF 2016: 9; Pröpper 2015: 252).
Eragrosis lehmanniana Lehmann's lovegrass	*Muxhova-xhova* The name is adapted from their elders (Xhosa)	-	Perennial grass, 1 m tall, branched culms (Müller 2007:194)	Sandy soil
Aristida meridionalis Giant bristlegrass	*Mutowandavu* Its fluffy inflorescence resembles the mane of a male lion, and lions can hide in it	*Mutowandavo* "It is very hard to know or to recognize one when it is standing in that grass. You will keep going thinking there is nothing yet there is a lion looking at you" (Kwandu 20.09.2023)	Perennial grass, up to 2 m tall, unbranched and straight culms, occurs widespread along the roads in the Zambezi Region (Strohbach & Walters 2015: 18).	Clay soil (m, k), swampy areas (k)
Heteropogon melanocarpus Sweet tanglehead	*Mucele* Is called "mucele" because it is too long	*Mpako/Mucele* the grass is hollow and that hollow space is called "mpako"	Annual grass, 2 m long or more, hard, reed-like culms (Müller 2007: 36)	Loamy, clay soil (m, k), alongside the river (k)
Aristida pilgeri Pilger's bristlegrass	*Kachila* "Kachila" refers to the appearance; it is like an animal tail	-	Perennial grass, up to 1.5 m long, occurs in the Zambezi and Kavango East Region (Strohbach & Walters 2015: 19).	Sandy and clay soil

Latin name & English name	Masida (indigenous name and origin of name)	Kwandu (indigenous name and origin of name)	Properties	Soiltype
Aristida stipitata stipitata Dune/Sandveld bristlegrass	-	*Kachila* "Kachila" means "tail". "You look at the buffalo at the end you will find there is that part. So when they looked at it those elders who gave that name they were like: 'wow, it's just like a tail'" (Kwandu 20.09.2023)	Most likely annual (Strohbach & Walters 2015: 20), up to 1.5 m tall (Müller 2007: 118), branched culms (Strohbach & Walters 2015: 20).	Swampy areas, clay soil (k), over-gazed areas and sandy soils (Strohbach & Walters 2015: 20)
Sample not identifiable		*Nandundu* They are not certain about the name's origin		Grows in the field, soft, sandy soil
No sample	*Kafuha* "Kafuha" means bone; it is said to be as strong as a bone	-		Sandy soil
No sample	*Matengenya*			

Table 1: Identification, indigenous names, properties and preferred soil of grasses

The grass names from Masida are in siLozi and the names from Kwandu are in chiFwe, with the exception of *mumbuwa*, which was said to be called the same in siLozi and chiFwe by the Kwandu respondents. What stands out is that grasses which have almost the same appearance and are closely related were not distinguished from each other. We could not find out if the grasses were assigned the same names because people in general do not have different names for these grasses because they do not compile relevant differences, or whether they could not distinguish the samples during our interview due to their quality. The sample of *bosho* from Masida Community Forest is identified as *Hyperthelia dissoluta*, and is very difficult to distinguish from *Hyparrhenia rufa,* which is called *mutengenya* in siLozi (Strohbach & Walters 2015: 30). It is therefore assumed that the identification of *Hyperthelia dissoluta* as *mutengenyi* (chiFwe) in Kwandu Conservancy is referring to *Hyparrhenia rufa*, but was not distinguished

from *Hyperthelia dissoluta* by the respondents. Similarly, *Aristida pilgeri* and *Aristida stipitata stipitata* are both referred to as *kachila* and are described with the same properties by the respondents from both locations. The same also applies to *Eragrostis pallens* and *Eragrostis lehmanniana*, which are both called *muxhova-xhova*.

Factors that influence the choice of which thatch grass is preferred are the culm length, and the durability, which depends on the hardness and the ripeness of the culms and certain tannins (Strohbach & Walters 2015: 14-15). Strohbach and Walters (2015) collected quality criteria for thatch grasses to make trade more formal and ensure good product quality. The ideal culm length is 1.5 meters or more, with 1 meter being the minimum. Grasses with very thin culms are at risk of rotting and fungal attack while thick culms make roofs less waterproof and therefore one would need to thatch a thicker, more expensive layer. The standard culm diameter for selling is 3 to 4 mm (Strohbach & Walters 2015: 35). The grasses should have very straight culms to ensure well-thatched roofs. Hollow culms are also not suitable since they can break or splinter when flattened due to the weight of the roof. Grasses like *Cymbopogon caesius* are regarded to be very good thatching grasses, as this species contains specific essential oils that work as insect repellents (ibid.: 15).

7.2. Harvest and sustainability

Historically, the harvesting of thatch grass was a task only performed by women (Mukululi et al. 2023: 3). Still today the harvest of thatch grass is said to be mainly done by women (Ashley & LaFranchi 1997: 31; Cunningham & Terry 2006: 136); however, in the areas where we conducted our interviews it is practiced by men as well (C 17.09.2023; Kwandu 20.09.2023; Masida 20.09.2023; NSG 14.09.2023). This was explained by people in the Masida Community Forest, who stated that any person can harvest grasses but that it is considered a female domain as women possess the knowledge (Masida 20.09.2023). Harvesting thatch grass involves time-consuming and hard labor since people have to walk a long way, bend down the entire time to cut the grass, then carry the bundles back to their village and process the grasses by cleaning them of excess leaves and twigs, separating and bundling them (Pröpper 2015: 260-261). We were told that grass is harvested using a sickle called a "*jackson*" (Kwandu 20.09.2023; Masida 20.09.2023; NSG 14.09.2023), which is also confirmed by the existing literature (Pröpper 2015: 254; Strohbach & Walters 2015: 35; Velempini & Perkins 2008: 81). The tools are bought at a market; the sickle for example costs N$20-30 (NSG 14.09.2023). Grass harvesters in our interviews reported that they cut the grasses above the roots as close to the ground as possible (NSG 14.09.2023). Strohbach and Walters (2015) explain that grass is cut close to its base with the tuft being left in the ground to encourage regrowth (Strohbach & Walters 2015: 35; Velempini & Perkins 2008: 81). During the cutting process little shoots are stripped from the grass to make it look clean (NSG 14.09.2023). During the cutting process some harvesters purposefully scatter the seeds of the grass to help with regrowth (Velempini

& Perkins 2008: 81). After the harvest the grass is bound together with self-made ropes into small bundles that are measured according to the diameter of a cola can (Pröpper 2015: 257). Ten of those cola-can-sized bundles are then tied together to form a bigger bundle (ibid.: 254). The average bigger bundle has a diameter of 60 cm (NNF 2016: 4). A physically fit harvester can collect between 20 and 30 bundles in a day (Pröpper 2015: 261). Following the harvest the grass needs to be stored properly to prevent it from being destroyed by rain or fire, which would diminish the harvester's income (NNF 2016: 13).

To be allowed to harvest grasses, all our respondents reported having to buy a permit. In most cases this permit is acquired from the responsible conservancy or community forest. The prices, allowed grass types and time of validity for a permit vary by area. In the Sikunga Conservancy one permit for the entire harvesting season costs N$30 (NSG 14.09.2023). In Masida Community Forest a permit costs N$20 for two weeks for all grasses, while residents of the Kwandu Conservancy pay N$20 for one month (Kwandu 20.09.2023; Masida 20.09.2023). In the Sachona Forest the N$50 permit is valid for two months and even includes the harvest of reeds (OL 21.09.2023). In areas that are not managed by CBNRM institutions, anyone within a community can harvest grasses if they need them for their own use, but when the grass is being sold they might have to acquire a permit from the local traditional authority (NNF 2016: 41-42 based on Symonds 2010). But regardless of these regulations, thatch grass is sometimes harvested without obtaining permits beforehand since many people claim the costs are too high (Pröpper 2015: 255). One woman in our interviews explained the contradiction in CBNRM requesting the buying of a permit to harvest grass as an income source to us: "if you don't have money you have to go get again a permit to go cut the grass. But you are an unemployed person. You don't have money to go buy a permit" (NSG 14.09.2023). The people who harvest grass to create an income most of the time already have difficulties in finding other cash sources, which means that people might feel discouraged from harvesting if they cannot or do not want to purchase a permit before receiving the earnings from the grass sale. Grass that is cut without a previously acquired permit can be confiscated, and the harvester receives a fine (NSG 14.09.2023).

As an example, we list the required permits for reed and thatch harvest in the Kwandu Conservancy as of 2012. The Kwandu Conservancy requires the acquisition of a N$5 permit before the harvest if the resources are harvested for domestic use (Khumalo 2012: 293-294). In contrast, a person who wants to sell grasses or reeds commercially has to pay an entry fee of N$15 for a harvest time of 30 days plus an additional per unit permit of N$0.5 for each grass bundle and N$2 for each reed bundle they harvest for selling (ibid.). In addition, if the harvester wants to transport and market the bundles, they have to pay a N$15 transport permit and a N$15 marketing permit (ibid.). These expenses reduce the final earnings of the grass and reed sale, and therefore it is only profitable if a larger number of bundles is sold.

To make sure that women can benefit from thatch grass growing in protected areas, a different thatch-grass harvesting model was developed in Zimbabwe. In the Kazuma Pan National Park and in the Matetsi Safari Area in Zimbabwe only women have the right to request a harvesting permit for cutting thatch grass, usually for two weeks (Mukululi et al. 2023: 1, 3). After receiving a permit, the women have to register with their personal information and are assigned a specific area outside of tourism or hunting activities (ibid.: 3). The harvest is done in groups and the women are escorted by armed rangers that protect them from wildlife and ensure that the harvesting is only done in the assigned area (ibid.: 3). After the cutting the parks keep every fifth bundle and use it to roof the park infrastructure (ibid.: 3-5). The protected areas suffer no disadvantage from letting women have access to the thatch grass (ibid.: 1). The harvest is even beneficial for the park since the removal of the grasses means that there is no fuel load for the dry-season fires, preventing them from spreading (ibid.: 5). Additionally, no illegal harvesting was reported with this concept in place (ibid.: 6). However, an issue that arises from letting local communities use natural resources from protected areas is that many people and institutions working with and in these areas fear that the presence of local people within these areas may disturb the touristic activities related to wildlife sightseeing and photography (ibid.: 7).

When we asked our respondents about the ideal time for the harvest of grasses, the shared perception was that grasses should generally be collected during the dry season between May and August (NSG 14.09.2023; RW 21.09.2023; OL 21.09.2023). Ashley and LaFranchi found that at some places in the Zambezi region grasses can even be harvested up until October (1997: 31). *Eragrostis pallens* is harvested when it begins to mature and flower, which occurs together with the beginning of the rainy season in September (Velempini & Perkins 2008: 80). At that time, it turns brown and is easy to cut (ibid.). At one of our interview locations the women stated that no woman harvests grasses before turning 20 years old (NSG 14.09.2023). But if a household depends on child labor for the harvest, grasses can already be cut during April and May when school children are on vacation (Strohbach & Walters 2015: 39). Most people only harvest from morning to midday, before it gets uncomfortably hot (NSG 14.09.2023). The harvesting of grasses can be very dangerous. Encounters with elephants, hippos, buffalos, lions and crocodiles can lead to injuries or even death (Masida 20.09.2023; OL 21.09.2023).

The sustainable use of grasses requires harvest management as well as fire management (NNF 2016: 10, 13). Fire can have positive as well as negative effects on the harvest of grasses. In the Zambezi Region wildfires can occur naturally or are purposely set by humans to prevent the uncontrollable spreading of wildfires or to burn remaining grass after the harvest to make room for new grasses (NSG 2013; Mukululi et al. 2023: 7; NNF 2016: 10, 13). But if set too early, fires can get out of hand and lead to women having no grass left to collect (Mukululi et al. 2023: 7). This is especially true when communities that do not harvest grasses set

fires and thereby deliberately or accidentally diminish the harvest of neighboring villages (Strohbach & Walters 2015: 37). To prevent malicious burning by others, the communities need to be aware that they are burning income when doing this (NNF 2016: 46 based on Symonds 2010). In April and May, when some households are already harvesting, the seeds are not ripe yet and the grass is still green (NNF 2016: 10). This means that it is still soft and can rot faster (ibid.). But if harvested at a later point when the grasses are ripe, the harvest collides with the fire season, which can start in late May (NNF 2016: 10; Strohbach & Walters 2015: 37). Fire breaks are useful to protect the grass from early fires (NNF 2016: 46 based on Symonds 2010). Beginning the thatch-grass harvest as early as mid-April is considered an unsustainable harvesting practice because during the rainy season nutrients traveling from the roots to the culms of the grass are facilitating the growth of the grass, and it is not until the growing season ends with the first cool days in May that the nutrients are stored in the root system again to ensure regrowth in the next season (Strohbach & Walters 2015: 35). If the nutrients have had no time to be relocated back to the roots and if the grass is cut early and very low to the ground, it is likely to not grow back and is then replaced by annual grasses like *Aristida stipitata* that cannot be harvested for the thatch-grass market (ibid.). Additionally, a later harvest ensures that the seeds are ripe and have fallen off of the grass and can germinate again (ibid.: 36). Another problem with *Eragrostis pallens* observed by Strohbach and Walters is that the grass is often cut too early, when it is still green, so that the culm of the grass is not as strong and thick as it could be (2015: 35). Harvesters also need to pay attention that they do not rip out the roots along with the grasses, because without the roots, perennial grasses cannot regrow in the next year (Strohbach & Walters 2015: 35). We also tried to find out how the harvesting process and sale of grasses has changed in the last decades. An elderly lady told us about the changes she had experienced since she was young and mentioned higher prices and increasing human-wildlife conflicts. The lady explained that the price of a bundles of grasses or reeds was also significantly cheaper when she was younger, and also said that essential products such as maize or sugar were being sold at lower prices than today. She could also tell that the amount of grass has decreased: “back then it was a lot of grass and reeds. But today it’s few because of the elephants and buffalos” (OL 21.09.2023). Our research assistant added that he thinks that the animals have increased because of conservation, and criticized its efforts at importing wildlife. The old lady stated that she feels like in the past they were “friends” with the animals while nowadays the animals are considered to pose a threat. But apparently these difficulties have not led to conflicts with neighboring communities over the natural resources. In Masida Conservancy we were also told about changes but this time they were associated with climate change. Because the grass stock is observed to be decreasing, people sometimes have to mix different types of grasses to have enough to make a bundle because they cannot find enough of one sort:

> "Because of climate change, now the grass is not growing like those olden days. They will find that if they go for harvesting those grass, they might mix them. For example, muxhova-xhova can be mixed with kachila. Sometimes they can mix with kachila mende. Mixing with kachila mende or muxhova-xhova. Yeah, they mix it together and make a bundle" (Man in Masida 20.09.2023).

This is compared to 15 to 20 years ago when they felt that there was still an abundance of grass: "In those olden days, grass was too much" (Man in Masida 20.09.2023). All in all, there is currently enough grass for harvesting in the Zambezi Region as long as the correct cutting technique and season are considered and fire management is applied.

7.3. Usage of grasses

Thatch grass is one of the natural resources that almost every household in the Zambezi Region uses (Ashley & LaFranchi 1997: III). The grass is commonly used in southern Africa for a variety of purposes such as roofing – when little or no stone, clay or timer is available as an alternative – or for brooms, baskets and fences (Ashley & LaFranchi 1997: 4; Cunningham & Terry 2006: 27, 135-137; Mukululi et al. 2023: 3; Strohbach & Walters 2015: 35). In addition, some mats, especially in Zimbabwe, are also made from grass (Cunningham & Terry 2006: 103).

Regarding the use of thatch grasses, the literature names a handful of different species. We will first take a look at the findings of other researchers in this regard and then add what we deduced from our interviews. Strohbach and Walters identified *Cymbopogon caesius*, *Hyperthelia dissoluta* and *Eragrostis pallens* as the most important grass species used to thatch roofs (2015: 38). Cunningham and Terry also mentioned *Hyparrhenia* as a commonly used thatch species (2006: 138). As for the thatching of rural houses, different grasses are used which are not sold commercially (NNF 2016: 10). Regarding thatch grasses, Strohbach and Walters also reported that the annual grass *Aristida stipitata* cannot be harvested for the thatch-grass market but is often used for temporary roofs as its quality is not the best, but it can be collected easily (2015: 20, 35). On the other hand, *Eragrostis pallens,* which is unsuitable for feeding livestock, is almost exclusively harvested to be traded in the Kavango Regions as it is the preferred thatching material for the tourism industry (NNF 2016: 10; Pröpper 2015: 253). *Eragrostis pallens* is not sold in the Zambezi Region (Strohbach & Walters 2015: 26). Thatching roofs of tourist lodges and other accommodations with grass became popular after 1990 (Pröpper 2015: 253).

In general, 65.7% of households in the Zambezi Region use corrugated iron/zinc as their main material for roofs, while 31.9% use thatch grass, mainly in rural areas (Namibia Statistics Agency 2016: 48). Thatch-grass roofs have a significant advantage compared to other roofing materials. Thatch grass is still highly valued as a roofing material outside of urban areas because houses with thatch roofs remain cool during the summer, which is not the case

with corrugated-iron houses (Cunningham & Terry 2006: 135; Pröpper 2015: 253). Regardless of its poorer insulation properties, corrugated iron is seen as a “symbol of wealth, status and modernity” (Pröpper 2015: 253) because of its easy installation and durability. But even though traditional roofs made from thatch grass are being used less nowadays, they still hold great cultural value for many Namibians (Cunningham & Terry 2006: 141). The change in roofing materials was also mentioned by one of our respondents from the Masida Community Forest who stated that ten to 15 years ago there were only grass houses in Masida and that now many people are trying to “modernize” their houses with zinc. The respondent argued that zinc sheets heat up and that raindrops are very loud, in contrast with grass, which is cooler and mutes the sound of rain (Masida 20.09.2023). The Masida respondents still preferred thatch-grass roofs for huts used for cooking on firewood as the smoke is reduced and extreme heat is prevented through its cooling effect (Masida 20.09.2023). Thatch roofs can last up to 15 years (NNF 2016: 4). In our interviews people mentioned roofs lasting from ten years (Kwandu 20.09.2023) up to even 20 years (NSG 14.09.2023). Some people told us that they put motor oil on thatch roofs to protect them from termites (NSG 14.09.2023). The process of building a thatched house is a “social activity performed at reciprocal work gatherings where family and neighbours come together to work in exchange for the collective consumption of food or alcohol” (Pröpper 2015: 253). Thatching houses can be done in two ways according to the respondents of Kwandu Conservancy. The first method is a simpler, where the uncleaned grass is thatched into a roof without making use of a specific stacking technique (Kwandu 20.09.2023). Uncleaned in this case means that the culms have not been cleaned by removing any excess leaves or little shoots (Kwandu 20.09.2023). These roofs work temporarily but they will start rotting quickly (Kwandu 20.09.2023). The other way, which is also commonly used for lodges, requires the grasses to be cleaned, and is done with traditional tools (Kwandu 20.09.2023). The first grass layer is laid from the bottom towards the top of the roof and then a second layer is laid with from the top to the bottom (Kwandu 20.09.2023). These roofs last about 10 years (Kwandu 20.09.2023). The first method is for roofs of temporary shelters, and as the grass is not cleaned, fewer bundles are necessary compared to the second method (Kwandu 20.09.2023). Terry noted that men typically cut wooden poles and construct the roof truss, while women take over the task of thatching the roof and building reed walls and fences (1999: 693). Besides roofs as the main usage of grasses, brooms measuring between 40 and 60 centimeters are also produced from different species of grass, such as *Aristida*, *Cymbopogon* or *Eragrostis* (Cunningham & Terry 2006: 150).

In our interviews we asked about the usages of the different grass species that the respondents showed us. The following table (table 2) illustrates these uses collected in Masida Community Forest (m) and Kwandu Conservancy (k) according to the interviewed respondents.

Names and usages	Roofs	Courtyards	Brooms	Cattle fodder	Floor mats	Baskets	Silos	Additional usages
Bosho (m) **Mutengenyi (k)** *Hyperthelia dissoluta*	**X**	**X**					**X** (m)	
Namanunka (m/k) *Cymbopogon caesius*	**X**	**X** (k)					**X** (m)	
Kachila mende (m) **Katondo (k)** *Heteropogon contortus*	**X**			**X** (m)			**X** (m)	Is referred to as a “very special” thatch grass in Kwandu
Muraranyati (m) **Mboke (k)** *Aristida adscensionis*								Decoration (k), Medicine against constipation (m)
Mumbuwa (k) *Juncus kraussii*	**X**	**X**			**X**	**X**		First roof coat
Kanamulama (k) *Setaria verticillata*								Soil-fertility indicator, potency-enhancing drug for men
Kachila (m) *Aristida pilgeri*	**X**					**X**		
Muxhova-xhova (k) *Eragrostis pallens*	**X**					**X**		Roofing if Mpako or Namanunka are unavailable
Mutowandavu (m/k) *Aristida meridionalis*		**X** (k)			**X**			
Muchele (m) **Mpako/Muchele (k)** *Heteropogon melanocarpus*	**X** (k)			**X** (m)	**X** (m)			Medicine against diarrhea (m), necklaces for children are made from the tubers threaded onto rope (m)
Kachila (k) *Aristida stipitata stipitata*	**X**	**X**	**X**					
Muxhova-xhova (m)	**X**		**X**			**X**		

Names and usages	Roofs	Courtyards	Brooms	Cattle fodder	Floor mats	Baskets	Silos	Additional usages
Eragrostis lehmanniana								
Kafuha (m) *No available sample*	**X**							Used only in combination with Matengenya
Matengenya (m) *No available sample*	**X**							Used only in combination with Kafuha
Nandundu (k) *Unidentifiable sample*				**X**			**X**	Used as cattle fodder when it is still green

Table 2: Usages of grasses

These results indicate that many grass species are used for a variety of purposes, whilst some grasses are regarded as exceptionally suitable for one function. *Hyperthelia dissoluta* (*bosho*/*mutengenyi*) is classified as the main commercial thatch species in the Zambezi Region, but is not regarded as a high-quality thatching grass by locals (Strohbach & Walters 2015: 30). This aspect is mirrored by our findings, as respondents in the Kwandu Conservancy told to us that: "if you were *mutengenyi* as a person, they could say that person could be specialized only in courtyards. Otherwise, if you would force that person to build a house, you will find that your house will not look nice but you could still build a house then" (Kwandu 20.09.2023). *Cymbopogon caesius* (*namanunka*) is considered a high-quality and long-lasting thatch grass, and the essential oil of the grass prevents rotting; however, the grass is not sold commercially since not enough is available (Strohbach & Walters 2015: 23). Respondents from Masida Community Forest confirmed this as they said that this species is the best thatch grass. *Cymbopogon caesius* (*namanunka*) is sometimes used with *Hyperthelia dissoluta* (*bosho*/*mutengenyi*) in a half-and-half mix (ibid.). The grass named *mumbuwa* in Kwandu Conservancy we assume to be *Juncus kraussii* or a closely related species, and was referred to as a "multitasking tool" by Kwandu respondents since it is used for a variety of purposes (Kwandu 20.09.2023). *Setaria verticillata* (*kanamulama*) was said to be an indicator species for low soil fertility which can at the same time help to enhance the soil fertility if mixed with manure and plowed back into the soil (Kwandu 20.09.2023). Interestingly, *Eragrostis pallens* (*muxhova-xhova*), the commercially sold thatch grass in the Kavango Region, was not liked as a thatch grass in Kwandu Conservancy and was referred to as a lower-quality alternative used for roofs if *Heteropogon melanocarpus* (*mpako*) and *Cymbopogon caesius* (*namanunka*) are unavailable (Kwandu 20.09.2023). Silos or barns are made by first putting down a layer of wood on the ground and

then covering it with grass before storing grain on top (Masida 20.09.2023). *Hyperthelia dissoluta* (*bosho*), *Cymbopogon caesius* (*namanunka*), *Heteropogon contortus* (*kachila mende*) and *nandundu* are used as such a bottom layer in barns as they prevent grains from falling on the ground. In Kwandu Conservancy respondents said that they like using *nandundu* for barns because it is soft and can be shaped easily, which is helpful for round barns (Kwandu 20.09.2023). Respondents in Masida Community Forest explained that they use *kafuha* and *matengenya* together for thatching as *kafuha* is thinner and creates a denser roof while *matengenya* is bigger and useful for volume (Masida 20.09.2023). When only using *matengenya*, water can leak into the house, hence it is used together with the smaller and thinner *kafuha*, which is put on top to cover the holes (Masida 20.09.2023). We also asked 17 people of Masida Community Forest and 15 people of Kwandu Conservancy what their most-used and preferred grasses are. Each person was given five stones to place next to the chosen grass samples. Each grass could only be given one stone per person. In Masida Community Forest the most used and preferred grasses quality-wise were, in descending order, *Aristida pilgeri* (*kachila*) and *Heteropogon contortus* (*kachila mende*) (each 16); *kafuha* (no sample), *Aristida meridionalis* (*mutowandavu*) and *Cymbopogon caesius* (*namanunka*) (each 10); *Hyperthelia dissoluta* (*bosho*) (9); *Eragrosis lehmanniana* (*muxhova-xhova*) (7); *Heteropogon melanocarpus* (*mucele*) (5); *matengenya* (no sample) (1); and *Aristida adscensionis* (*muraranyati*) (1). In Kwandu Conservancy the most used and preferred grasses (including the reeds *Phragmites australis* (*luwondowe*) and *lushuvu* (not identifiable)) quality-wise were, in descending order, *Phragmites australis* (*luwondowe*) (14), *Aristida stipitata stipitata* (*kachila*), *Heteropogon melanocarpus* (*mpako*) and *Cymbopogon caesius* (*namanunka*) (each 11); *lushuvu* (not identifiable) and *Heteropogon contortus* (*katondo*) (each 10); *mumbuwa* (assumed to be *Juncus kraussii*) (3); *Hyperthelia dissoluta* (*mutengenyi*) and *nandundu* (not identifiable) (each 2); *Setaria verticillata* (*kanamulama*) (1); and *Aristida adscensionis* (*mboke*), *Aristida meridionalis* (*mutovandavo*) and *Eragrostis pallens* (*muxhova-xhova*) (each 0). When comparing the rankings from Kwandu and Masida, it is evident that the grasses called *kachila* (*Aristida pilgeri* in Masida and *Aristida stipitata stipitata* in Kwandu) are preferred in both locations, which also applies to *Cymbopogon caesius* (*namanunka* in both areas) as well as *Heteropogon contortus* (*kachila mende* in Masida and *mpako* in Kwandu). These grasses were all regarded as high-quality thatch grasses. What is interesting about this is that *Aristida pilgeri* and *Aristida stipitata stipitata* are liked for thatching even though the literature suggest that they can only be used for temporary roofs (Strohbach & Walters 2015: 20, 35). *Aristida meridionalis* (*mutowandavu* in Masida) has similar characteristics to the latter two species, besides being taller, and is also used as thatch grass. *Heteropogon contortus* (*kachila mende* in Masida and *mpako* in Kwandu) and the related *Heteropogon melanocarpus* (*mpako* in Kwandu) are not mentioned as a good and often used thatch grass in the existing literature; however, the respondents in Masida

Community Forest and Kwandu Conservancy highlighted these grasses as having good characteristics for roofing (Kwandu 2023; Masida 2023). In Kwandu Conservancy the reeds *Phragmites australis* (*luwondowe*) and *lushuvu* (not identifiable) were also highly regarded (Kwandu 20.09.2023). Generally, most grasses have a variety of uses rather than only having one purpose, and the people knew very clearly which grasses they favored for what use and why.

7.4. Selling structures

The thatch-grass trade is especially common among impoverished people living far away from the riverine wetlands as these people greatly depend on NTFPs (Strohbach & Walters 2015: 14). Thatch grass, which is traditionally used for roofing in rural communities, has become a valuable commodity due to the demand from the tourism industry for “typical African” roofing for lodges after the Namibian independence in 1990 (Pröpper 2015: 247). This “economic success story” (Pröpper 2015: 247) has led to the establishment of a value chain connecting grass harvesters from remote regions with traders, ultimately supplying thatching companies in for example Windhoek or Rundu that sell to tourist lodges (ibid.: 247-248). The thatch-grass trade was established in the Zambezi Region in the early 1990s by local entrepreneurs and a lodge owner (ibid.: 256). Following this thatch grass became a commodity, and Prothatch, the first company selling the grass, entered the market (ibid.: 256-257). In this process two-liter cola bottles and cola cans were established as a size reference for bundles in community projects (ibid.: 257). Thatch grass now had a fixed value and a price (ibid.: 257). Cola-bottle sized bundles are typical for the Zambezi Region (NNF 2016: 42 based on Symonds 2010). In the following decades the market grew, and more households became partly or in some cases even fully dependent on the income generated from thatch-grass sales (Pröpper 2015: 258). In line with the growth of the NTFP trade, the trading of thatch grass also increased, with a revenue of millions of Namibian dollars (Strohbach & Walters 2015: 13). Thatch grass is also exported to Angola (ibid.). Often the supply cannot cover the demand for thatch grass (ibid.). Most of Namibia’s commercially traded thatch grass comes from the Kavango Regions (NNF 2016: 4). 1.2 million bundles of thatch grass were sold in 2015 and 2016, in the Kavango Region alone, at a price per bundle of N$7-10, creating a large revenue (NNF 2016: 4; Strohbach & Walters 2015: 13).

During our interviews the respondents mentioned average bundle prices from N$15 up to N$35. This increase in bundle prices is the result of a rise in inflation, as a bundle selling for N$10 in September 2015 was worth US$0.75, while in September 2023 a N$10 bundle was worth US$0.53. This means that a N$15 bundle now has the value of US$0.80 which is roughly the same value as a N$10 bundle in 2015. The reason that some bundles cost up to N$30 is most likely the size difference, as small bundles were reported to cost N$15 and the price of N$30 refers to larger-sized bundles that are more common in the Zambezi Region, thereby explaining the doubled price. In two locations the respondents reported to us that the price was

at N$20 for a big bundle and N$15 for a small bundle (NSG 14.09.2023, RW 21.09.2023). In Masida Community Forest and Kwandu Conservancy the prices were higher. In Kwandu the respondents explained that the negotiations between harvester and buyer start at N$30 for a bundle of *mpako* (*Heteropogon melanocarpus*) and the price is lowered to N$25 if the buyer refuses to buy the bundles at the higher price (Kwandu 20.09.2023). In Masida the kind of grass does not determine the price; it is the same for a bundle of any type of grass (Masida 20.09.2023). A normal bundle sells at N$30, a small one at N$15 (Masida 20.09.2023). However, the respondents in Masida explained that the price varies depending on the circumstances. A bundle sells at N$30 if no costs for transportation to the village had to be paid by harvesters. When a bundle has had to be transported it sells at N$35, compensating the harvester for the cost of carrying bundles to the village (Masida 20.09.2023). The basic prices of grass bundles, and price changes, are generally determined by the chief officer (Masida 20.09.2023). Additional price increases can be negotiated between a harvester and a buyer (Masida 20.09.2023).

The thatch-grass market is largely unregulated, and therefore unsustainable harvesting is a problem, possibly causing a depletion of grasses (NNF 2016: 4). Generally, the thatch-grass market is characterized by competition among harvesters, pricing disagreements with buyers and lack of communication (Pröpper 2015: 262). There is poor communication along the value chain regarding the state of the supply, harvesting techniques, the trade and value addition and lastly the demands of the market (ibid.). Communication also suffers due to the language barrier (ibid.). This makes it difficult for harvesters to oversee the processes of the market, calculate demands and possibly adjust pricing (ibid.).

In light of thatch grass becoming a commodity, Michael Pröpper (2015) comments on the discussion about ecosystem services (ESS) with an ethnographic case study of the thatch-grass trade in the Kavango region. Pröpper (2015) argues that thatch grass is a so-called ecosystem service (ESS). ESS “are supposed to function as a protective mechanism to make nature economically visible, while simultaneously contributing to economic development” (Pröpper 2015: 247). The concept attempts to quantify, price and commodify natural resources for entering the economic market, in turn reducing poverty and leading to a sustainable use of those resources, as they have been ascribed an economic value (ibid.: 248). However, criticisms of this approach include that the notion of using market-based mechanisms to commodify and at the same time seemingly protect nature may lead to the exploitation of natural resources for profit without considering ecological consequences or new social vulnerabilities emerging for local communities engaging in the trade with an ESS (ibid.: 249-251). An ESS such as thatch grass is not just a market commodity, but is always connected with ecological, political and social aspects that influence the lives of rural communities on many other levels besides the positive effect of it being an additional cash-income source (ibid.: 263). The consideration of these vulnerabilities and possible negative changes is of particular importance

when looking at the suitability of thatch grass as a beneficial income source for women, because negative social changes should not outweigh financial benefits. We will discuss this issue further in the next chapter: 7.5. “Financial contribution to households”.

Regarding places where thatch grass is sold, our respondents indicated that they sell thatch grasses in their villages to people who pass by (NSG 14.09.2023). These are local people or people from outside the villages (Masida 20.09.2023; NSG 14.09.2023). In Masida the bundles are sold inside the community forest to buyers including local people who cannot go harvesting because of physical (age, illness or disability) or time constraints (working in town). In general, there are no official marketplaces in the village (Kwandu 20.09.2023; Masida 20.09.2023). Everyone can place their bundles next to their house and whoever wants to buy bundles can purchase them (Kwandu 20.09.2023; Masida 20.09.2023). Generally the thatch-grass trading started along the B8 road from Divundu to Rundu (Strohbach & Walters 2015: 14). Thatch-grass bundles are transported to the selling places on the head or with the help of an ox, as reported during interviews (Kwandu 20.09.2023; Masida 20.09.2023). Pröpper also mentions donkeys, cars or sledges as means to transport the bundles (2015: 254). A common practice is that merchants open market stalls at thatch-grass selling points and the earnings from grass sales are often spent directly on clothes, sweets or drinks (Pröpper 2015: 254). People who live close to the roadside typically sell the grass bundles there, whereas people living more remotely wait for buyers to come to their villages (NNF 2016: 23). In Rundu a thatch-grass hub was established to help stabilize and formalize the thatch-grass trade (Strohbach & Walters 2015: 13). Selling usually takes place between May and December along the roads, where people also socialize and chat (NNF 2016: 41 based on Symonds 2010; Pröpper 2015: 247-248, 254). The buyers pay immediately and in cash (Pröpper 2015: 254). When it comes to finding buyers, a contract with a bulk buyer has the potential to create a stable income for a community (Ashley & LaFranchi 1997: 32). Grass sellers often have to live with the uncertainty of not knowing whether they will be able to sell all their products or when a purchase will take place (ibid.). If it is not purchased in time, a bundle can get damaged by the rain (ibid.).

It is also important to note that the commercially traded thatch grass must fulfill certain requirements before it reaches the end user and passes the red line, a veterinary control border across Namibia. These requirements include a permit of the Directorate of Forestry and the Veterinary Office as well as chemical treatment, since on one hand buffalos that like to feed on the grass occasionally carry foot-and-mouth disease or botulism, possibly leaving infected saliva, and on the other hand infection with insects or bugs has to be prevented (NNF 2016: 44 based on Symonds 2010; Pröpper 2015: 255). Therefore the grass has to be quarantined for 21 days and treated with two insecticides (NNF 2016: 44 based on Symonds 2010). During an outbreak of foot-and-mouth disease, no grass is sold (ibid.). Furthermore the grass has to be treated in order to be resistant to fire (ibid.).

When looking at the ways harvesters sell their bundles it is also important to look at the entire value chain of thatch grass, as this has many effects on the financial benefits that harvesters can gain from the grass. The value chain of thatch grass consists of four parties and is characterized by middlemen buying the grass from harvesters and selling it to larger buyers at an increased price (NNF 2016: 6, 26). The first party involved in the value chain is that of the producers who harvest and bundle the grass. The second party consists of the so-called primary traders, who exchange food for thatch grass harvested by the producers, and then sell it in stalls on the roadside to passing customers (ibid.: 24). Other primary traders drive to remote areas and buy thatch grass that they then chemically treat and often rebundle into smaller sizes (ibid.: 24-25). This constitutes a large value-addition to the thatch grass (ibid.: 24). They pay for the transport and then sell the grass either directly to the end users or to the secondary traders, the constructors (ibid.: 24-25). The secondary traders are the third party involved in the thatch-grass value chain, and consist of construction companies such as Prothatch, which thatch roofs for customers (ibid.: 25). They usually provide end users with the already treated grasses bought from primary traders, so that the customers pay for the labor and the grass supply (ibid.: 25). Sometimes the customers, the fourth party, buy the thatch themselves and only pay constructors for the labor (ibid: 25). A survey by the Namibia Nature Foundation in 2016 showed that when the bundles reach the end user, the price has increased from around N$5 per bundle received by the harvester to between N$64 and N$140, while the labor cost for one square meter is N$150 near Rundu to up to N$2,500 per square meter in other areas (ibid.: 25). Interestingly, the diameter of the bundles decreases as it travels through the value chain while the price increases (ibid.: 28). The middlemen, the primary traders, get larger benefits from selling the rebundled grass at higher prices even when no value is added (ibid.: 29). Value is added in turn when the product is chemically treated and transported to secondary traders (ibid.: 29). After that, the construction work adds more value to the product (ibid.: 29). All our respondents only sold thatch to end-users and not to other primary or secondary traders. Buyers include local people and lodges (JM 18.09.2023; RW 21.09.2023). However, we were told of thatch that is sold to a secondary buyer in Lizauli (JM 18.09.2023). A specific thatch grass grows in Lizauli from March to May which Prothatch buys upfront from local producers on the roadsides, then supplying lodges and other buyers in Namibia (JM 18.09.2023). They come at an agreed time with a truck that can load about a thousand bundles (JM 18.09.2023).

7.5. Financial contribution to households

In general, it can be said that thatch grass is an ecosystem service that provides a direct economic as well as utilitarian advantage for women living in rural communities (Mukululi et al. 2023: 1; Strohbach & Walters 2015: 13). With thatch grass as a strategy of income generation, money flows into cash-poor households within rural communities which previously relied only

on subsistence agriculture and money from state programs (Pröpper 2015: 247-248). Creating an income from thatch grass requires a lot of labor time for traveling to the harvesting site, cutting the grass, cleaning and tying the bundles and lastly bringing them to a selling outlet (Ashley & LaFranchi 1997: 32). These tasks also require larger blocks of time and hardly fit between other daily activities (ibid.).

But besides the thatch harvest being a time-consuming and very laborious cash-in-come-generating activity, it also benefits women as it is social activity among them (ibid.). An advantage of thatch grass is that it provides a cash income even at the end of the dry season when other resources are limited (ibid.). Grass is also less vulnerable to drought than livestock and crops (ibid.). Regarding the importance of thatch grass as an income source, it is important to note that thatch is a means to earn cash, in particular for rural communities in strongly stratified societies where little cash income and few job opportunities exist, and people are additionally restricted due to a lack of formal education and home-binding responsibilities (Pröpper 2015: 252; Strohbach & Walters 2015: 39). The selling of NTFPs such as thatch grasses or crafts fills a niche in these stratified communities which allows people, women in particular, to generate income in the absence of formal employment (Pröpper 2015: 252). How-ever, it is important to consider that thatch grass is a seasonal income source and therefore never the only income source, as respondents from Masida Community Forest and Kwandu Conservancy told us (Kwandu 20.09.2023; Masida 20.09.2023). For the people of Masida Community Forest other income sources include woodcutting to sell firewood, poles and axe handles; the sale of wild fruits; selling charcoal; selling devil's claw; the farming of chicken, goats, pigs or cattle to sell them (six cows can be sold for up to $20,000); and the sale of traditional medicine from roots and farming crops like maize, millet, sorghum, pumpkin, and watermelon (Masida 20.09.2023). In Kwandu Conservancy income sources are explored using creativity and adaptive skills, as the respondents explained (Kwandu 20.09.2023). One can, for example, buy a fishhook to catch fish that are then sold (Kwandu 20.09.2023). Sources of income, besides the selling of grasses and reeds, include fishing with self-made fishing nets, piecework such as preparing other people's fields for a certain amount of money, agriculture and the farming of cattle, chickens, pigs and goats (Kwandu 20.09.2023). In Kwandu Conserv-ancy respondents also described how they combine subsistence use of resources with income generation. They practice subsistence farming to cover their consumption needs and then sell the surplus, thereby generating income while at the same time securing their food supply (Kwandu 20.09.2023). For the people of Kwandu Conservancy selling grasses and reeds is not their main income source; however, it is a supplemental one (Kwandu 20.09.2023). They stress that they generally take every opportunity they can to generate income (Kwandu 20.09.2023). Even though financial benefits from thatch are not large, "at least you get some-thing. It is not like staying in here without doing anything", as a man from Masida Community Forest explained (Masida 20.09.2023). People often mentioned this to us when talking about

income generation from natural resources. It is not ideal, but it is better than sitting around and not having the extra money (Kwandu 20.09.2023; Masida 20.09.2023).

When attempting to quantify the financial benefits from selling grasses, it is important to consider that the individual yields a person is able to harvest vary greatly. Mukululi et al. reported that in western Zimbabwe a bundle sells at US$2, but after subtracting the transportation costs needed to get the bundles to selling points, the income for women is US$1.5 per bundle (2023: 4, 6). In this case study, women were reported to earn up to US$187 from a two-week harvest (Mukululi et al. 2023: 1). The NNF on the other hand reported that "in some areas, hardworking grass cutters can earn up to N$12,000/year" (NNF 2016: 41) while "not as hardworking" harvesters can earn about N$5,000 a year (at that time US$338) (ibid.). In areas where thatch grass does not grow in abundance, the incomes are smaller (ibid.). In a village east of Katima Mulilo the women we interviewed stated that they make about N$1,000 (US$52) from selling grasses (NSG 14.09.2023). With a bundle price of N$20 as reported in this village, this means that 50 bundles are sold to earn N$1,000 (NSG 14.09.2023). Regarding permits, some women we interviewed claimed that the thatch-grass permits were too expensive. This was also reported in Khumalo's study, as women in the Kwandu Conservancy stated that the permit costs were too high and may prevent them from harvesting legally (2012: 304). Up until 2010, only two to four women annually had applied for a harvesting permit but Khumalo observed many more harvesting during one of her fieldwork periods, possibly illegally (2012: 305).

When talking about the financial contribution of thatch grass for rural households, it is important to determine what the income generated from the trade with thatch grass is actually used for. The existing literature does not describe this in detail and only states that the income is generally important. As to what "important" means in this context, few examples can be found. In our interviews we specifically asked what the money earned from thatch-grass trading is spent on. The answers were the same in all locations: school supplies such as books, fees and uniforms for children make up the largest expense covered with money earned from selling thatch grass, followed by food such as cooking oil, maize meal and salt, then sanitary products, hospital costs, furniture and cosmetics (Kwandu 20.09.2023; Masida 20.09.2023; NSG 14.09.2023; RW 21.09.2023). In Masida Community Forest the people explained that they harvest to pay for certain things and that they already know what they want to buy with the money even before they start harvesting grasses. This shows that the money earned from selling grasses is already taken into account to pay for basic goods and the education of children. Therefore, the money generated from thatch-grass trading is essential even if it is supplemental.

Nevertheless, a problem can arise in the context of thatch-grass trading for income and engaging in subsistence agriculture. With the thatch-grass trade also reaching remote areas,

new cash-related products such as cellphones were introduced and became a symbol of connectivity and status, challenging traditional ideas of these concepts (Pröpper 2015: 260). These developments led to a change in the subsistence strategies of many rural households (ibid. Pröpper observed during his fieldwork in the Kavango Regions that the cropping cycle, which encompasses ploughing and clearing the fields, was delayed so that more thatch grass could be harvested and sold, as the harvesting season for grasses starts in May or June and therefore collides with the crop harvest (2015: 260). After the crop harvest, which lasts from June to August, households typically have a resting phase in which they work on repairing and/or thatching their houses (Pröpper 2015: 260). From September until early November the ploughing of fields takes place (ibid.). However, Pröpper observed that people continued harvesting and processing the grasses as late as December (2015: 260). This poses a few problems. The delaying of the crop cycle leads to shortages caused by the small yields harvested (Pröpper 2015: 261). To ensure food supply, people then buy maize meal and other foods with the cash they received from the thatch-grass sales (ibid.). Therefore, once the grass harvest interferes with crop production, the income from grass sales is not solely beneficial and, in the end, does not bring additional cash to the families since this cash has to be spent on food which would not have been needed if a proper crop harvest had taken place (ibid.). When thatch grass is used as an income source and subsistence agriculture is still practiced, less money is needed to buy food. But thatch grass can be used as a means to buy food and cover other basic needs in times when droughts cause crop failure and households have to rely on food bought from other people or stores.

7.6. Research findings

Concerning the economic importance of grasses, we found out that people in Masida Community Forest and Kwandu Conservancy (integrated Community Forest) know about and use at least 15 different types of grasses. Some grasses such as *kachila* (*Aristida pilgeri* and *Aristida stipitata stipitata*) and *kachila mende (Heteropogon contortus*) are preferred over others, for example, because they are considered high-quality thatching grasses and can also be utilized for a variety of purposes such as fences, brooms and cattle fodder, and also for grain storages or even medicine. Grasses are harvested with the use of a sickle and harvesting primarily takes place during the dry season between May and August. Grass harvesters reported that it is dangerous to harvest grasses as harvesters may be attacked by wildlife on the long walks to the harvesting site. The harvest requires a permit that is acquired at the community forest office, the conservancy office or the traditional authority. To ensure sustainable use, grasses should not be ripped out along with their roots or cut during the growth period. Even though fire helps to burn old grasses and make room for new ones, communities need to ensure that wildfires are not set before the end of the harvesting season to avoid destroying the yield. Grass that is not required for personal usage can be sold for between N$15 and N$35 a bundle

to other villagers or lodges. As there is no official marketing hub in the Zambezi Region, the grass is sold in the harvesters' village and along the road. Grass can be sold to the direct consumers or to middlemen who transport and treat the bundles and then resell them to construction companies. The price for a bundle increases significantly along the value chain. When grass is sold commercially, it needs to be chemically treated to avoid the spreading of diseases and to kill bugs. Grass that is sold as thatching material additionally needs to be sprayed with a fire-resistant substance. Thatch grass is of financial importance to rural households because its collection offers a job at a very low initial financial outlay, as only a little capital is required to start working (Terry 1999: 250). Even though grass only offers a supplemental income, it is an important part of income diversification for rural households and helps to minimize risks as it is a drought coping strategy.

8. Reeds

Since there is little research regarding the economic value of river reeds and other wetland resources, we decided to include reeds in our research as we wanted to explore their economic potential as an income source for women in the Zambezi Region (Mmopelwa 2006: 329). The lack of scientific attention can lead to these resources being overlooked in conservation efforts, since wetlands are often regarded as wastelands without economic value (ibid.). Reed is generally considered a natural resource and is known to be used for income generation as well as subsistence by rural households living in wetlands (ibid.). We structured the following chapter by identifying the various reed species native to the Zambezi Region, followed by listing harvesting practices and focusing on the question of sustainability. Afterwards, we take a closer look at the different usages of reed and the related sedges, describe common trading mechanisms, and finally review the income value and potential of reeds. In addition to reeds, this chapter also encompasses some of the closely related sedges, as they can be used for similar purposes.

8.1. Identification and properties of reeds

The identification of reeds turned out to be more difficult than the identification of grasses; statements about the names and characteristics of the various reed types were inconsistent which made it challenging to draw clear conclusions. While we first heard about *mataka* and *makama*, which were described as a solid and a softer reed respectively, these descriptions clashed with the statements of other respondents who described *mataka* as “weaker”. In addition, the frequently used classification of white and black reed, and also a mention of a red reed, which could have been a slip of the tongue or the result of an unclear audio recording as the words black and red sound similar, did not always match up. The following table (table 3) lists our interpretation of the classification of three types of ‘reeds’. What we do know is that *mbu* (Mbukushu), *mataka* (siLozi) and *mutaka* (chiFwe) refer to the same reed, which was identified as *Phragmites australis*, the “white” reed, which is big and hollow, as this was mentioned in every interview we conducted on reed (Kwandu 20.09.2023; OL 21.09.2023; RW 21.09.2023). This finding is also confirmed by Cunningham and Terry (2006: 103).

Latin name	Kwandu (name and origin of name)	Properties	Soiltype/Habitat
(Could not be identified)	*Lushuvu* (ciFwe) Also called *Museme* (siLozi) (pers. comm. UNAM botany students) "*Lushuvu*" means "weakness". A characteristic of it is that it has joints at which you can easily break it, leading it to make a popping sound when pressed together (Kwandu 20.09.2023)	Up to 2 m tall, pointed ends, joints are bent outwards and appear every few centimeters (personal observation)	Grows in the river
Phragmitis australis	*Luwondowe* "*Luwondowe*" means "hard", depicting the central feature of the reed (Kwandu 20.09.2023) *Mbu* (Mbukushu) *Mataka* (siLozi) *Mutaka* (ciFwe) Referred to as the "white reed" (OL 21.09.2023; RW 21.09.2023)	Is bamboo-like, up to 3 or 4 m with big hollow culms (Huhta 2007: 30; Roosaluste 2007: 8; Strohbach & Walters 2015: 31).	Grows in the river (Kwandu 20.09.2023). Shallow water in the margins of rivers and inundated wetlands (Huhta 2007: 30; Strohbach & Walters 2015: 31). It prefers those with a high phosphorus, calcium and potassium content (Huhta 2007: 30; Roosaluste 2007: 9).
Phragmites mauritanica (Assumed)	*Ngondo* Referred to as the "black reed" (OL 21.09.2023; RW 21.09.2023)	Shorter than *Phragmites australis* (Strohbach & Walters 2015: 31). Was said to not have many bugs (OL 21.09.2023)	Rivers and wetlands, is less common than *Phragmites australis* (Strohbach & Walters 2015: 31).

Table 3: Identification, indigenous names, properties and preferred soil of reeds

8.2. Harvest and sustainability

In every community we visited that lives close to a river, people expressed that they harvest reeds. Cunningham and Terry noted that the collection of reeds is a task performed by women (2006: 136). This is in line with Khumalo stating that the Kwandu residents said that harvesting reeds and grasses is the responsibility of women (2012: 155), which we also noted in our observations and interviews. Especially the reed *lushuvu* was named as a reed that is only harvested by women (Kwandu 20.09.2023). A woman in one village close to a river stated that every woman in her village over 20 years of age harvests reeds (NSG 14.09.2023). The walk to the harvesting site was estimated to take an hour by the harvesters (NSG 14.09.2023).

People that live too far from the riverbed are not able to harvest reeds and instead buy them from river adjacent communities (C&P 26.09.2023; RW 21.09.2023).

Reeds are cut using a sickle, locally called a "*jackson*", a machete called a "*panga*" or an axe (Kwandu 20.09.2023; NSG 14.09.2023; RW 21.09.2023). In areas where the flood levels can rise to a height that makes the reed harvest impossible, the harvest is done according to the flood pattern of the river (Mmopelwa 2006: 333-334). Harvesting reeds is a form of unskilled labor that does not require much expertise (Milechin et al. 2009: 69; Mmopelwa 2006: 331). Many women harvest reeds when they are not occupied with farming (Murphy & Suich 2003: 14). When we asked about the harvesting season, we got varying answers such as between May and August, between May and December, or from September to October (NSG 14.09.2023; OL 21.09.2023; RW 21.09.2023). The harvesting can take place on just a few days a year or on multiple days a week for the entire harvesting season, depending on time, need and resources (Mmopelwa 2006: 332-333). At one place, the women we interviewed mentioned mainly harvesting from 7am in the morning until 12 noon because it gets too hot to harvest after this time, while some harvesters were said to be strong enough to cut until 1pm or even 4pm after taking a lunch break (NSG 14.09.2023). At another location, the cutting takes place from Monday to Friday, from 9am in the morning until the evening (RW 21.09.2023). The women set individual targets when it comes to harvesting based on demand and their personal time limits (RW 21.09.2023). The harvesting targets can depend on the need for personal usage or on demands from certain buyers, for example for the delivery of 300 bundles (RW 21.09.2023). The women mentioned being able to harvest between ten (mentioned by a woman with a young baby she had to breastfeed) and 15 bundles a day (RW 21.09.2023).

The harvesting procedure involves first cutting all the reeds and then binding them into bundles. After all the reed is harvested, the bundles are sold (NSG 14.09.2023). Harvesters look for certain qualities in the reeds they are cutting, depending on their intended use (Milechin et al. 2009: 54). Reed for courtyards is best harvested when it is hard, which is during the winter (Häkkinen 2007: 65). If intended for cattle fodder, reed should be harvested in the summer when it is softer, and the nutrients are concentrated in the shoots instead of being stored in the rhizome (ibid.). Most harvesters prefer reeds that are not bent (Milechin et al. 2009: 54). For making mats it is important that the reeds are of similar thickness and size (ibid.). For use as a construction material, reeds need to be strong, which can be tested by compressing the reed in one's hand (ibid.).

For Namibia we could not find estimations of reed-bundle weights or diameters. In Botswana reed bundles usually weigh five to 10 kilograms and have a diameter of 40 to 80 centimeters (Mmopelwa 2006: 332). Bundles are occasionally transported by boat to the riverbanks and are usually carried on the head (Mmopelwa 2006: 333).

The main dangers during harvesting include encounters with wildlife, notably with hippos, crocodiles, buffalos, snakes and elephants that can lead to injuries or even death (NSG 14.09.2023; OL 21.09.2023; RW 21.09.2023). Several respondents criticized the conservancies for the higher numbers of wild animals there and the resulting increased danger especially near rivers, to the extent that they are afraid to cross the river with a canoe (NSG 14.09.2023; OL 21.09.2023). Another danger for the harvesting women is getting injured by accidentally stepping on the sharp ends of the cut reeds, which are sometimes submerged by water (RW 21.09.2023). Moreover, working with sickles and machetes to cut the reeds can also lead to injuries (RW 21.09.2023). These finding are consistent with the results of Khumalo and Milechin et al., who also mention the increased risk of accidents due to broken glass or sinkholes in the river and the general risk of drowning (Khumalo 2012: 191; Milechin et al. 2009: 77-78). Protective gear could help minimize accidents (Milechin et al. 2009: 78) but the associated costs make such purchases unlikely. In addition, harvesters reported dangerous men hiding in the river (Khumalo 2012: 191; Milechin et al. 2009: 78). All these hazards explain why the women we interviewed stated that they mostly harvest in groups rather than alone (RW 21.09.2023). This is congruent with Khumalo's findings that women accompany each other or ask for the company of a male relative to feel safer when harvesting reeds and grasses (2012: 211).

After describing the harvesting practices themselves, we will now turn our attention to the question of sustainability regarding the reed harvest. Pereira et al. did not observe a decrease in raw materials, mainly sedges, used for reed crafts (2006: 488). Local communities in Eastern Cape, South Africa also cultivate *Cyperus textilis* in their gardens, when there are wetland areas or rivers close by (Pereira et al. 2006: 488). This species is generally easy to plant (ibid.: 488-489). Regarding reeds, DeMotts observed that women discuss with each other that the harvest should not take place too early since the reeds would not have dried out and distributed their seeds by then, which would minimize the following harvest (2017: 380). If the reed is cut off above the water surface, the growth of the shoots is restricted, but the plant is likely to survive because in the winter the nutrients are stored in the submerged rhizome and roots (Huhta 2007: 30, 32). If reed is cut off below the water surface, it can die due to the lack of oxygen (ibid.: 32). It is best to harvest reed when it has finished growing, as at this point the nutrients have returned to the rhizome (van Rooyen et al. 2007: 37). This means that cutting the stalk will not impair the plant's nutrient balance (ibid.: 37-38). The practice of burning the reeds after harvesting is also known to lead to an increased thickness of the stalks, but also to reduce reed density (ibid.: 2007: 35). In case of over-harvesting, van Rooyen et al. suggest a harvesting rotation every three years to give the reeds time to recover (2007: 39).

Harvesting reeds required a permit in all areas where we interviewed harvesters (Kwandu 20.09.2023; NSG 14.09.2023; OL 21.09.2023). However, the price and time for har-

vest allowance differs. At Sachona Forest, for example, acquiring a two-month harvesting permit for grasses and reed costs N$50 (OL 21.09.2023). In the Sikunga Conservancy grass and reed permits need to be bought separately (NSG 14.09.2023).

8.3. Usage of reeds

In general, reeds, as well as the related sedges, are used for construction purposes, namely courtyard fencing, insulation, furniture, showers and occasionally roofing; fish catchers, fishing baskets, brooms, floor mats, table plates, baskets and as grain storages (Cunningham & Terry 2006: 82, 84; Milechin et al. 2009: 17, 71; Mmopelwa 2006: 329; Pereira et al. 2006: 477-478). Besides the commonly known baskets made of palm leaves, there are several crafts with cultural and functional importance made from reeds (Pereira et al. 2006: 477). The respondents we interviewed stated that they all harvest *Phragmites australis* (*luwondowe/mataka/mutaka/mbu*) to make courtyard fencing for their own use and to sell it to other people wanting to buy it to fence their courtyards (NSG 14.09.2023; OL 21.09.2023; RW 21.09.2023). Courtyards made from reeds act as windbreaks around the houses (RW 21.09.2023). In the absence of reed for courtyard fencing, the straws of sorghum and millet, which are collected after harvesting the grains from the field, are used as a substitute, as we observed in areas away from rivers. However, these courtyards are a lot weaker and thus a less preferred alternative (Masida 20.09.2023). A courtyard made from *Phragmites australis* was said to last five to ten years, while some respondents mentioned a durability of up to 20 years (NSG 14.09.2023). Additionally, respondents made sleeping as well as table mats from *Phragmites australis*. In Kwandu Conservancy these were made from *lushuvu* and in a village near the Kwando River from a reed called *ngondo* (OL 21.09.2023). Respondents said that *lushuvu* can also be used as a temporary floatation aid by people stranded on the river without a canoe (Kwandu 20.09.2023). They explained that in this instance *lushuvu* can be piled and used to cross the river (Kwandu 20.09.2023). In Kwandu Conservancy the people also described *luwondowe* (*Phragmites australis*) as a “multitasking tool” since it is used for fish traps, floor mats, courtyards, and skirts for traditional ceremonies, and is also preferred by lodges for fencing (Kwandu 20.09.2023). *Luwondowe* was praised for its good quality and cultural importance as evident by one respondent’s statement: “we base our pride on those” (Kwandu 20.09.2023). We also observed *Phragmites australis* being used for fishing rods and traditional skirts. Generally, the trade with reeds is either done to get cash or to exchange it for a bag of maize, millet, sorghum, or butter (RW 21.09.2023).

Reed mats are very common in Southern Africa and are used for a variety of purposes (Cunningham & Terry 2006: 103). Examples are mats used to sleep or sit on, mats to catch ground grain and mats that are used as plates for food (Cunningham & Terry 2006: 103-105; Terry 1999: 113). Often these products are a cultural gift at weddings or initiations ceremonies of children into adulthood, symbolizing the beginning of a new life (Cunningham & Terry 2006:

103, 151; Pereira et al. 2006: 478; Terry 1999: 113). Besides the use as a traditional wedding gift, Adam and Shackleton observed that sleeping mats are of particular cultural and functional importances as they are also "placed in graves to symbolize 'resting in peace'" (Adam & Shackleton 2016: 5). Sleeping mats are also a favored by people that live in urban areas and want to "remain in touch with their culture" (Adam & Shackleton 2016: 5). Plants collected to make these mats include the reed *Phragmites australis*, the sedges *Cyperus papyrus, Cyperus marginatus, Cyperus textilis*, *Cyperus sexangularis*, *Cyperus natalensis* and *Juncus kraussii*, also called mat rush (Pereira et al. 2006: 477-478). In Kwandu Conservancy the reed *lushuvu* is also utilized for making mats (Kwandu 20.09.2023). Mats are generally either woven or sewn together (Cunningham & Terry 2006: 103). An example is that of the twill-woven stiff sleeping mats, *masharo*, crafted by Mbukushu men by splitting *Phragmites australis* (*mbu*) with a spear and afterwards flattening it with an hourglass-shaped wooden mallet (ibid.: 47, 103). Sometimes these mats are used as the base of a big basket called *thishete,* created to store grain (ibid.: 103). Traditional Mbukushu house walls are also made from *Phragmites australis* and are fixed to a foundation made from thin wooden poles with wooden rings connecting the poles, outlining the shape of the house (ibid.: 136-138). The reeds are then placed vertically within the outline creating a wall and are fixed together on the rings with palm-leaf strips (ibid.: 138-139). Mbukushu women make sleeping mats from *Cyperus papyrus* that they sew together with a needle and a thread made from natural plant fiber (ibid.: 49).

The Nama pastoralists also use sewn sleeping mats from the sedge *Cyperus marginatus*, and even constructed semi-permanent shelters with these in the past (ibid.: 103, 137-138). For a shelter 15 to 20 large mats were required, which means it took a lot of time and effort to create these, but they last as long as 15 years (ibid.: 106-107, 137-138). The shelters are waterproof as sedges swell when rain falls on them, thereby closing any gap in the weave (ibid.: 137). Today these houses are not used anymore since the Nama now rely on plastic or corrugated iron to build their shelters (ibid.: 137). Besides sleeping mats made from *Phragmites australis* or *Cyperus papyrus*, those used as plates are usually made from sedges such as *Cyperus textilis* or *Cyperus sexangularis* and mat rush, *Juncus kraussii* (Cunningham & Terry 2006: 105; Pereira et al. 2006).

In addition, reeds are used as compost material, as well as cattle fodder, firewood, for water-storage covers and as paper due to their high levels of cellulose (Milechin et al. 2009: 16-17, 27, 56, 71). Furthermore, different types of baskets can be made from the sedge *Cyperus natalensis*, such as valve and thrust baskets, used to catch crabs, mussels and fish (Cunningham & Terry 2006: 110). In comparison to other fishing equipment, these baskets do not rust and are water-resistant (ibid.). As we have shown in this chapter, a variety of products can be made from reeds and sedges, including sleeping mats, table mats, baskets and fishing equipment and, most importantly, courtyard fences.

8.4. Selling structures

In contrast to thatch grass, reed is almost exclusively traded from the producer directly to the end user. As not every village, town or lodge is located near a river, interested buyers need to come to the communities living close to rivers and floodplains to acquire reeds (Kwandu 20.09.2023; NSG 14.09.2023; OL 21.09.2023). This means that the people that live close enough to wetlands to harvest reeds always have customers (Mmopelwa 2006: 333). Nevertheless, reed is only traded locally and not exported (ibid.: 331). The bundles are traded along the roads or within the villages where harvesters live (Kwandu 20.09.2023; OL 21.09.2023; RW 21.09.2023). As of now, there is no selling hub for reed in the Zambezi Region. Our respondents stated that a bundle of reed sells at N$25 or N$30 (NSG 14.09.2023; OL 21.09.2023; RW 21.09.2023), but in some places a bundle of *Phragmites australis* sells at N$40 (Kwandu 20.09.2023). Regarding reed-made crafts, large reed mats of 5 x 1.8 meters are sold for N$250 (Milechin et al. 2009: 60). Women in the Sikunga Conservancy reported that they were able to earn up to N$4,000 a month from selling reeds (NSG 14.09.2023). Reed is generally more expensive than thatch grass because harvesting near water entails additional risks (Kwandu 20.09.2023).

8.5. Financial contribution to households

In conclusion, the harvest of reeds requires low financial input and is highly important for the livelihood of rural communities, especially those living in and adjacent to wetlands (Mmopelwa 2006: 335; Terry 1999: 250). Harvesters only need to pay for a machete, a *panga*, which is used to cut the reeds and is bought at the market for N$50 (NSG 14.09.2023). Apart from that, the only other expense is the transportation cost for the bundles which are brought to the village or to the roadside for sale (Mmopelwa 2006: 331). The driver can also be paid with bundles of reed instead of cash (ibid.: 333). Upon being asked if the cash generated from reed sales is a main income source, several respondent agreed (OL 21.09.2023; RW 21.09.2023). The only exception are occasional piecework jobs, for example cleaning someone's yard (RW 21.09.2023). Other income sources of reed harvesters typically include the sale of grasses, livestock, and remittances from children or old-age pensions (Mmopelwa 2006: 332). Most times the harvesters do not have formal income sources or own livestock, another valuable income source (ibid.). When it comes to the use of the cash, it becomes obvious why reed sales and the sale of reed crafts such as sleeping mats are so fundamental for wetland communities. All interviewed women stated that the money earned from selling reed bundles and crafts made from reeds and sedges is exclusively spent on basic needs for themselves and their families, namely on maize meal, radishes, cooking oil, sugar, soap, clothes, pots and dishes, and to ensure that they are able to support their children going to school (Kwandu 20.09.2023; NSG 14.09.2023; RW 21.09.2023). This underlines the significant financial impact the ability to harvest reeds has on rural households in the Zambezi Region. When asked if they

would still go to the floodplains to harvest reeds if they had another income source, the women said no, and said that if an opportunity were to arise where they could generate sufficient income in some other way, there would be no need for them to continue cutting reeds (RW 21.09.2023). This demonstrates that reed sales are a good source of income for rural wetland communities that do not have other opportunities for cash income, but they would likely not be practiced if other jobs or occupations were available.

8.6. Research findings

When looking at reed as an income source, sustainability is a crucial topic. Conservation efforts need to consider reeds so that future generations can still use this culturally and financially significant natural resource (Mmopelwa 2006: 335). Therefore, sustainable harvesting practices need to be implemented and resource monitoring is necessary (ibid.). The harvest poses many dangers, such as wildlife encounters with elephants, buffalos, hippos, and crocodiles, as well as injuries from submerged reed stumps, glass shards or the cutting equipment. Additionally, women mentioned men hiding in the river as a danger. Because of these hazards, women accompany each other when harvesting. Reeds are either sold in bundles or processed into a variety of different products such as floor and table mats, baskets, and fishing equipment. Since the harvest and trade is mainly done by women, reeds are of particular importance to women for cash generation in rural areas, and also to their families since women spend the cash earned from the trade with reed and reed crafts on basic needs such as food and household necessities. It is important to underline that the money earned is also used to cover school fees, thereby enabling children to access formal education and to have a better standing for obtaining official employment jobs. Further research is needed to identify and quantify reed and sedge resources and to explore the possibility and profitability of opening central markets while at the same time implementing sustainable harvesting practices.

9. Basketry

While there are some men who weave hats and bags or even baskets in Namibia, basketry is primarily done by women and is seen as a female domain (Cunningham & Terry 2006: 38). Since its commercialization, basketry has become an important income source for rural women, especially in the Zambezi Region, which is one of the centers of Namibian basketry production (Konstant et al. 1995: 345: Murphy & Suich 2006: 4). This is why we looked into the making of the craft in our research and investigated its financial importance for women living in rural areas, who often have limited access to cash income.

In this chapter, we will first identify the materials used for baskets in the Zambezi Region and explain how they are harvested, with a focus on sustainability. Afterwards we look into the making of a basket, how the craft is learned, and what setting baskets are produced in. The section about usage lists the ways basketry was historically utilized in southern Africa and then points out how the craft has changed in the last decades due to its commercialization. The last part of the chapter focuses on the sale of baskets, describing different sale outlets, and finally analyzes the financial contribution that basketry makes to rural households.

9.1. Identification of basketry materials

A minimum of 30 different plants are utilized for basketry in southern Africa, as well as 22 plants for natural dyes (Terry & Cunningham 1993: 41). Women have experimented with different fibers over centuries, and the most used ones are long, flexible, durable and strong such as those from palm, grass, reed, bamboo, tree bark and roots (Cunningham & Terry 2006: 156; Madusise 2021: 69). They need to be strong enough not to break when pulled or stitched during the weaving process, must be able to last as long as possible while being used for a variety of purposes, and must not decompose when stored for a while (Cunningham & Terry 2006: 156). The preferred plant species for basket fibers and dyes have largely remained the same (Cunningham & Terry 2006: 23), as has the technique (C&P 26.09.2023). In the Zambezi Region, baskets are made from grass and palm leaves and designs are created by weaving in leaves that were dyed mostly using traditional plants (Suich & Murphy 2002: 5; Murphy & Suich 2006: 1). In this chapter we attempt to identify the utilized species and explain the creation of different dye colors.

The open coiled baskets that are common for the Zambezi Region are typically made from wrapping strips of the unopened leaves of juvenile palms around a basis of grass that is characterized by having no nodes (Cunningham & Milton 1987: 388; Konstant et al. 1995: 345-346, 348; Murphy & Suich 2006: 5). In our interviews, basket weavers solely mentioned using the *makalani* palm (*Hyphaene petersiana)*. According to Cunningham and Terry, the palm *Hyphaene coriacea* is also used for baskets in Namibia (2006: 157). Most basket makers we asked do not have a name for the grass inside the baskets; they simply call it “grass” or “basket grass” (C&P 26.09.2023; UW 26.09.2023). An older lady told us that the grass she uses is

called *mushange* (DM 21.09.2023). It is only used for basketry and differs from thatching grass (DM 21.09.2023). The basket grass is said to grow near water (C 17.09.2023). In our interviews in Masida Community Forest and Kwandu Conservancy the residents mentioned that *Aristida pilgeri* (*kachila*), *Eragrostis lehmanniana* (*muxhova-xhova*) (Masida 20.09.2023), *Eragrostis pallens* (*muxhova-xhova*) and *Juncus kraussii* (*mumbuwa*) (Kwandu 20.09.2023) can also be utilized for basket weaving. Unlike *mushange*, these grasses can all be used to thatch houses.

For dyeing baskets, weavers use different materials to achieve a variety of colors. Such materials include roots or bark from trees and shrubs, sorghum or millet leaves, rusty tin cans or chains and nowadays also chemicals. To dye one kilogram of palm leaf material, the equal amount of dye material is required to achieve a pigmented color (Cunningham & Milton 1987: 394). As reported in our interviews, to dye the palm leaves, the materials are either soaked in water or boiled. In the future chemical dyes may be used in addition to natural dyes to combat shortages in natural dye material (Terry & Cunningham 1993: 45). Dye colors can have specific meanings; however, these differ depending on the region and group using them (Cunningham & Terry 2006: 144-145). All respondents in our interviews indicated that baskets are dyed because they are mainly sold for aesthetic purposes and buyers like the colorful baskets (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; NSG 14.09.2023; R 17.09.2023; UW 26.09.2023). In the following table (table 4), we listed the dye materials we were told were used with their respective colors and how they are processed to achieve those colors.

Dye material	Color	Processing
Rusty tin cans or chains	**Charcoal-grey**	The cans or chains are put in water with the palm leaves for several days. Sometimes plant dyes such as the bark of the eucalyptus are added to achieve an enhanced grey (C&P 26.09.2023; R 17.09.2023; JM 18.09.2023).
Root of aloe vera (*Aloe zebrine*)	**Yellow** (Cunningham & Terry 2006: 160; Suich & Murphy 2002: 14).	To harvest aloe vera, harvesters dig a hole to cut the root which is located near the surface. Afterwards the root of the aloe vera is boiled with the palm leaves to achieve a yellow color (C&P 26.09.2023).
Euclea divinorum (diamond leaf/toothbrush tree)	**Dark brown** (Cunningham & Terry 2006: 181).	*Euclea divinorum* is boiled with the palm leaves to achieve a dark brown color.
Fungi-infected leaves of sorghum or millet	**Pink** (Cunningham & Terry 2006: 167).	The leaves are boiled with the palm leaves to achieve a pink color.

Dye material	Color	Processing
Root of *mkokosh* tree (a shrub)	**Purple**	The roots of the *mkokosh* tree are far out in the bush; as one woman said: "that *mkokosh*, to harvest it, my dear, you have to sweat" (C&P 26.09.2023). After the root is extracted, the bark of it has to be removed, which is tough work to do. Then the roots are crushed and boiled with the palm (C&P 26.09.2023; DM 21.09.2023).
-	White	White is created by boiling the palm without any dye (C&P 26.09.2023).
Root of *Berchemia discolor* (Bird plum) *Muzinzila*	**Dark red/red brown** (Cunningham & Terry 2006: 166, 181; Murphy & Suich 2006: 5)	For a lighter shade the roots are used and for a darker shade the bark (C&P 26.09.2023; R 17.09.2023; UW 26.09.2023).
Old cans with the bark of *Berchemia discolor*	**Black**	The bark is boiled together with old cans and the palm leaves which then turn black (C&P 26.09.2023). *Berchemia discolor* is also called a dye fixer; if it is mixed with other colors, it turns black (CP 31.01.2024).
Root of *Diospyros mespiliformis* (jackel berry)	**Black**	The roots are burned first and then put in water which will color the palm leaves black (DM 21.09.2023).

Table 4: Identification, colors and processing of dye materials

9.2. Harvest and sustainability

In this chapter we want to take a closer look at the process of basketry resource acquisition as well as questions of sustainability regarding harvesting practices and amounts. Palm trees in the Zambezi Region do not grow evenly distributed (Suich & Murphy 2002: 9). Generally, the raw materials used for basket weaving are all common-property resources that are usually regulated and managed by the responsible traditional authority (Murphy & Suich 2006: 3). Because of increased sales enabled by the commercialization of crafts, local authorities now often give out permits to harvesters in exchange for a fee and in turn protect the raw materials from being used by people outside of the local community (ibid.: 3-4, 10). But this also poses a problem. When weavers must pay for a permit to harvest and have to pay an additional commission when they want to sell their crafts, they do not make much of a surplus, especially given the fact that the retail prices for baskets are generally low (ibid.: 10). In a study in Botswana conducted by DeMotts women cited regulations such as permits as problems that complicate their access to raw materials (2017: 377-378). Women stated that they were afraid that further restrictions could be put in place; however, the current ones did not stop them from harvesting, either because they paid for it or because they did not and harvested illegally (ibid.: 378-379).

9.2.1. Resource acquisition

When women want to harvest basketry resources, they sometimes have to travel far and invest quite some time into the resource acquisition as the material does not grow densely in some areas (Murphy & Suich 2003: 15). In these cases, women told us that they go together once to collect all the materials they need, so that they do not have to go several times (Masida 20.09.2023; R 17.09.2023). But these endeavors can be dangerous. Especially wildlife encounters with snakes, elephants, lions and buffalos are feared (DM 21.09.2023; Masida 20.09.2023; R 17.09.2023). Besides these dangers, Murphy and Suich mention elephant damage to palm leaves as an issue that hinders the acquisition of raw materials (2003: 15). Moreover, injuries can happen when cutting palm leaves and extracting dye materials (DeMotts 2017: 376). Basket weavers from Masida Community Forest explained to us that they go in groups and talk loudly with each other to distract themselves from their fear and to scare off the animals (Masida 20.09.2023). Another tactic they use to feel safer is that they ask a husband or a community member to accompany them (JM 18.09.2023). When women go in groups, they sometimes hire a car to transport the materials back to their villages (DM 21.09.2023). The statements regarding women's safety, shared transport costs and companionship are in accordance with the research findings of Murphy and Suich (2006). If resources grow too far from their homes, some women buy the materials from other women or pay a family member for the harvest (DeMotts 2017: 377; Murphy & Suich 2003: 22). This is done through informal networks that women have created to help each other in order to gain access to raw materials and markets (DeMotts 2017: 377). Women can trade materials with each other, such as palm leaves and dye, depending on the resources they can and cannot harvest locally (ibid.). Janet Matota of IRDNC also told us of such a trading practice where women engage in a so-called partnering system where some women harvest palm while others harvest dye plants and then they all bring the materials to the Mashi Craft Market, for instance, to then exchange the collected materials so that everyone has a supply of each raw material (JM 18.09.2023). When women need to buy raw materials, a bundle of palm leaves costs N$5 or N$10 depending on the size (JM 18.09.2023). A few women also explained to us that they have to buy the grass used for baskets, which was reported to cost between N$50 and N$100 for a small bundle (C&P 26.09.2023; UW 26.09.2023). One bundle of grass costing N$50 yields enough grass for three baskets (UW 26.09.2023). The grass was said to be scarce in some regions, so one would have to walk very far to harvest it, and therefore some women buy it (C&P 26.09.2023). These grass-bundle prices are disproportionately high considering the fact that these women sold their baskets for an average price of N$40-50. Therefore, the buying of grass for the baskets lowers the revenue notably. The price is also significantly higher than the prices paid for thatch-grass bundles, which is N$15-30 on average. It is not certain why the basket-grass bundles are this expensive. However, the majority of weavers collect the raw

materials themselves and only a few have to buy them from others (Adam & Shackleton 2016: 4; DeMotts 2017: 377). But even though there are many hardships when acquiring basketry raw materials, DeMotts' survey in Ngamiland in Botswana showed that women always find ways to gather raw materials for basketry (2017: 377). The damage from an increasing number of elephants as well as their presence in palm forests is also an issue in some regions (ibid.: 378-379). But women found solutions to deal with the elephant problems, as they have, for example, observed the paths elephants use during the day, and the times when they usually go to rivers (ibid.: 380). Women then use these times to harvest where they predict the elephants to likely be somewhere else (ibid.).

9.2.2. Sustainable harvest

A crucial aspect when assessing the potential of fibrous plant products for income generation is to look at the natural resource sustainability. Long-term financial benefits from basketry are only possible if the resources are not exhausted quickly. To ensure long-term access to weaving materials, palm leaves and dye ingredients have to be harvested sustainably without damaging the plants (Suich & Murphy 2002: 8). A depletion of the raw materials used for basketry is evident in Botswana, East Africa, and South Africa as well as Sudan (Konstant et al. 1995: 347; Bishop & Scoones 1994: 1). Konstant et al. argue that "this has been attributed largely to human population increase and commercialisation of the basketry industry resulting in the unsustainable frequency and intensity of palm use for basketry, accompanied by non-selective […] cutting of palm leaves" (Konstant et al. 1995: 347). After the commercialization of basketry in Botswana, the dye trees were also depleted, especially *Berchemia discolor*, due to the heavy use of the bark for dyeing (Bishop & Scoones 1994: 16; Cunningham & Terry 2006: 164). Another problem with the palm supply in areas where the human pressure on raw materials is high is the decrease of the palm leaf length. The leaf length is responsible for the durability and strength of the finished basket (Konstant et al. 1995: 350, 352). The preferred length is at least 80 cm up to 110 cm or more, but in areas where there is a high pressure on the palm with many leaves being harvested for basketry, weaver also use leaves only as long as 50 or 60 cm (Konstant et al. 1995: 350, 352; Cunningham & Milton 1987: 390).

DeMotts (2017) criticizes the widespread conception that resource depletion is solely caused by the over-harvesting of basketry resources stemming from the commercialization of basketry. She comments on the raw-material accessibility in Botswana and argues that a coming resource shortage has been predicted since the beginning of the commercialization and that a lot of research suggested that these shortages would arise because of unsustainable harvesting practices by the increasing number of weavers, often citing women that stated that the harvest has become more difficult (DeMotts 2017: 369, 376). According to DeMotts, this cited difficulty is not always connected to less raw materials caused by over-harvesting but could also be connected to factors such as an increased number of elephants competing with

weavers for resources, as well as the general nature of the harvest being time-consuming and difficult (2017: 378-379).

When looking at Namibia, however, the situation regarding the resource use is different. Due to the low population density in Namibia the pressure on the raw materials is not as high compared to other countries, also making it easier to ensure sustainable harvesting practices (Konstant et al. 1995: 347). Several authors have established guidelines as to what such sustainable harvesting practices could look like: for example, to ensure continued productivity of the plant, palm leaves need to be cut individually with a sharp knife, and not more than 30% of the annual leaf regrowth should be harvested, leaving some healthy new leaves on the plant (Bishop & Scoones 1994: 1; Cunningham & Terry 2006: 46; DeMotts 2017: 380; Konstant et al. 1995: 347; Murphy & Suich 2003: 6; Murphy & Suich 2006: 7). It is now prohibited to use hoes or axes in some areas, as this damages the palms severely (Bishop & Scoones 1994: 19; Cunningham & Terry 2006: 46; DeMotts 2017: 377-379). When using a sharp knife as recommended, the risk of injuring oneself is lessened (Bishop & Scoones 1994: 19). For a sustainable use, dye plants such as *Berchemia discolor* and *Euclea divinorum* can only be used in moderation and by avoiding uprooting or ringbarking, which ultimately lead to the death of the plant (Cunningham & Milton 1987: 399). Women are increasingly aware that raw materials for crafts need to be used sustainably, and navigate difficulties regarding the collection of those with diverse adaptive mechanisms (DeMotts 2017: 370). Women value and teach each other sustainable harvesting techniques to try to prevent the shortage of basket materials (ibid.: 378). In our interviews we also noticed that women are aware of sustainable harvesting techniques and know which plants are available in abundance and which ones need to be conserved (C&P 26.09.2023; R 17.09.2023). A woman we interviewed stated: “we don’t use axe, but we use the sickle. We only cut those ones that are grown up, then we leave that small one there for tomorrow use” (R 17.09.2023). Two other women mentioned that they cut down the whole plant when harvesting aloe vera as the species is not endangered but its numbers are even increasing in the area, and they are also planting them in their gardens (C&P 26.09.2023). In contrast, they would try to ensure that rare dye plants remain alive, as seen with the *mkokosh* tree the numbers of which they said are decreasing: “you only get some roots. Then you leave it to grow” (C&P 26.09.2023). The same applies for *Berchemia discolor*, as they take only a little bit of the bark making sure to leave the tree alive (C&P 26.09.2023).

But when looking at basketry resources in Namibia, it is also very important to note that basketry was not found to be the main stress factor for the palm population, while wildfires or browsing livestock, elephants or hippopotami are responsible for extensive damage to the palms, especially to the young shoots that these animals feed on when other fodder sources are scarce (Cunningham & Milton 1987: 389; DeMotts 2017: 381; Konstant et al. 1995: 345-346, 350, 354). Young trees of the popular dye tree *Berchemia discolor* are also favored by livestock, and once the bark of older trees is removed to be used as dye, it only regrows slowly

and is vulnerable to termites (Cunningham & Terry 2006: 166). When implementing sustainable management of basketry resources, it is therefore crucial to consider that in Namibia livestock and elephants damage palms more extensively than harvesting for basketry does, and therefore protection of raw materials from animals is essential, as factors like climate change will exaggerate this problem further (Konstant et al. 1995: 355). Konstant et al. underline that the organized marketing of plant products should never be undertaken without making sure that the resources used are also monitored and sustainably managed, whether that is through planting of palms and dye plants, or through harvesting restrictions (1995: 346). As we were told during our interviews in Masida Community Forest, they have considered this and are already planting *Berchemia discolor* in shared courtyards as well as *Hyphaene petersiana* near the villages (Masida 20.09.2023). Namibian NGO workers engaging with crafts are also planting *Berchemia discolor* and *Hyphaene petersiana* since 1994, since ensuring a stable resource supply is essential for the women trading and marketing baskets to generate income (CP 31.01.2024). However, resource planting takes time and is difficult to finance, as NGO donors typically want quick results and are often disappointed if not every planted palm turns into a full-grown tree (CP 31.01.2024). The monitoring and the sustainable harvest of the raw materials needed for basketry are crucial as these natural resources are often the only ones available to rural households, which could possibly lead to exaggerated poverty in case of resource depletion (Murphy & Suich 2003: 8). Thus, a sustainable use of basketry resources is also essential to prevent an increase in poverty caused by the depletion of natural resources, and with that the decreasing number of baskets a woman can produce (Murphy & Suich 2006: 7).

9.3. Weaving a basket

Baskets in southern Africa are either sewn or woven (Cunningham & Terry 2006: 53). Coiled baskets are the most common type in southern Africa and typical for the Zambezi Region (Cunningham & Terry 2006: 53; Murphy & Suich 2006: 5). Despite being called a “weaving technique”, coiling is a combination of wrapping and sewing (Cunningham & Terry 2006: 53). Coiling is the “wrapping of a foundation with a binding material to make coils that are stitched together” (Cunningham & Terry 2006: 53). The coiled baskets we saw used grass as a core material and palm leaves as a binder. The string of palm is brought around a strand of grass, pulled tight and then threaded through a hole in the top part of a previously wrapped row using an awl or a needle (ibid.: 51). The awls were traditionally made from animal bones but have largely been replaced by ones made from sharpened pieces of metal or long nails (ibid.: 48). For a better grip, the metal can be bent round at the end or fitted with a handle made of wood or a brass gun cartridge (ibid.). Before starting the weaving process, the leaves from the palm tree are split and dried in the sun (Murphy & Suich 2006: 5). During the weaving process, the material is wetted so that it does not break, and the finished basket is only laid out in the sun to dry after the weaving is completed (Cunningham & Terry 2006: 51).

9.3.1. Learning Basketry

All the basket weavers we interviewed told us that their mothers, sisters or grandmothers taught them how to weave (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; NSG 14.09.2023; R 17.09.2023; UW 26.09.2023). That young weavers typically learn the skill from female members of the family is confirmed by the existing literature which adds that the teacher may also sometimes be a friend of the family (Cunningham & Terry 2006: 52; DeMotts 2017: 376; Madusise 2021: 65). An alternative to being taught how to weave at home by friends and family is learning from craft lessons in schools, workshops and skill groups that are often organized by NGOs (Cunningham & Terry 2006: 52; Madusise 2021: 69; Suich & Murphy 2002: 16). Most girls are between the ages of eleven and 15 when they attempt their first basket, while some start as early as age seven (Cunningham & Terry 2006: 52). The non-formal teaching happens through committed practice of trial and error and observing the teaching weavers (Cunningham & Terry 2006: 52; Madusise 2021: 65). As one basket weaver told as: “I used to watch Mama how to make these things. And me also, I started to practice. After practice now I see that: ‘Ah, now I can make a nice basket’” (C 17.09.2023). Learning the basic skills can take as long as one month or even one year, while ten to 15 years are needed to perfect the skill and create high-quality baskets (Cunningham & Terry 2006: 52). Most basket weavers we interviewed stated that they already are teaching or will teach their children how to make baskets (C&P 26.09.2023; Masida 20.09.2023; R 17.09.2023; UW 26.09.2023). But during our research we also noticed that several people mentioned that basketry seems to be dying out because the younger generation does not consider baskets important and is not interested in learning how to make them: “they don’t take it seriously, because, you know, the world is transforming” (DM 21.09.2023). A man in Kwandu Conservancy told us that his grandmother used to make baskets: “but for now since she is now longer there, she went with the talent” (Kwandu 20.09.2023). Another man attributes the disinterest in basketry to people turning away from traditional knowledge to modern ways of education: “So our generation, they don’t see that this is important, how those kind of skills and where you get them from. I think that we are losing our traditions” (Kwandu 20.09.2023). Karin le Roux already stated in 1993 that the children of Namibian basketmakers have no interest in learning the skill, as they associate it with being uneducated (Terry 1999: 54-55). Recent studies by Adam and Shackleton in 2016 and by DeMotts in 2017 showed similar results, as the people participating in craft making were merely middle-aged and older women because younger women were generally less interested in learning crafting skills (Adam & Shackleton 2016: 4; DeMotts 2017: 374). Skills to weave hats and bags typically made by men are not being passed on because younger men are not interested in learning a skill that generates little money (Murphy & Suich 2003: 13). Some women are still teaching their daughters how to make baskets, but primarily as a financial backup strategy and not necessarily to pass on a culturally important skill, as shown by Pereira et al.,

who observed that “the trade was seen as an important option to fall back on, but certainly not a first choice as a livelihood source” (Pereira et al. 2006: 487-488). As mentioned by an elderly woman in our interviews, this is a pity because they consider basketry to be a very important skill that needs to be passed on, not only because of its income-generating capacity but also because of its cultural significance (DM 21.09.2023).

9.3.2. The time and setting for basket weaving

The time it takes to make a basket can vary greatly depending on the experience and efficacy of the weaver, as well as the size and complexity of the basket. Most weavers cannot weave for more than five to six hours a day as the work is strenuous on the neck, back and eyes, and they also have to attend to other household chores (Cunningham & Terry 2006: 52). One woman we interviewed claimed to need only half a day to finish a basket, the truth of which was made apparent by her weaving half a basket during our 20-minute interview (UW 26.09.2023). All the other weavers cited a workload of one to three days depending on the basket size (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; R 17.09.2023). Two women mentioned that very big baskets can even take two to three weeks to make (C&P 26.09.2023). This is in line with the findings of Murphy and Suich, who noted that depending on the quality aimed for, the size and the design, the weaving of a basket can take a few days or even a month (2006: 5). The time spent on collecting palm fiber, dye materials, water and firewood, and processing the materials as well as traveling to the selling point require an additional 16 hours in total, as estimated by the literature (Ashley & LaFranchi 1997: 31; Cunningham & Terry 2006: 50, 52).

Our findings show that baskets can be made all year round because the materials can be collected during a single harvesting session and then stored to be used throughout the year (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; R 17.09.2023; UW 26.09.2023). In order to preserve already finished baskets and shield them from dust and other harmful substances, the baskets are put in plastic bags inside the house and are brought out when potential buyers come (DM 21.09.2023). When it comes to the seasonality regarding craft production, a difference between men and women becomes evident. Men’s seasonality is dependent on the best time for the natural resources required to be harvested, which means the late rainy season for palm (Murphy & Suich 2003: 14). Since men barely have any other chores, male crafters can spend the entire day making products (ibid.: 15). For women, the time to produce crafts is determined by how many other prioritized activities like farming and domestic duties they have to do (Suich & Murphy 2002: 18). As a respondent in Suich and Murphy said: “if I don’t have work, I will make baskets. If I do, I will make baskets later” (Suich & Murphy 2002: 18). Since women are responsible for food production, they are occupied with farming from December to March and do not have time to weave (Masida 20.09.2023; R 17.09.2023). The dry season, especially June and July, is the main period where women find the time to weave

because they do not have to plough fields or chase birds away from the seeds and crops, so they can spend the most time on making baskets and mats (Madusise 2021: 69; Murphy & Suich 2003: 14-15). This was also stated in our interviews (Masida 20.09.2023; R 17.09.2023). There are also more tourists visiting during the dry season, which means there are more customers (C&P 26.09.2023). Moreover, it can also be too hot to do anything else during the dry season besides sitting under a tree producing crafts, and therefore women build up their stock during that time, so they have enough baskets to even be able to sell some during farming season (JM 18.09.2023).

Women weave alone or together in groups (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; R 17.09.2023). While sitting together women teach the young children how to weave and exchange knowledge about basketry techniques (R 17.09.2023). Common conversation topics when women sit together to weave include basketry techniques, how to best use the money earned from basketry and how to harvest the resources sustainably: “we talk about how to use that money, which we are getting there. And how to maintain those palms, which we are getting there in the forest. How do we cut that palms to make it [that] they are not finished” (R 17.09.2023). Collecting the materials for basketry and making baskets are joint ventures for women that men never join in with (C&P 26.09.2023; Masida 20.09.2023; R 17.09.2023). Men in Masida Community Forest quickly pointed out that they themselves do not make baskets and noted that if they were to make a basket or sit with women making baskets they would start acting “feminine” as well and become a woman themselves. One man stated: “Your mental will more like change. So you behave like a woman” (Masida 20.09.2023) and another added: “Even when they are doing they have to sit sometimes together; if there are five they have to sit, five of them. Then if you are man you would be the sixth one” (Masida 20.09.2023). These statements show the sexist bias that women in general and basket-weaving women in particular are confronted with, which is based on the patriarchal notions that prevail in Namibia.

To summarize, in this chapter we showed that weaving can be taught through non-formal training by a skilled weaver and does not require extensive cash input or elaborate equipment. Furthermore, weaving can be practiced at all times, making it possible to fit in with any woman’s livelihood.

9.4. Usage of baskets

Some crafts are produced to be used by local people, such as large harvesting baskets, while others are specifically made for tourists and often have different designs, shapes and sizes compared to the baskets made for domestic usage (Adam & Shackleton 2016: 5). In most cases the crafts made for tourists are smaller, so as to fit in their luggage (ibid.). The main motivation for crafting is that the crafts can be sold for money; however, a few producers make them for home use, for example for winnowing or as a gift (Murphy & Suich 2003: 13). Most

crafters would stop producing crafts that they do not use themselves if it was not for the social and financial advantage (Terry 1999: 61; Terry & Cunningham 1993: 30). Palm baskets are generally used for winnowing and sifting, storage, collecting and carrying, and beer production as well as milk storage (Cunningham & Terry 2006: 10, 126, 127). Baskets are used for winnowing and sifting since grain needs to be processed several times to remove the inedible chaff in order to be consumable (ibid.: 73). After threshing, the grain is sieved, and after pounding or grinding, it is winnowed (ibid.). The grain is moved between two baskets or tossed through the air, so that the chaff can be blown away by the wind (ibid.). Winnowing is the most common use for traditional baskets (ibid.: 87). Other baskets are used for the adequate storing of clothes, household utensils, fruits, vegetables, unprocessed agricultural products, flour, traditional medicine, herbs, seeds, oils, scented powders, or objects with spiritual and ritual meanings (ibid.: 30, 73, 77, 145-146, 148). For beer production, beer strainers and funnel baskets are used to funnel grain into containers for beer fermentation (ibid.: 36-37). Carrying baskets can be used to transport agricultural products, nuts, berries, household possessions or cow dung (ibid.: 87). Women often balance these baskets on their heads (ibid.). As women are the ones who make and use the baskets, they make sure that they are practical yet comfortable to carry (ibid.). Beer strainers and beer skimmers continue to be made as there are few industrially made alternatives (ibid.: 93). But the watertight milk and beer baskets themselves have largely been replaced by plastic or metal buckets since these baskets are very time-consuming to make (ibid.). Traditional beer also has a social and cultural value as it forms an integral part of certain rituals and religious ceremonies (ibid.). Hence, beer strainers are a gift that young men receive, for example during initiation ceremonies (Pereira et al. 2006: 483). Besides beer strainers, Pereira et al. and Thondhlana state that large baskets are also given as gifts at weddings or funerals (Pereira et al. 2006: 483; Thondhlana 2020: 2). Smaller baskets are primarily made for selling to tourists and urban residents (Adam & Shackleton 2016: 5; Pereira et al. 2006: 483). During our interviews, different usages of and motivations to make baskets were mentioned. One woman we interviewed said that she also makes baskets for herself to use for carrying fish and vegetables home from the market (NSG 14.09.2023). Two women also used baskets to carry and store their crop harvest or to wash laundry in (C 17.09.2023; DM 21.09.2023). In contrast, another woman we asked about this topic said: “I cannot spend my time on baskets for using, I only spend [it on] baskets for selling” (R 17.09.2023). She used buckets for carrying instead of baskets (R 17.09.2023). The women generally said that baskets for selling to tourists are made in the sizes required by resellers or buyers, while baskets woven for their own use are a lot bigger.

9.5. Baskets and their commercialization

Basketry is often the result of the lack of other materials such as clay for making earthenware containers, thus fibrous plant materials are used (Terry & Cunningham 1993: 41). Until the

1970s, African baskets were made for individual usage by agriculturalists, pastoralists, fishing communities and hunter-gatherers and they reflected their respective lifestyles (Bishop & Scoones 1994: 1: 25; Murphy & Suich 2006: 1, 4-5; Terry & Cunningham 1993). Because they were essential for everyday tasks, most women were weaving baskets (Cunningham & Terry 2006: 52). Push and pull factors such as better grazing land or displacement due to war or disease led to a mobile lifestyle in southern Africa which enabled the exchange of basketry styles and the exploration of new materials (ibid.: 22, 28). In the 1970s the United States, Europe and Australia became interested in African basketry, and since then baskets are produced commercially to be exported to museums, interior designers, and collectors (Terry & Cunningham 1993: 25). The commercialization has led to a significant change in the production of African baskets and the life of the basket makers themselves (ibid.). Through commercialization, basket styles have changed to reflect "Western" tastes (Terry & Cunningham 1993: 31; Cunningham & Terry 2006: 10, 170). An example is that deep baskets are changed and made to be flatter in order to present designs better and to be more suitable as wall decorations (Cunningham & Terry 2006: 175). While the traditional harvesting baskets were made to sit well on the head, commercial baskets are woven with larger flat bottoms to stand well on tables (ibid.). Some baskets traditionally used at home have been replaced by often cheaper and more easily accessible buckets, containers or dishes made of plastic or metal (Bishop & Scoones 1994: 9-10; Terry & Cunningham 1993: 31; Cunningham & Terry 2006: 174-175). One basket maker in our interviews told us from personal experience that baskets were much bigger in the past, but that weavers do not make baskets that big anymore because they take longer to make (UW 26.09.2023). According to her, the smaller baskets are more efficient money-wise because they are quicker to make (UW 26.09.2023). In areas with more commercial marketing, designs become more colorful, and new and artistic patterns are woven in (Terry & Cunningham 1993: 32; Cunningham & Terry 2006: 10, 170, 172). Commercialization has led to the introduction of new materials like plastic, mainly from shopping or vegetable bags, (telephone) wire, and new dyes including textile and chemical dyes, and ink derived from ballpoint pens and carbon paper (Cunningham & Terry 2006: 10, 176-181). In recent years some weavers have started integrating strips of the colorful traditional *chitenge* fabric into their baskets to achieve attractive colors that appeal to tourists, which we saw when we visited the Mashi Craft Market in Kongola (JM 18.09.2023; Masida 20.09.2023). The commercialization of baskets has also led to a renewed interest in the craft among rural Zambezi women (Terry 1999: 65). While in the early 1990s, women did not see a reason to produce more crafts than they were using for themselves, this notion changed when they saw how their colleagues received their first payments from resellers (JM 18.09.2023; R 17.09.2023). After seeing that they could make money through the sale of baskets, more women started to pick up the craft

(JM 18.09.2023). The commercialization of crafts is facilitated by NGOs and private entrepreneurs that buy crafts from producers, then market and sell them, while institutional support is often lacking as the work and its benefits are overlooked (Pereira et al. 2006: 478).

But the commercialization has also sparked some criticism concerning the pressure on natural resources and the deviation from traditional ways of making baskets. A middle-aged basket maker recalled that the rise in population in the Zambezi Region since the year 2000 and the increase in basket producers lead to a greater utilization pressure on basketry materials and dyes (R 17.09.2023). Furthermore, some people criticize the situation, stating that tourism and the subsequent commercialization have led to poorer-quality crafts because they follow the wishes of tourists instead of being an expression of cultural identity (Cunningham & Terry 2006: 184; Terry 1999: 64). Names and meanings of designs are not always traditional and historical, as some were created in cooperation with marketing officers, who were interested in finding or creating elaborate explanations for “traditional” designs to make them sell better (Terry & Cunningham 1993: 38). Proponents of commercialization point out that the baskets made for sale have created a necessary source of cash income for many poor rural women: “People need income. And they won’t get income from their traditional baskets” (CP 31.01.2024). This statement refers to the fact that the commercialized baskets are more popular among touristic customers. To assist with marketing, some NGOs and individual activists have helped to establish basket workshops to improve the quality of baskets and market them commercially (CP 31.01.2024; KR 07.02.2024).

9.6. Selling structures

Terry names three levels of craft marketing: selling to people inside the village, nearby villages or to people that come to the village; selling at retail outlets such as craft centers which are created and owned by a production unit, a commercial retailer or a non-profit organization; and lastly non-profit or commercial middlemen who collect and resell the crafts (1999: 116-117). In addition, some non-profit organizations, commercial retailers and production units also export the crafts (ibid.: 117). While we will briefly look into the selling at the village level in this section, the second and third level of commercial resale in craft centers or via craft collection are explained in separate subsections.

At the village level, weavers can sell individually or organize into a producer group (DeMotts 2017: 376; Terry 1999: 116). Groups of weavers from different villages develop connections and manage resource and sale issues among each other, often with the help of NGOs or CBNRM programs (DeMotts 2017: 380). The basket weavers we interviewed reported selling their baskets to people coming to the village, passing by the roadside, or selling them at neighboring villages (C&P 26.09.2023; DM 21.09.2023; NSG 14.09.2023; R 17.09.2023). Village-level selling is inexpensive and requires little effort but it is not very reliable in securing an income because it depends on sporadic visitors (Terry 1999: 184). If there are no markets near

the craft makers' village, they often have to travel long distances and pay for transport and accommodation, if needed, to get to a sales outlet (Thondhlana 2020: 12). Common resellers in the area that basket weavers work with include craft centers like the Mashi Craft Market (C&P 26.09.2023; DM 21.09.2023; R 17.09.2023). Two weavers mentioned wanting to build their own craft center next to the road for the community to sell there, because it would be closer than Mashi Craft Market (C&P 26.09.2023). Apart from having to pay for transport, selling to a reseller provides similar revenue for producers as selling directly, as prices only increase along the value chain (JM 18.09.2023). Additional costs, and also the higher end price, only affect the intermediary and final buyers (JM 18.09.2023). The buyers of basketry mainly comprise tourists, resellers, lodges and hotels, some local people that buy baskets for general use, and people from nearby countries such as Botswana where basketry materials have become scarce (C&P 26.09.2023; CP 31.01.2024; DM 21.09.2023; NSG 14.09.2023; R 17.09.2023; UW 26.09.2023).

9.6.1. Craft Centers

In the Zambezi Region a few craft centers have opened in the last decades to sell local crafts to tourists and other interested buyers. The Mashi Craft Market (MCM) is the largest craft center in the Zambezi Region and is located in central Kongola on the Trans-Kalahari highway leading to Katima Mulilo, meaning that many customers are able to stop there. Other craft markets in the Zambezi Region are Ncheche Crafts in Oporo Conservancy, Ngoma Crafts in Salambala Conservancy and Mashambo Crafts in Bwabwata (JM 18.09.2023). The MCM is a cooperative of producers and was brought to life in 1998 by the NGO Integrated Rural Development and Nature Conservation (IRDNC) to sell crafts produced by people living in the Zambezi Region (Murphy & Suich 2003: 3-6; Murphy & Suich 2006: 6). At MCM mostly women sell their crafts, such as baskets and reed mats (Murphy & Suich 2003: 3, 6). Products commonly produced and sold by men at the Mashi Craft Market are hats and palm bags (ibid.: 3). Additionally, woodcarvings and jewelry are sold (ibid.: 3). The MCM also sells high-quality Khwe baskets, which were revived through the efforts of the IRDNC and the MCM (ibid.: 6). They had practically died out until an old Khwe woman taught other women the skills again (ibid.: 6). In the beginning, the MCM was a rack of posts where the women could sell their crafts during the day, but since it became a success, this post stand has been converted into a building (JM 18.09.2023). To sell crafts at MCM every producer has to register, and every product receives a code and a tag with the price and the producer's name on it (JM 18.09.2023). The MCM grades baskets, ranging from the high-quality baskets receiving an AA grade with the highest price, down to the C-grade baskets with the lowest quality and an accordingly lower price (Murphy & Suich 2003: 9). The craft center is always aiming at diversifying and developing their products to increase sales (JM 18.09.2023). The new baskets that integrate chitenge fabric are already popular (JM 18.09.2023).

In order to ensure that maintenance and operating costs, including the wage of salespersons, are covered, every producer who sells their crafts at MCM pays an annual membership fee (N$20 for residents of the local conservancy and N$40 for producers from outside the conservancy and outside Namibia) and a 40% commission; the latter is deducted from the sales price (Murphy & Suich 2003: 4, 6; Murphy & Suich 2006: 6). The other 60% of the revenue is paid in cash to the producer once a craft item is sold (Murphy & Suich 2003: 4, 6). This also means that producers sometimes have to wait for long periods to receive any money if their products are not bought within a month (Khumalo 2012: 347; Murphy & Suich 2003: 4; Murphy & Suich 2006: 6).

Most women have to organize the transport of the crafts from their villages to the MCM themselves (JM 18.09.2023). When their crafts are sold they can pick up their monthly payment at MCM or collect it when the employees hand it out in town (C&P 26.09.2023). The MCM has a management committee which meets several times a year (Murphy & Suich 2003: 6). The IRDNC supervised the MCM until recently (JM 18.09.2023) in terms of providing management advice, quality and product-development training and also helped with trips to the palm supplies in Katima Mulilo (Murphy & Suich 2006: 6). Because of its financial and organizational success, the MCM can now be managed by the producers and finances itself without outside funds from the IRDNC (JM 18.09.2023). The MCM is even able to build up reserves and endure hard times such as the Covid-19 pandemic (JM 18.09.2023).

The MCM is also working with local female Community Resource Monitors (CRMs), who are responsible for promoting women's participation in conservancies and monitoring their resources (Murphy & Suich 2003: 3-6; Murphy & Suich 2006: 6). Responsibilities of Community Resource Monitors include taking crafts from the weavers to the MCM, delivering payment once items have sold, monitoring the raw materials such as palm and dye-plant populations and teaching weavers how to collect these materials in a sustainable manner (DeMotts 2017: 372; Murphy & Suich 2003: 6). This training has proven to be extremely successful, because even though the number of weavers increased rapidly around the turn of the millennium and therefore much more raw materials were needed, the resource base remained healthy and stable (DeMotts 2017: 372; Murphy & Suich 2006: 8, 10).

9.6.2. Craft collecting

Besides the establishment of craft centers, there are also organizations that buy crafts from producers and sell them online and at retail outlets in the larger cities. In the 1990s, the Rössing Foundation, a Namibian NGO, started buying crafts from producers in the Salambala Conservancy as well as Masokotwane on a quarterly basis (Murphy & Suich 2003: 3-4; Murphy & Suich 2006: 5). The weavers were paid for their crafts on the spot and the NGO transported the crafts to Windhoek to sell them in retail shops owned by Mud Hut Trading (Murphy & Suich 2003: 3-4; Murphy & Suich 2006: 5). The profits Mud Hut Trading earned through craft sales were

reinvested into further development of the craft sector (Murphy & Suich 2006: 6). The Rössing Foundation was the leading NGO in the CBNRM craft-development program and worked together with other organizations such as IRDNC (Murphy & Suich 2003: 3). The craft program focuses on the development and the marketing of craft products, as well as the sustainable use of required raw materials such as palm and dye plants, and laid the foundation for the now blooming craft industry in the Zambezi Region (Murphy & Suich 2006: 1). The Rössing Foundation as well as IRDNC are the biggest craft marketers and craft-skill trainers of rural women, and facilitate basket-weaving training from local master basket weavers (Murphy & Suich 2003: 5; Murphy & Suich 2006: 5). In 2004, the Omba Arts Trust, a non-profit "fair trade marketing organization" (KR 07.02.2024), founded by Karin le Roux, who previously worked for the Rössing Foundation, also started engaging in the trade and marketing of baskets. The Omba Arts Trust is based in Windhoek and is selling and marketing Namibian craft products created by cooperating artisans, most of whom are San women who live in remote areas (CP 31.01.2024; KR 07.02.2024). Omba currently works in nine regions of Namibia and the baskets Omba sells are produced by 150 female weavers in the Kavango, the Zambezi, and Oshana Regions (KR 07.02.2024). Karin le Roux herself told us that the mission of the organization is to "support the sustainable livelihoods and resilience of economically marginalized communities" (KR 07.02.2024). Omba buys two to three times a year to provide the weavers with a stable income, but this of course depends on how much they are able to sell (KR 07.02.2024). The money earned through selling their crafts to Omba is often the only income source for women who do not have access to other jobs and increasingly suffer from climate-change-related effects such as recurring droughts (KR 07.02.2024). Karin le Roux told us that marketing in a country with a small population is difficult since the supply chain is rather small and they therefore have to make sure to sell-high quality products (KR 07.02.2024). They do this by experimenting with new colors and designs which are developed together with the weavers in workshops organized by Omba (KR 07.02.2024). In this process the organization encourages the individual creativity of the weavers to develop unique designs (KR 07.02.2024). But Karin le Roux underlines that they do not follow trends, do not prescribe ideas to the weavers, and make sure to stick to traditional weaving techniques and skills, but pointed out that regarding the design one has to understand that it is about creating stable incomes for which the baskets need to appeal to the market (CP 31.01.2024; KR 07.02.2024). In the Zambezi Region Omba also buys baskets below their quality standard in order to encourage the weavers to work more and produce better-quality baskets over time (KR 07.02.2024). The Omba Arts Trust uses a grading system to encourage the creation of intricate high-quality baskets as these are bought at higher prices, leading to higher incomes for the producers (CP 31.01.2024; KR 07.02.2024). There are four grades, in ascending order: the C-grade for "cheap and cheerful" baskets, the B-grade for "generally beautiful baskets that do not have a stunning pattern or great colors", A-grade for "almost perfect" baskets with a nice design and good colors, and

lastly the AA-grade for baskets that are only put on the wall or seen at exhibitions (CP 31.01.2024; KR 07.02.2024). An AA-grade basket is worth 4 to 5 times as much money as a C-grade basket (CP 31.01.2024). The most Omba pays for a big basket of excellent quality is N$450-500 (KR 07.02.2024). For baskets of lesser quality a weaver receives between N$80 and 100 (KR 07.02.2024). The prices are reviewed each year and adjusted if possible (KR 07.02.2024). Omba then adds the costs of the transport, petrol, overnight costs for the buyer who goes from Rundu to the villages to collect the baskets, rent for the office and the sales outlets, and staff costs as well as marketing and promotional costs (KR 07.02.2024). The crafts are sold at their two retail shops in Windhoek and in Swakopmund as well as in an online shop to tourists, collectors, international customers or lodges (KR 07.02.2024). To ensure continued raw-material supply, Omba has been planting palm and dye trees since its beginning, not because the materials were already scarce, but because they want to avoid shortages when the number of weavers increases, which they saw happening in neighboring countries (CP 31.01.2024; KR 07.02.2024).

9.7. Financial contribution to households

In a case study by Adam and Shackleton in Eastern Cape, South Africa, the income generated from basket selling was responsible for 35% of the total annual household cash income (2016: 5). This is also true for northern Namibia, where basket sales are an important contribution to the income of rural households (Terry & Cunningham 1993: 30). Nevertheless, basketry as an income source is often overlooked and underestimated because markets involving baskets and other crafts are often not centralized and do not produce large flows of money, even though the income generated from the trade in these markets constitutes a significant part of the total income of many rural people (Adam & Shackleton 2016: 1-2). In addition, cash income is used to buy goods and services in the village, thereby supporting the local economy. In this chapter we will first look into the income that can be created from basketry to then assess its importance to households by analyzing the expenses.

9.7.1. Income

Baskets require a large time input for preparing the materials and weaving and marketing the basket, but weavers only get a low return (Murphy & Suich 2003: 10, 21). Nevertheless, the income is still important for many basket weavers as the commercial sale of their crafts is their main or even only form of cash income, and often the person producing the crafts is the only cash-earning member of the household, which means that money from basket sales benefits an entire family (Adam & Shackleton 2016: 2; Bishop & Scoones 1994: 27; Cunningham & Terry 2006: 10; Murphy & Suich 2003: 21; Terry 1999: 66, 187). One basket producer we interviewed stressed the high importance of basketry revenue for the producers: “we are sur-

viving because of this basket" (C&P 26.09.2023). For old or disabled people who would otherwise have to rely on other people for financial aid crafts can be the only available income source (Terry 1999: 261-262; Thondhlana 2020: 7). Moreover, crafts like basketry provide an employment opportunity during times with few agricultural returns, for example during droughts (Terry 1999: 307).

Basket sales are of varying importance for the producers depending on the revenue. Murphy and Suich (2003) surveyed middle- and high-earning producers of crafts selling at the Mashi Craft Market between 1999 and 2002. Whether a person can generate high or low earnings through basketry sales depends on the time input and level of skill (Ashley & LaFranchi 1997: 30). Women that could generate high earnings with an average cash-income contribution of 72% often only have to engage in one other cash-generating activity or can even fully rely on baskets as their sole income source, while basket sellers with medium earnings had to rely on selling three or four other products such as thatch grass, maize or reed (Murphy & Suich 2003: 16). For medium craft earners who gained 38% of their cash income from baskets, thatch-grass sales on average contributed 13% of total cash income, while 11% were added by maize and 9% by reed sales (ibid.). Other income sources that the basketry producers we interviewed mentioned apart from selling grasses and reeds were farming, selling *mahangu* and vegetables (C&P 26.09.2023; R 17.09.2023). This demonstrates that crafting is mostly a part-time job and is accompanied by other cash-generating activities, but nonetheless it contributes significantly to people's livelihoods and is often their main income source (Murphy & Suich 2003: 18). All the basket weavers we talked to named basketry as their most important or one of their most important income sources (DM 21.09.2023; R 17.09.2023; UW 26.09.2023). Especially in touristic areas basketry is a popular income choice as tourists are the main customers (DM 21.09.2023). As a resident of an area characterized by tourism stated: "like to us, this area of us, from Kongola going up to Sangwali, we are in the tourism areas. So, if you depend on weaving baskets then you are getting a lot of income every month" (DM 21.09.2023).

Multiple basket makers explained that the price depends on the size of the basket (C&P 26.09.2023; NSG 14.09.2023; R 17.09.2023; UW 26.09.2023). The pattern or color does not influence the price but the quality does (R 17.09.2023). Higher-quality baskets are more expensive (R 17.09.2023). The price of baskets often increases in N$10 steps and was mostly indicated as a round number. The cheapest basketry items we heard of were flat and round table mats or plates that look like coasters and cost N$30 (C&P 26.09.2023). A simple small basket costs N$40 while the biggest and most expensive baskets can even be priced at N$250 and above (C&P 26.09.2023; DM 21.09.2023; Masida 20.09.2023; NSG 14.09.2023; R 17.09.2023; UW 26.092023). These are the prices at the village level. The price for the same basket sold at a craft center would be higher to cover the expenses of the reseller. While woodcarvers can earn up to N$30,000 per month, other crafters only generate N$5,000 at highest

(JM 18.09.2023), usually even lower for the labor intensive basketry production. In months with enough available time to produce baskets, one producer mentioned being able to earn up to N$1000 a month (R 17.09.2023). Another producer with higher average unit prices of N$150 was able to sell about 20 baskets a month and earn up to N$3,000 a month (DM 21.09.2023). According to Janet Matota of the IRDNC, earnings up to N$5,000 can make a big difference for the basket producers: “so now if you look at that 5,000 for an unemployed female headed household, it means a lot”. The ways in which the money earned through basketry is implemented are explained in the following chapter.

9.7.2. Expenditure

Our respondents reported spending the cash earned from the sale of basketry on basic needs such as food, clothes, school expenses, domestic goods like soap and medical costs (C&P 26.09.2023; JM 18.09.2023; KR 07.02.2024; Masida 20.09.2023; R 17.09.2023; UW 26.09.2023) which is congruent with the findings of Cunningham and Terry about basketry expenses in southern Africa (2006: 185). Other expenses include sanitary products, transportation and hiring oxen or tractors for ploughing fields (Adam & Shackleton 2016: 7; DeMotts 2017: 374; Murphy & Suich 2006: 9; Suich & Murphy 2002: 3)

Adam and Shackleton found that 90% of respondents spent a part of their basketry earnings on food, which exemplifies that this income is important for improving food security (2016: 6-7). 80% spend money earned from basket and mat sales on educational expenses for children such as school fees and uniforms, which is also usually the first payment made from the craft income (Adam & Shackleton 2016: 7; Pereira et al. 2006: 486; Suich & Murphy 2002: 3). In one of our interviews a mother explained the importance of basketry income for school expenses: “it helps the family; it takes the young ones to school, for example buying books for them, buying pen, pencils and rubbers” (DM 21.09.2023). Spending income on children’s school expenses has multiple benefits for their future. They will have more career options which could lead to better living conditions (Adam & Shackleton 2016: 7). Education also imparts knowledge to resolve conflicts and make healthier life choices (ibid.). Since school fees have to be paid at the start of the year and Christmas falls in the same period, the sale of crafts peaks in December (Pereira et al. 2006: 486).

If basic needs are covered, women are able to buy livestock or equipment such as a plow which help improve their circumstances by creating new ways to earn income and function as reserves (Adam & Shackleton 2016: 6-8). But even if the cash earned from craft sales is not enough to invest in other income sources or assets, it contributes the welfare of the household since even small cash-income sources are significant for people living in poverty (Murphy & Suich 2006: 9, 11; DeMotts 2017: 374).

As one respondent explained to us, basketry is also important in relation to climate change, as basketry materials are less vulnerable to environmental changes than agriculture:

“There is this crisis, you know, climatic change where there is drought; people don’t harvest properly, so this is the main source of food when they sell that money” (DM 21.09.2023). A craft reseller noted that the production of baskets goes up considerably in times of crop failure as people have no other means of securing their livelihoods (KR 07.02.2024). While selling baskets to neighbors cannot secure income in times of drought, when everyone is trying to save money, selling to tourists is not affected by the drought and thus offers a strategy to minimize risk (Ashley & LaFranchi 1997: 30; Bishop & Scoones 1994: 47).

9.8. Research findings

In this chapter, we demonstrated that in the Zambezi Region baskets are mostly made by women using a coiling technique to create open palm baskets from *Hyphaene petersiana* leaves that are wrapped around a grass base. The palm leaves are often dyed by boiling or soaking them with roots, bark or rusty metal to create a variety of colors that appeal to tourists. Harvesting the materials is time consuming and can be dangerous because of wildlife. The raw materials are not overexploited in Namibia at the moment but livestock and wildlife both feed on the palms, which means that fencing, sustainable harvest, monitoring and additional planting are important to reduce the pressure on the resources.

Young women learn the craft at an early age from a female family member or friend by trial and error, and women spend years perfecting their weaving skills. The majority of baskets are produced during the dry season when women are not occupied with farming. Because weaving is not restricted to one place, it is compatible with women’s other domestic duties. Weavers often sit together with other women to exchange knowledge about basketry techniques, sustainable harvesting or the best investment options for the earned money. In the past, most women made baskets that were utensils for everyday activities such as the processing of grain, fishing or storage. Commercialization has shifted this focus to baskets being primarily made as a cash-income source, which has brought the weaving skill back to life in some instances, as many people were replacing it with more convenient alternatives. Despite this new purpose, the commercialization keeps the culture of weaving baskets alive, which many weavers appreciate. Baskets are generally sold in the villages, next to the road, at crafts centers like the Mashi Craft Market or to resellers, while the end-buyers are mostly tourists. NGOs such as the IRDNC, the Rössing Foundation and the Omba Arts Trust are involved to help women sell their products and improve their livelihoods. The income from basketry is not large, especially considering that it is a very labor-intensive activity, but because the money is spent on basics like food, clothing, school fees and medical expenses, it can help to reduce poverty. Like grasses and reeds, basketry provides a drought coping strategy as it is less vulnerable to fluctuating climates than farming.

10. Decision-making about the income from fibrous plant products

Women in Namibia are often disadvantaged because the socio-cultural norm of men being considered the head of the household who makes the decisions prevents the women from participating in decision-making and enforcing their own interests (Khumalo 2012: 349; Nelson et al. 2015: 5). Only 59% of men in the Zambezi Region believe that a wife should have any right to participate in making decisions about her own earnings (Khumalo 2012: 54). This pertains to the decision-making power over money, which was already an issue when women started producing baskets commercially in the 1990s but had to give their earned money to their husbands (JM 18.09.2023). The men were often using it to buy alcohol with other men at the local cuca shop (CP 31.01.2024). The cuca shop is a place where traditional local beer is made (CP 31.01.2024). The beer is a food source because it is rich in carbohydrates (CP 31.01.2024). Since babies are fed with a porridge gruel made from local grains, the men develop a preference for mahangu (pearl millet) and sorghum beer (CP 31.01.2024). When the women wanted to decide about the use of their earnings themselves instead of seeing it spent on alcohol, the men started to resist:

> "The women said: 'We are suffering; I take weeks weaving and you are not contributing anything. You want me to bring the money and then you take my money and going to drink'. The women said 'no, this should change'. And daily you could see these women, after they receive their money, they go straight to the shop and do the shopping" (JM 18.09.2023).

Faced with the resistance of their wives, some men started taking the money secretly (CP 31.01.2024). So, to avoid losing control over their earnings, some women left the majority of the cash in a box at the craft center and only brought a small share home to give to their husbands (CP 31.01.2024). When the men went to drink the women returned for the remaining cash to immediately spend it on food or other necessities (CP 31.01.2024). Nowadays most women have complete control over the decision as to how to spend their earnings from craft sales; however, some women either decide together with their husbands or, in some cases, lose their decision-making power over their income to their husbands (Adam & Shackleton 2016: 8; Khumalo 2012: 348; Murphy & Suich 2003: 3, 18-19; Terry 1999: 262). This was also reflected in our interviews, where most basket weavers stated that they themselves decide about the usage of their earnings, while one married woman mentioned deciding together with her husband (DM 21.09.2023; Masida 20.09.2023; NSG 14.09.2023; R 17.09.2023). In Masida two weavers explained that married women must show their earnings to the husband for "transparency's sake", then afterwards it is a shared decision (Masida 20.09.2023). Grass- and reed-harvesting women answered in a very similar way, deciding themselves or together with their husbands (NSG 14.09.2023). But it is important to notice that several women mentioned that they were single, thus naturally stating that they had complete control over their earnings. One basket weaver mentioned planning ahead what she wants to buy before earning the money

(DM 21.09.2023). Having decision-making power over their own income can greatly increase positive livelihood impacts for women and their families (Adam & Shackleton 2016: 8).

11. Fibrous plant products for an improved livelihood? – A discussion

In the previous chapters, we examined the current state of three plant-fiber products in terms of harvesting and sustainability, use, sales, product prices and what the revenues are used for. It is now important to assess the extent to which fibrous plant products contribute to the lives of women living in the rural areas of the Zambezi Region. To achieve this, we first identify the benefits and challenges of grass, reed, and basketry as a source of income, in order to then evaluate the extent to which these three products can contribute to women's empowerment and to answer the question of whether they have the potential to alleviate poverty. Subsequently, we list some suggestions that researchers have made to increase the benefits of grass, reed and basketry to rural households in the future.

11.1. Benefits of fibrous plant products for women

In this section we will focus on the financial, social, and cultural benefits that fibrous plant products have for the producers. As we showed in our study, grass, reed, and baskets are all important and widespread means of income in the rural areas of the Zambezi Region. Only a few tools are needed to harvest reeds and grasses or weave baskets, which makes them accessible to people with minimal starting capital (Cunningham & Terry 2006: 46). Basketry only requires the purchase of an awl for approximately N$12 and sometimes the price of a permission to harvest palm leaves, which makes it accessible for most women (Suich & Murphy 2002: 25). The harvesting of reeds and grasses only requires a sickle, machete or axe and the acquisition of a permit. Even though the sale of grass, reed or baskets alone can rarely secure the entire income that a household requires, it is the combination of several strategies that ensures a household's livelihood, since diverse income sources help to minimize risks (Adam & Shackleton 2016: 12; Suich & Murphy 2002: 19). Basketry can even be the main source of income for a household (Murphy & Suich 2003: 18). These natural resources can be an "economic safety net" because they are less vulnerable to climatic changes such as droughts than crop and livestock farming (Ashley & LaFranchi 1997: 30; Cunningham & Terry 2006: 185; DeMotts 2017: 381; Konstant et al. 1995: 346; Pereira et al. 2006: 483). These income sources are especially important for women, who usually do not own any cattle and practice subsistence farming and have little or no education, which puts them in a socially and economically disadvantaged position (Cunningham & Terry 2006: 185; Terry & Cunningham 1993: 27; Pereira et al. 2006: 478). While the harvesting of reeds and grass is hard labor, basketry can even be practiced by the elderly or people with health restrictions, which makes them less dependable on government handouts or family remittances (Cunningham & Terry 2006: 190; Terry 1999: 258-260). Several of our respondents noted that basketry provides them with a stable income, and they said it was their only option for earning money (C&P 26.09.2023; DM 21.09.2023; R 17.09.2023). Because of the rural setting of many women's homes and their limited formal education, salaried labor is not an income alternative (Suich &

Murphy 2002: 24; Pereira et al. 2006: 478). Because gendered divisions of labor are still prevalent in Namibia any cash-generating activity that women could practice needs to be compatible with their responsibility for food production, childcare, and other domestic duties (Ashley & LaFranchi 1997: 30; DeMotts 2017: 381; Murphy & Suich 2003: 1; Terry 1999: 308; Thondhlana 2020: 74). Reeds and grasses fulfill these requirements as their harvesting period does not overlap with the farming season, and the making of baskets is completely independent of time and place (Cunningham & Terry 2006: 46, 185; Suich & Murphy 2002: 20). Farming and planting are done from December until April, reeds and thatch grass are collected from July to September and the time in between is used to craft baskets (DeMotts 2017: 381; Suich & Murphy 2002: 20). Even when women cannot escape their restriction to the domestic sphere, basketry, grass, and reed sales offer them a way of participating in the economy and increase their visibility to the public (Nghitevelekwa et al. 2023: 372). In addition to financial incentives, these activities also provide social and cultural benefits. NTFPs offer the opportunity for women to talk about the sustainable use of natural resources and participate in their conservation when formal managements often fail to recognize their knowledge (DeMotts 2017: 382). Basketry is part of the Namibian culture, as are thatch roofs and reed courtyards, which means that women are able to create these products on the basis of their indigenous knowledge (Cunningham & Terry 2006: 43): “It’s important, because it’s coming through my background. Also my parents was making the basket, […]. They were artists. It’s coming through my blood” (R 17.09.2023). The traditional work with local techniques, materials and designs is strengthened and even kept alive (Cunningham & Terry 2006: 191; Pereira et al. 2006: 486-487, 492; Terry 1999: 265; Terry & Cunningham 1993: 30). Even though commercialization comes with changes, it preserves an important handicraft that was becoming rare in some areas and was also substituted through other items before of its introduction to the market (Cunningham & Terry 2006: 191, 194). In addition, all the cash-generating activities offer a set of skills as well as confidence, and acknowledgement by their families for being able to create a financial income from self-employment (Adam & Shackleton 2016: 11; Cunningham & Terry 2006: 190; Terry 1999: 31, 262). Besides that, the financial independence women can achieve through basket selling allows them to choose their partners for marriage more freely or gives them the ability to divorce an abusive husband (Cunningham & Terry 2006: 190; Terry 1999: 262).

11.2. Challenges regarding fibrous plant products as an income source

While the sale of fibrous plant products has many benefits for the producers, there are also restraints that limit the positive impact of selling these products. The first challenge is that even though basketry and the harvesting of grass and reed bundles are highly laborious activities that require lots of time and expose the producers to dangers such as wildlife, the financial compensation is comparatively small (Adam & Shackleton 2016: 11, Cunningham & Terry 2006: 184; Murphy & Suich 2006: 1). But producers cannot easily raise their prices as they

would risk no-one buying their products (Pereira et al. 2006: 490) as exemplified by the work-to-benefit ratio of basket weaving explained by one of the NGO workers:

> "If you take in the collection of firewood to boil the palm, the collecting of the palm fronds […], collecting of the dye materials, processing the palm and then the skill in weaving the baskets and the design, we can never pay them for that. You know that's thousands, and you can never sell the basket for that" (CP 31.01.2024).

In addition, taking baskets as an example, women often have to wait a long time to receive any income from crafts being sold at the Mashi Craft Market, especially for lower-quality products (Murphy & Suich 2003: 15-16; Murphy & Suich 2006: 9). There is no guarantee that there will be a buyer for fibrous plant products if a household is in desperate need of cash, as demand can fluctuate (Ashley & LaFranchi 1997: 31). Besides that, markets and means of transportation are limited (Nghitevelekwa et al. 2023: 369; Pereira et al. 2006: 492; Terry 1999: 223). Women have to pay for transport to get to a sales point; however, they experience difficulties in organizing joint transportation, which would save them additional money (Adam & Shackleton 2016: 10; Mukululi et al. 2023: 4, 7; Murphy & Suich 2003: 15-16; Murphy & Suich 2006: 9).

Another issue is the lack of standardization, as NTFPs do not have regulations for prices and sizes. Reed and grass bundles can vary in diameter but need to be of consistent sizes to correspond to the demands of end users and construction companies (NNF 2016: 13). Baskets also do not have standardized prices so women often sell baskets below their actual market value, which is common for local NTFP markets (Adam & Shackleton 2016: 10). One threat to the local craft market is globalization coupled with an increasing mass production of similar crafts in Asia, leading to Namibian indigenous handicrafts made from local fibrous plants having to compete with much cheaper international products (Murphy & Suich 2006: 2, 10). Weavers can be forced to reduce the prices of their products in order to compete with other sellers (Adam & Shackleton 2016: 11). The management of money is also problematic. Even though people might want to build a business, frequent emergencies such as funerals quickly use up all reserves (CP 31.01.2024). This dilemma is coined by the local term "they eat their own money" (CP 31.01.2024), because after paying for the necessities there is nothing left to invest (CP 31.01.2024).

Even though efforts towards sustainable usage of natural resources have been already implemented, sustainable management remains highly important, as poor households that heavily rely on these resources would be the first to suffer from their depletion (Konstant et al. 1995: 346; Murphy & Suich 2003: 8). Additionally, weavers compete with animals for the plants. Cultivation could be an option to mitigate shortages, but planting reeds that require flowing water is impossible to realize in a village (Adam & Shackleton 2016: 11). Moreover, access rights to planted resources are complicated (ibid.). Even though governmental policies intend

to protect local communities, there is also a risk of them leading to increased hardships regarding access and financial benefits for NTFP harvesters since over-regulated processes and a lack of attention to local social and political contexts puts people equipped with traditional knowledge at risk of exploitation and expropriation (Lavelle 2020: 1).

11.3. Economic empowerment of women

One benefit of fibrous plant products which we want to discuss in more detail is their contribution to the economic empowerment of women. We argue that the use and trade of NTFPs is an income-generating activity that women can undertake within societal and cultural constraints such as the lack of formal education, lack of access to property, limited benefits from initiatives such as CBNRM, and their spatially restricting household responsibilities, such as childcare and domestic duties. Crafting and the trade of other NTFPs are convenient for many rural women because they are compatible with the societal role of women (Ashley & LaFranchi 1997: 30; DeMotts 2017: 381; Murphy & Suich 2003: 1; Terry 1999: 308; Thondhlana 2020: 74). Even though not every woman in the Zambezi Region will perceive these aspects to be constraining, crafting and selling NTFPs offers empowerment opportunities for all women. As changes in cultural gender roles do not happen overnight, it is essential to find ways to support women within these roles, giving them the chance to empower themselves while simultaneously challenging pre-existing gender roles. With the empowerment of women, both men and women can benefit from better opportunities for income generation and skills and thereby an increased welfare of their families. Women in our interviews indicated that the harvest and trade with thatch grass, reed, baskets and other fibrous plant products helped them to generate essential income. When engaging in these activities women make use of traditional skills such as basket weaving which they have been taught by their mothers, and which they can teach to other women to present them with a new income source.

The harvesting of thatch grass and reeds and especially the weaving of fibrous crafts is work that is mainly done by women. As we have seen, women often collect natural resources in groups to better protect themselves from wildlife or men. By doing this they create a space where men are absent. Men do not want to be involved or be close to women doing craft work as they fear they will become “feminine” as well. This means that crafting and also the harvesting of NTFPs offer women a “safe space” to exchange ideas, problems and worries with each other. Thereby the use of NTFPs empowers women by strengthening their ties to each other and opening a space for conversations about nutrition, literacy, sexual health, reproductive rights, childcare and their relationships (Cunningham & Terry 2006: 191; Pereira et al. 2006: 486-487). This was also underlined by one of our respondents stating that such topics are also addressed in basket-weaving workshops (CP 31.01.2024). Women experience autonomy in these settings as they can make decisions regarding these female-dominated activities on their own (Pereira et al. 2006: 487). Furthermore, many women produce crafts to sell them, which

empowers them not only financially but also in terms of entrepreneurial skills, self-confidence, self-reliance, and autonomy (DeMotts 2017: 374; Madusise 2021: 57; Nghitevelekwa et al. 2023: 372). Most importantly, Murphy and Suich found that through the income generated from craft selling women were able to be financially independent from their husbands, did not have to borrow money from others and could send their children to school (2003: 21). Women can also decide to leave abusive marriages when they are no longer dependent on a husband's access to cash and goods because they earn their own money to sustain their livelihoods (Khumalo 2012: 373).

The use of and trade with fibrous plant products can also increase a woman's power in decision-making processes. When we asked women how they make decisions about the money they earned from selling crafts or reeds and grasses, all women reported that they decide this on their own or together with the husband. No woman said that she completely loses control over her earnings. However, deciding together with the husband does not necessarily mean that the woman actively decides, and the final decision could still be made by the husband. One older woman stated that she alone decides what her earnings are spent on, and illustrated a very crucial point that underlines further why selling baskets is so vital for rural women in the Zambezi Region: she plans ahead with the money she will earn from selling her baskets (DM 21.09.2023). The cash earned from basketry is something that she relies on and that she plans her expenditures with: "I want to make this. And after making this I will sell it. So this money I will use it for this" (DM 21.09.2023). This is a clear example of economic empowerment, and was shared by other women we interviewed. As CBNRM often focuses on wildlife, it is important to find ways to support women within CBNRM contexts and empower them through participation in decision-making committees and securing access to natural resources (DeMotts 2017: 371). One way this can be done is through the craft program within CBNRM that was supported by NGOs, namely the Rössing Foundation, IRDNC and the Omba Arts Trust. These institutions offer women empowerment opportunities, not just in terms of cash earnings from their trade, but in the case of collectively run craft centers also through business administration skills, resource exchanges and new ideas and creativity.

Furthermore, education can be one of the keys to women's economic empowerment. In the case of rural women this can be achieved through non-formal education and training where women acquire basket- and mat-weaving skills (Madusise 2021: 57). This could support the sustainable economic development of communities (ibid.). In a setting where formal education cannot be obtained, non-formal education can help build practical skills that equip a person with the necessary abilities to participate in the informal economy to sustain their livelihood (ibid.: 61-62). Investing in women's economic empowerment by providing non-formal training situated outside of formal education systems, such as basket-weaving training in community groups for women prone to or living in poverty, could "lead to development of micro and

small-scale enterprises in which women are highly represented, thus, economically empowering women for sustainable development" (Madusise 2021: 59).

11.4. Can fibrous plant products reduce poverty?

As stated earlier, "development activities that target women are widely acknowledged as a direct way to alleviate poverty" (Murphy & Suich 2003: 7). In this subchapter we want to assess whether fibrous plant products can contribute to poverty alleviation. Murphy and Suich argue that even small cash amounts can make a significant contribution to impoverished people, which makes the trade with crafts and NTFPs an important livelihood strategy even though the earnings are generally low (2003: 3). Income diversification is a key household strategy to combat poverty in rural areas, especially for women living with few available cash income sources (Nghitevelekwa et al. 2023: 371; Terry 1999: 33). Often poor rural households combine several livelihood activities such as craft selling, agriculture, and the selling of grasses, poles, and reeds (Pereira et al. 2006: 483). Having multiple livelihood strategies also helps rural communities in terms of having a buffer once one cash-income source ceases. An example for this is the collapse of the thatch-grass industry in the Zambezi Region at the turn of the millennium which impacted many households (Murphy & Suich 2003: 21). During this time people invested more in other livelihood strategies, such as selling crafts, in order to cushion the financial loss (Bishop & Scoones 1994: 47; Murphy & Suich 2003: 21). This livelihood diversification was also evident in the interviews we conducted. Most women reported that they engaged in many different livelihood strategies such as piecework, selling fish, maize, self-made pastries, biscuits, or ice, as well as selling crafts, grasses and reeds and lastly farming. Women in our interviews also emphasized that basketry is a very vital income source, as one woman stated that basketry is so important to her money-wise that she quickly returned home to continue making baskets after being hospitalized (UW 26.09.2023). Two other women also highlighted the importance of basketry for their livelihoods saying, "people here, they depend on the money from baskets" (C&P 26.09.2023) and "if you don't have money, [you will] not survive" (R 17.09.2023).

But when looking at these statements the question arises as to whether the money earned from the trade with crafts and NTFPs can help to better the livelihoods of rural women and her families in the long run or if it is just a short-term aid for acute cash shortages. Producing crafts can be beneficial for creating employment within families since family members often participate in craft related activities such as collecting raw materials or helping with transport (Adam & Shackleton 2016: 9). Employment in this case does not refer to family members getting paid in cash for their labor but to investing in a future together through shared labor that allows the crafter to produce higher quantities, thereby increasing the household income (ibid.). Another side effect of shared labor is that weaving skills are passed on to younger generations. Therefore, the craft sector, and the NTFP sector, offer employment and

income opportunities in rural areas where the majority of people live in poverty and have generally limited options to earn cash income (ibid.). The income generated through NTFP sales benefits the rural community as a whole since it "is passed on to relatives, community members or those in need" (Adam & Shackleton 2016: 9) and important basic-need items are purchased with it, such as food or medical treatment costs. Local businesses also benefit from this as craft producers, who now have more income, buy their products. This means that shop owners increase their sales and can send their children to school (ibid.: 10). In this way the trade with NTFPs can have long-term benefits for rural communities.

A crucial point is that the income generated by women is often reinvested in their children, leading to increased economic security and better opportunities for future generations (Madusise 2021: 60; Nghitevelekwa et al. 2023: 363), as "using income from crafting to pay for education could be seen as intergenerational poverty alleviation" (Pereira et al. 2006: 486). Women also spent the income from the sale of baskets on the well-being of their entire families, directly contributing to the positive development of the community (Suich & Murphy 2002: 26). This is an aspect that we also saw in our research. Every respondent stated that the income earned from selling crafts, thatch grass or reeds was spent on basic needs such as food and clothes, which is the short-term use of cash for immediate needs, but also reported that the money is used to invest in their children's education by paying school fees, books and other supplies with it. This is an indicator for poverty alleviation, as the younger generations are equipped with formal education, leading to them having higher chances of formal employment. Women in Murphy and Suich's study reported that their lives and livelihoods would be threatened if they would not be able to sell crafts (2003: 21). Since the earned cash is spent on basic needs, consequences of this missing income would affect core aspects of women's lives in various ways, such as having no more food or clothes, having to take children out of schooling, and having no means to pay for medical treatment (Khumalo 2012: 341; Murphy & Suich 2003: 21). Terry also mentioned respondents indicating that if they could not sell crafts, they would likely have to commit crimes in order to survive (1999: 260). Another aspect that proves that poverty alleviation can be possible through the sale of fibrous plant products is that it can enable people to make investments such as buying cattle. One woman told us that she had been able to buy cattle from the money she made from basketry, thereby creating an investment that can be sold in times of immediate cash needs (DM 21.09.2023).

But even though these examples show that the money earned from selling fibrous plant products can in some cases lead to a more secure livelihood and even enable investments, this does not apply for all women trading these products. Pereira et al. argue that concerning the trade of NTFPs and derived crafts "the chances of poverty elimination are extremely low, but the contribution is high enough to justify recognition and support for these activities" (Pereira et al. 2006: 493). Even a small extra income can make a difference in terms of food security and help vulnerable impoverished families to ensure their livelihoods (Suich & Murphy

2002: 26). Adam and Shackleton as well as Pereira et al. argue that even though craft selling cannot reduce rural poverty overall, it can help to improve the livelihood of some individual people and families (Adam & Shackleton 2016: 2; Pereira et al. 2006: 478). We therefore conclude by saying that the income generated from selling NTFPs and crafts is significant to the majority of rural households living in or prone to poverty. The sale of NTFPs provides a crucial supplemental income within the context of livelihood diversification, covering short-term needs such as food and clothes and in some individual cases even enabling households to create a safety net and alleviate poverty by making investments in long-term assets such as cattle. We also want to highlight that the earned income from crafts, grasses and reeds is responsible for sending children to school, thus laying a foundation for the better future of the younger generations.

11.5. How to increase the benefits from fibrous plant products

Suggestions for the improvement of the harvest and trade in fibrous plant products include ideas that apply to all NTFPs as well as customized solutions for basketry, reeds, and grasses. That the commodification of NTFPs supports women's economic empowerment and helps to improve their families' livelihoods proves that policymakers should consider them in their development plans (Mukululi et al. 2023: 6). Listening to the wants and needs of local communities concerning NTFPs as well as to the third-party expertise from NGOs prior to the creation of new policies could help on one hand to avoid the exploitation of traditional knowledge and on the other hand to minimize the bureaucratic burden that possibly prevents harvesters from getting official permits and benefit from the sale of NTFPs (Lavelle 2020: 4). Prices for plant products need to be re-evaluated as their benefits to the producers could be further increased with higher prices (Nghitevelekwa et al. 2023: 372). Cooperation between producers to create market groups would help to find joint solutions for the marketing of NTFPs (Kamwi et al. 2020: 6).

In terms of sustainable use, the monitoring of natural resources in protected areas can help to ensure long-term benefits for the people that depend on them (Mukululi et al. 2023: 3). Murphy and Suich also suggest looking into other common-property natural resources and investigating whether they could hold the potential of creating income for poor rural female-headed households (2003: 4).

Several publications on basketry conclude that the basketry trade is worth investing in to improve rural women's livelihoods. For example, Pereira et al. mention that if crafters trade full-time they are even able to generate more income than they would be able to with unskilled wage jobs (2006: 484). Charlie Paxton, who works on the sustainable economic development of basketry, explained to us that basketry has the advantage that the benefits go directly to the people who need them the most (CP 31.01.2024).

To improve the benefits from basketry, Madusise proposes that women could be brought together and trained informally in how to weave baskets and mats for the purpose of selling them (2021: 65). Especially in places frequented by international and local tourists, weaving programs are reasonable since the products can be sold at markets there (ibid.: 69). In order to run a weaving project efficiently, the women also need non-formal training on topics such as adequate pricing of products, keeping records of sales and products, quality control and basic entrepreneurial skills (Adam & Shackleton 2016: 5; Cunningham & Terry 2006: 195; Madusise 2021: 69; Terry 1999: 258). Knowledge about marketing and pricing is crucial for women as it ensures that they can continuously profit from basketry, maximizing benefits through adequate pricing, and that they know how to market baskets autonomously to customers. The idea of creating workshops to teach basketry and business skills along with brainstorming about new designs is supported by multiple other researchers (Adam & Shackleton 2016: 10-11; Pereira et al. 2006: 491; Terry 1999: 35). These kinds of workshops are already facilitated, for example by the Omba Arts Trust and the IRDNC, but they could be supported even more and expanded further. A good quality of baskets needs to be ensured in order for them to sell well and to earn the producers more money, since many commercial buyers pay more to highly skilled weavers with good products (Cunningham & Terry 2006: 194; Thondhlana 2020: 1). This ties in with the fact that many baskets are sold at a price that does not properly compensate and benefit producers (Cunningham & Terry 2006: 197). It is therefore important to educate buyers about the work involved in making a basket to explain the higher prices and create more appreciation for the product itself (Cunningham & Terry 2006: 197; Terry 1999: 257). In the future basket producers should be able to market and sell their products mainly without the help of external organizations and funding, which many weavers currently depend on (Cunningham & Terry 2006: 194; Terry 1999: 258). One example of such a successful project is the Mashi Craft Market, now run only by community members on their own. Regarding the resources, sustainable management and monitoring needs to be taught and, in some cases, cultivation can be a method to ensure continuing access to raw materials (Cunningham & Terry 2006: 198; Pereira et al. 2006: 486). People outside of palm-growing regions could try to use other available materials for weaving (Murphy & Suich 2003: 23).

The weavers we interviewed also had ideas about how to improve their situation. Two women in the Kalumba area are looking for donors to fund a small craft center that they want to build near their village. This is supposed to encourage tourists that drive by on their way to the lodges to stop and buy crafts, as they are otherwise too afraid to stop when they see no official sales structure (C&P 26.09.2023). Moreover, the weavers would create pamphlets that point to their business (C&P 26.09.2023). Another weaver mentioned that to focus completely on basketry production and create larger quantities she would need more materials and support through someone else taking over her other duties (DM 21.09.2023). To sum up the suggestions for increasing benefits of the basketry trade, workshops would provide women with

additional skills, sustainable management of basketry resources would ensure their continuous usage, and more markets would facilitate the sale of basketry products.

As yet there is little research on the economic importance of reeds and very few publications have made suggestions on how to improve economic benefits from reeds. The bachelor's thesis by Milechin et al. (2009) that discussed the economic potential of reeds in Marienthal investigated what products can be made from reeds aside from bundles that have the potential to be marketed. They found that craft shops and lodges are willing to buy decorative craft made out of reeds if it appeals to tourists (Milechin et al. 2009: 84). Various retailers would sell reed crafts if tourists were interested in buying them (ibid.: 87). Placemats, baskets, and coasters are popular with tourists because they easily fit in a suitcase (Milechin et al. 2009: 64). In contrast reed mats are not marketable to tourists as they are too large (ibid.). To start a reed business, residents would need startup capital, materials and tools, training in how to harvest and process the reeds and a means of transportation (ibid.: 87-90).

In contrast to the limited research on reeds, several researchers as well as the Namibia Nature Foundation have made suggestions for improving the conditions for grass harvest and trade, as thatch grass is widely acknowledged as an essential income source for rural households (Mukululi et al. 2023: 6). The suggestions include sustainable harvesting, monitoring, planting, and, regarding the improvement of the trade, the reducing of middlemen in the value chain and the standardization of grass-bundle sizes and prices (Mukululi et al. 2023: 6; NNF 2016: 33; Pröpper 2015; Strohbach & Walters 2015: 38). Mukululi et al. opine that concerning the implementation of sustainable harvesting practices for NTFPs, such practices are the easiest to implement regarding thatch grass (2023: 6). Sustainable harvesting practices for grasses include cutting five to seven centimeters above the ground with sickles and not pulling the grasses from the ground, as well as ensuring that grass seeds are distributed by manually spreading them, and only harvesting from mid-May when the plants have already dropped their seeds (NNF 2016: 33; Strohbach & Walters 2015: 38). Consistent monitoring of the resources is also deemed important (NNF 2016: 33; Strohbach & Walters 2015: 38). There needs to be an investigation into whether it is possible that grasses which are of good quality but do not grow in abundance, like *Cymbopogon caesius*, could be cultivated (Strohbach & Walters 2015: 37).

One approach that could increase revenues for the harvesters would be to avoid selling to middlemen that chemically treat, rebundle and resell the reed bundles and thereby obtain the largest profit margin within the value chain (Mukululi et al. 2023: 7; NNF 2016: 6). If this value-addition was moved to the level of harvesters and the products were sold directly to the lodges and construction companies, rural communities could increase their benefits from the thatch-grass trade significantly (NNF 2016: 6). To improve marketability a standard length and size of grass bundles should be established, as these criteria are often required by customers (NNF 2016: 33-34; Strohbach & Walters 2015: 38). The NNF suggests that people from the

community forest management could carry out official negotiations with traders on behalf of the harvesters to set a fixed bundle price as well as a collecting time and place (2016: 32). This would give harvesters security and make the trade more formal (ibid.). Another solution would be the establishment of a market or selling hub, so the buyers only have to drive to one place instead of many (JM 18.09.2023). But bringing their bundles to a central market is not practical for harvesters at the moment because most people do not own a car or have access to one.

In summary there are multiple ways to increase the income from fibrous plant products to rural women. These include the sustainable harvest and monitoring of the resources, the creation of local markets, providing women with business, marketing and production skills via workshops, and shortening the value chain by selling products directly from producers to end-buyers and omitting middlemen.

12. Conclusion and research outlook

In this thesis we posed the question of whether fibrous plant products are an income source for rural women of the Namibian Zambezi Region and, in the event of this being true, to what extent they can provide financial benefits. To answer these questions, we reviewed scientific literature on this topic and conducted semi-structured interviews in different locations of the Zambezi Region. We chose to exemplify our questions on the fibrous plant products of grasses, reeds and palm, with a focus on baskets made of palm leaves. Now, in answer to these questions, we conclude that fibrous plant products are indeed an income source many rural women in the Zambezi Region engage with.

Regarding thatch grasses, we conclude that there are a variety of grass species with different and sometimes multiple purposes. The most common use of grasses in the Zambezi Region is the thatching of houses. The preferred grasses in this regard are *Aristida pilgeri* (*kachila* in Masida Community Forest), *Heteropogon contortus* (*kachila mende* in Masida Community Forest and *katondo* in Kwandu Conservancy), *Aristida meridionalis* (*mutowandavu*), *Cymbopogon caesius* (*namanunka*), *Aristida stipitata stipitata* (*kachila* in Kwandu Conservancy) and *Heteropogon melanocarpus* (*mpako*). Other uses of grasses include courtyard fencing, brooms, baskets, cattle fodder, and floor mats. Grasses are bundled and sold in the villages and along the road to resellers, then further to construction companies and finally to the end users such as lodge owners.

We identified three different reed species, namely *Phragmites australis* (*luwondowe*/*mataka*/*mutaka*/*mbu*) and two other species locally called *lushuvu* and *ngondo*. Reeds are mainly used as courtyard fencing, but also to make traditional sleeping and table mats, large baskets and fishing equipment. *Phragmites australis* is the most-used species of the three. Reeds are also bundled but in contrast to thatch grasses they are only sold locally and are bought directly by the end users without the involvement of a longer value chain.

Baskets in the Zambezi Region are coiled, and made by wrapping and stitching *Hyphaene petersiana* palm leaves around a base of grass called *mushange*. Prior to the weaving, the palm leaves are dyed with a variety of plant and artificial dyes such as *Berchemia discolor* and rusty cans to achieve colorful looks that appeal to buyers. Baskets are sold at village level, often in community-run craft centers such as the Mashi Craft Market in Kongola or to resellers or NGO buyers selling and marketing the crafts in retail shops and online, as is the case with the Rössing Foundation and the Omba Arts Trust.

When it comes to the economic potential of fibrous plant products, it can be said that it is a very important income source for many impoverished rural women and their families. Regarding the financial benefits from fibrous plant products, crafts have the biggest potential, followed by grasses and lastly reeds. However, the individual benefit range greatly depends on the resources and skills women in rural communities can access, and it is crucial to acknowledge that these strategies are a supplement to other income sources such as farming

in order to have a diversification of livelihood strategies. Thereby rural households can generate income from other sources if one source fails because of climatic changes, droughts, an illnesses that prevents a person from performing hard physical labor, or due to other factors. The sale of fibrous plant products thereby creates a safety net and a buffer against poverty in case other income sources fail. This ties in with the fact that NTFPs are generally less susceptible to climatic changes than crops. As evident from all our interviews, the trade with thatch grass, reed and crafts made from fibrous plant products are income-generating strategies that are often pursued in combination as they can be practiced simultaneously and within the constraints women experience. These constraints include the lack of formal education, especially among the older generations, health restrictions, the limited cash-income and salaried labor opportunities, institutional constraints, and the culturally ascribed gender roles excluding women from male-dominated jobs and limiting both their access to resources and their mobility. NTFPs are often one of the few resources rural women can access, as for example they often do not own cattle, and the usage of natural products is part of their cultural skills and knowledge, offering a good option for generating income. Furthermore, little startup capital and few tools are needed to engage in these livelihood strategies, making them suitable for those living in poverty.

However, there are challenges and possible disadvantages that are important to consider when looking at fibrous plant products as an income source. These include that NTFPs such as thatch grass are only beneficial as supplemental income sources if the cash incentives from them do not interfere with other very important livelihood strategies such as subsistence crop farming. For example, some people choose to continue harvesting grasses when the farming season has already started, which can lead to them missing the first rains, and subsequently to lower yields. Other issues are that women have difficulties accessing markets and often do not have purchase contracts with buyers that would ensure them a constant supply of cash. Such contracts in most cases only exist when crafts are sold to organizations such as the Omba Arts Trust. Factors limiting financial benefits from fibrous plant products are high transportation costs, grass or reed permits as mentioned by some respondents, competition with cheaper products from Asian markets in the case of crafts, and the lack of standardization. This last factor is a particular problem with thatch grass, as bundle sizes and prices vary, which subjects them to rebundling and reselling by middlemen before reaching thatching companies and end users. Regarding the thatch-grass value chain, the treatment of bundles should be exercised at the village level in order to avoid middlemen collecting larger profits and to increase the financial benefits for communities. In addition, women can struggle with income generation as their perspectives are frequently overlooked in policies and decision-making processes. Having said that, the latter aspect can be improved through the engagement of women in the trade with NTFPs. This is because the income generation can lead to the eco-

nomic empowerment of women. Empowerment happens when women can increasingly exercise choice, participate in decision-making processes, and gain confidence from being self-reliant and self-employed. They learn business skills and earn money on their own. This money can give them the financial security and the independence to choose partners more freely and to leave possibly abusive relationships, as they no longer have to rely on a man for access to food and land. But even when women lose the money they earned from trading crafts and NTFPs to their husbands, they are still empowered as for example they gain new skills when marketing and trading their products. The weaving and harvesting of NTFPs also leaves room for women to discuss topics and exchange ideas without the presence of men, as fibrous plant products are a primarily female domain. Women's economic empowerment is a way to reduce poverty as women can make investments for the future such as acquiring cattle or being able to finance the education of their children. Women are known to spend more money on their families' well-being, and this underlines why cash-generating opportunities such as the trade with fibrous plant products is so crucial, especially when practiced along with other livelihood strategies. We showed that the earnings from the trade with fibrous plant products were used to cover basic needs such as food and clothes as well as to pay for children's education. Thereby fibrous plant products have a considerable impact on the livelihoods of individual families and the potential to alleviate poverty in some cases; however, it is important to note that poverty will not be erased by this livelihood strategy alone. Nonetheless it is an income source that is worth acknowledging and considering in sustainable-development programs as a way to support rural, impoverished women. One aspect we want to highlight is that the use of natural resources can only be beneficial for rural communities if sustainable harvesting practices and resource monitoring are in place. The women we interviewed were largely aware of such practices, but this topic needs further attention. As of now, fibrous plant resources in Namibia are not depleted or significantly decreasing; however, women in our interviews did indicate that the availability of certain species has decreased. The cultivation of basketry resources has been facilitated by the Omba Arts Trust for decades, and the possible cultivation of grasses and reeds should be given attention and further research. Further research is also needed to identify and assess reed resources in the Zambezi Region. Regarding empowerment, men's views and their perceptions of women's work would be interesting to explore.

To conclude, the income generated from fibrous plant products exemplified by thatch grass, reeds and woven crafts is essential for rural households and in particular women to cover everyday needs and to enable the financing of poverty-reducing measures such as children's education, yet it is only a supplement to other livelihood strategies such as subsistence farming and very rarely suffices as the sole income source.

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14. Appendix

14.1. List of interviews

Citation	Date	Informant(s)	Form of Interview
NSG 14.09.2023	14.09.2023	16 women in Sikunga Conservancy	Semi-structured
R 17.09.2023	17.09.2023	Rosa, basketmaker	Semi-structured
C 17.09.2023	17.09.2023	Catherine, basketmaker	Semi-structured
JM 18.09.2023	18.09.2023	Janet Matota, IRDNC	Unstructured
Masida 20.09.2023	20.09.2023	17 people in Masida Community Forest	Semi-structured
Kwandu 20.09.2023	20.09.2023	15 people in Kwandu Conservancy	Semi-structured
RW 21.09.2023	21.09.2023	Three female reed harvesters	Semi-structured
OL 21.09.2023	21.09.2023	Older Lady in Morero	Semi-structured
DM 21.09.2023	21.09.2023	Doreth, basketmaker	Semi-structured
C&P 26.09.2023	26.09.2023	Catherine & Precious, basketmakers	Semi-structured
UW 26.09.2023	26.09.2023	Basketmaker, female	Semi-structured
CP 31.01.2024	31.01.2024	Charlie Paxton, NGO worker	Semi-structured
KR 07.02.2024	07.02.2024	Karin le Roux, ‘Omba Arts Trust’	Semi-structured

Table 5: List of interview citations and respective interviews

14.2. Photographies of grasses, reeds and basket materials

Photos of grass and reed species (Taken by the authors)	**Latin name**	**Indigenous name (sl=siLozi, cf=ciFwe)**
	*Hyperthelia dissoluta*	*Bosho (sl)* *Mutengenyi (cf)*
	*Cymbopogon caesius*	*Namanunka (sl/cf)*
	*Heteropogon contortus*	*Kachila mende (sl)* *Katondo (cf)*
	*Aristida adscensionis*	*Muraranyati (sl)* *Mboke (cf)*

Photos of grass and reed species (Taken by the authors)	**Latin name**	**Indigenous name (sl=siLozi, cf=ciFwe)**
	*Juncus kraussii* (Assumed)	*Mumbuwa (sl/cf)*
	*Setaria verticillata*	*Kanamulama (cf)*
	*Eragrostis pallens*	*Muxhova-xhova (cf)*
	*Eragrosis lehmanniana*	*Muxhova-xhova (sl)*

Photos of grass and reed species (Taken by the authors)	**Latin name**	**Indigenous name (sl=siLozi, cf=ciFwe)**
	*Aristida meridionalis*	*Mutowandavu (sl/cf)*
	*Heteropogon melanocarpus*	*Muchele (sl) Mpako/Muchele (cf)*
	*Aristida pilgeri*	*Kachila (sl)*
	*Aristida stipitata stipitata*	*Kachila (cf)*

Photos of grass and reed species (Taken by the authors)	**Latin name**	**Indigenous name (sl=siLozi, cf=ciFwe)**
	*Phragmites australis*	*Luwondowe* *Mbu* (Mbukushu) *Mataka* (sl) *Mutaka* (cf)
	*unknown*	*Lushuvu*

Table 6: Photos of grass and reed samples with their respective Latin and indigenous names

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