

BINDURA UNIVERSITY OF SCIENCE EDUCATION

DEPARTMENT OF NATURAL RESOURCES

NON-TIMBER FOREST PRODUCTS AND RURAL LIVELIHOOD IN WARD 4 OF MATEPATEPA BINDURA MASHONALAND CENTRAL, ZIMBABWE.



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DEDICATION

I dedicate this to our LORD and savior Jesus Christ and all those who believe in him, and my late brother Darlington Mapeto who always believed in me since I started.

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I am very grateful to my family, my mother Susan Chiwale, my brothers and my sisters who showed me unconditional love and support during this journey. I am also grateful to my partner Lessanio R T Kuyeli who helped me throughout. And lastly I am thankful to all my friends who stood by me. Not forgetting my supervisor Dr L Mujuru who worked tirelessly during the project process.

ABSTRACT

The role played by non-timber forest products in enhancing rural livelihood has been recognised all over the world. Non-timber forest products greatly contribute to medicine provision, income generation and enhances cultural values. A study was done in WARD 4 in Matepatepa Bindura to determine socio-economic contribution of NTFPs. Results showed that about five types of non-timber forest products were harvested in this area including wild fruits, medicinal plants, honey, fiber and vegetables and these contributed to the local people's livelihoods in form of food (90%), thatching grass (57%), medicines (53.3%) and rituals and ceremonies (35%). Species like *Parinari curatellifolia* and *Phragmites australis* are used for rituals and ceremonies. Although the forest products played a crucial role, their harvesting had a negative impact of soil and land degradation. There is need to train local people in sustainable forest management to maximize forest production potential. Training includes sustainable NTFP harvesting techniques.

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CHAPTER ONE

1.1 Background

Non-timber forest products (NTFPs) are any product or service other than timber that is produced in forests. They include fruits and nuts, vegetables, fish and game, medicinal plants, resins, honey, mushrooms, essences and a range of barks and fibers such as bamboo, rattans, and a host of other palms and grasses. These products have recently gained global attention because of their ability to contribute to poverty reduction, rural development, and biodiversity conservation (Mufandaedza et al., 2015). They are defined as "goods of biological origin other than timber that are extracted from forests, including plants, animals, and fungi" (Rahman et al., 2021). NTFPs are critical sources of income and livelihoods for millions of people worldwide, particularly those living in or near forested areas (Kugedera et al., 2021).

According to Shackleton, (2015), over two thirds of Africa's 600 million people rely on forest products, either for subsistence or for cash income derived from the wide range of products. The NTFPs have played a significant role in the livelihoods of rural communities for centuries. An analysis of countries in Southern African region by Kugedera et al., (2021) showed that small forest products producers received more than 50% of their income from forest based enterprises, except in Botswana where it was lower. In Malawi, Epanda et al., (2020) showed high levels of dependence on forests for income, with households deriving about 30% of their incomes from forests. In Tanzania, households derived more than 50% of their cash incomes from the sale of NTFPs such as charcoal, honey, wild fruits, and firewood Peri-urban households derived almost 70% of their cash incomes from the woodlands (Mabhare et al., 2018). In this regard the use of NTFPs is deeply rooted in African culture and tradition, for food, medicine, and spiritual purposes, especially in areas where alternative sources of income are limited. NTFPs have been used for generations by rural communities, and they are an essential component of the rural economy (Suleiman et al., 2017).

Zimbabwe, like many other African countries, has a rich diversity of forests that provide sources of various NTFPs including fruits, nuts, roots, bark, and leaves, which are used for medicinal and

other purposes (Weyer et al., 2018). These forests also provide essential ecosystem services such as carbon sequestration, soil conservation, and water regulation (Mabhare et al., 2018). They also support biodiversity conservation by providing habitats for a variety of plant and animal species. NTFPs play a crucial role in the livelihoods of rural communities in Zimbabwe, providing food, medicine, income, and cultural significance. Forests and trees also conserve and sustain the ecosystems for future generations (Shackleton, 2015) and serve as important ecological resources that support biodiversity conservation and mitigate climate change (Rist et al., 2012). There has been growing concern about the unsustainable harvesting of NTFPs, resulting in the depletion of forest resources and biodiversity loss.

1.2 Problem Statement

Study based on NTFPs effects on the sustainability of the environment and governance and policy implications of NTFPs and their economic importance have been carried out in the Southern African region with very few focusing on the Zimbabwean context. Other studies focused on the contribution of NTFPs to the transformation of livelihoods in Zimbabwe (Mufandaedza et al., 2015; Suleiman et al., 2017 Kugedera et al., 2021). Although they provide important information on the importance of NTFPs to rural livelihoods, the sustainability of the resource due to their harvesting is not well documented. In this regard, the potential benefits of non-timber forest products (NTFPs) and their contribution to livelihoods in some parts of Zimbabwe is less documented. This research therefore, investigates the role of NTFPs in the livelihoods of local communities in Bindura.

1.3 Aim

To assess the contribution of NTFPs to the livelihoods of rural communities of Matepatapa in Bindura.

1.4 Objectives

- To identify the NTFPs harvested and used by rural communities of Matepatapa in Bindura
- To determine the contribution of NTFPs to rural livelihood in Matepatapa, Bindura
- To identify factors determining dependency on NTFPs in Matepatapa, Bindura

- To identify effects of harvesting of NTFPs on the environment in Matepatepa, Bindura

1.5 Research Questions

1. What are the NTFPs harvested and used by rural communities in Matepatepa, Bindura?
2. What is the contribution of NTFPs to rural livelihoods in Matepatepa, Bindura?
3. What are the factors leading to dependency of communities on NTFPs in Matepatepa, Bindura?
4. What are the effects of NTFP harvesting on the environment in Matepatepa, Bindura?

1.6 Justification of the study

The results of the study will be useful to various stakeholders. Results contribute to the existing literature on NTFPs and livelihoods, providing insights on the sustainable use and management of NTFPs, and identifying research gaps for future studies. Research and learning institutions will benefit from the results by improving their community engagement, and promoting sustainable forestry. Policy makers will benefit from the evidence-based results with potential to transform livelihoods

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Non-timber forest products (NTFPs) are products or services other than timber that are produced in forests. These include fruits and nuts, vegetables, fish and game, medicinal plants, resins, essences and a range of barks and fibers such as bamboo, rattans, and a host of other palms and grasses. These products have recently gained global attention because of their potential to contribute to poverty reduction, rural development, and biodiversity conservation (Mufandaedza et al., 2015). NTFPs are critical sources of income and livelihoods for millions of people worldwide, particularly those living in or near forested areas (Kugedera et al., 2021).

2.2. The Role of NTFPs in Rural Households

Non-timber forest products have been an important source of livelihood for rural communities for centuries. Several studies have shown that NTFPs contribute to a larger extent to households income and livelihoods in rural areas (Heubach et al., 2011; Sunderland and Ndoye, 2004). In a study of over 900 households across West Africa, Heubach et al. (2011) found that NTFPs contribute on average 22-25% of total household income. The contribution was higher for the poorest households. Similar results were obtained in a study in Tanzania, where the poorest households derived up to 90% of their cash income from NTFPs (Sunderland and Ndoye, 2004). Poverty reduction and improved livelihoods from NTFPs have also been reported in other countries like India (Kant and Kumar, 1999), Mexico (Gerhardinger et al., 2009), and Indonesia (Pfund et al., 2011).

The role of NTFPs in livelihoods varies by season. During rainy or farming seasons, agricultural activities may be prioritised, but in the dry season, NTFPs become crucial for income and sustenance. Some NTFPs are seasonal delicacies and closely tied to cultural traditions, e.g. bamboo shoots in North East India. There is debate around sustainable levels of harvest for various NTFPs. NTFPs livelihoods are often characterised by informality and illegality. Collectors frequently lack legal permits for harvest and sale. Integration into formal value chains could increase incomes, but may also present barriers for poor households. Policies around NTFP governance need to balance

livelihood interests and sustainability. Some key challenges in NTFP sectors include lack of secure resource access for collectors, price fluctuations due to demand and supply changes, and poor integration into formal markets (Belcher and Schreckenberg, 2007). Addressing these issues through policy and market interventions can significantly enhance how NTFPs aid to rural livelihoods. NTFPs are particularly important for women in rural communities. Women are often involved in collecting and processing NTFPs, and the income generated contributes significantly to household food security and children's education. Studies in Africa and Asia have found that 40-60% of NTFP harvesters and traders are women (Kant and Kumar 1999; Sunderland and Ndoye 2004.)

2.3 Economic Value NTFPs

The forest is an important resource base and the products are important for the livelihood of rural communities due to several reasons. First, they are often the only source of cash during non-farming seasons or periods of drought or other hardships (Arnold, 1995). Second, marginalized groups like women and landless people are often involved in NTFP collection and sale, hence contributing to their livelihood (Kant and Kumar, 1999) and (Sunderland and Ndoye, 2004). Third, NTFPs require little capital to harvest and process, hence accessible even to the poor (Belcher and Schreckenberg, 2007). Finally, profits from intermediaries in NTFP supply chains are often quite high, though only a small fraction of profits actually reach collectors (Sunderland and Ndoye, 2004). Income from NTFPs is often supplemental. While NTFP sales may significantly contribute to income, particularly in certain seasons, most households depend on a diversity of sources for their livelihood, including agriculture, livestock, wage labor, and remittances. NTFP dependence varies greatly based on location, community, and product. There is increasing global demand for certain NTFPs, e.g. shea nuts, baobab fruit, acai berries, and argan oil. Private companies have begun investing in developing supply chains of some crops. This could benefit livelihoods but also threatens local food security and traditional livelihoods if not properly regulated. More research is needed on the economic importance and sustainable management of NTFPs. Improved data can help governments develop better-informed policies to support livelihoods based on sustainable and equitable NTFP harvest and trade. In summary, NTFPs play a significant role in supporting rural livelihoods by providing food, shelter, medicines as well as income and employment, especially for the poor and marginalized groups.

2.4 Dependency of people on NTFPs

NTFPs contribute greatly to household income and food security for many communities. A study of over 8,000 households across 24 developing countries found that 22% of total household income came from NTFPs (Vedeld, 2007). In some countries like Cambodia, NTFPs make up 50-90% of total household income in rural, forested areas (FAO 2019). NTFPs are also crucial for nutrition, providing essential macro- and micronutrients, especially for poor households. A study in 12 developing countries found that on average, 22% of protein intake came from NTFPs (Powell 2011). The dependence on NTFPs is highest for marginalized groups like indigenous peoples, women, landless populations, and other minorities. These groups often have limited access to alternative livelihood options and stronger cultural ties to the forest. Studies show indigenous women can derive up to 65% of their household income from NTFPs (Shackleton et al. 2011). Landless populations also rely heavily on NTFPs since they have no agricultural land.

2.5 Impacts of NTFPs Extraction on the Environment

Although there is vast global demand for NTFPs, unsustainable and inequitable commercialization threatens local livelihoods. Overharvesting of NTFPs can lead to scarcity, threatening both subsistence use and market opportunities. Rural communities often have weak property rights over NTFP resources, limiting their participation in commercial markets. Powerful outside interests are frequently able to secure exclusive access to NTFP markets, leaving only a small share of the benefits for local harvesters (Belcher and Kusters 2004). Other threats include loss and degradation of forests from land conversion, overuse, and climate change. Deforestation and forest degradation pose severe threats to the availability of NTFPs. Rising global temperatures also change where plants can grow and how they produce helpful biological compounds. Combined with other stressors like overharvesting, these threats to forests constitute major perils for communities that depend on NTFPs.

CHAPTER THREE

3.0 Methodology

3.1 Description of study area

The study was done in Matepatepa area in ward 4, situated about 22 kilometers north of Bindura, Zimbabwe (Fig 3.1.3). This area is in Mashonaland Central Province and is in the Highveld region, 3,800 to 4,000 meters above sea level. The area is classified as ecological region 2A and typically receives annual rainfall between 750 mm and 900 mm, which supports the growth of diverse flora and fauna. The mean annual rainfall for Bindura is 850 mm with the heavier rainfall falling in January (Mavhura et al., 2022). The mean annual temperature for the area is 20-22 degrees Celsius (Moyo et al., 2012).

The vegetation in the area is classified as savanna woodland and characterized by a mix of trees and grasses. The dominant tree species include *Colophospermum mopane*, Baobab *Adansonia digitata*, and Msasa *Brachystegia spiciformis* while grasses such as *Themeda triandra*, *Cynodon dactylon*, and *Panicum maximum* are also common. The soils are largely determined by the underlying geological formations, which are mainly granites and gneisses and generally classified as Ferrallisols (Red Soils). The soils are generally acidic and nutrient-poor (Mavhura et al., 2022) and prone to erosion due to their coarse texture and low organic matter content. The Ferrallisols are also well-draining, which can be a limiting factor for plant growth, particularly during the dry season when moisture retention in the soil is critical for plant survival.

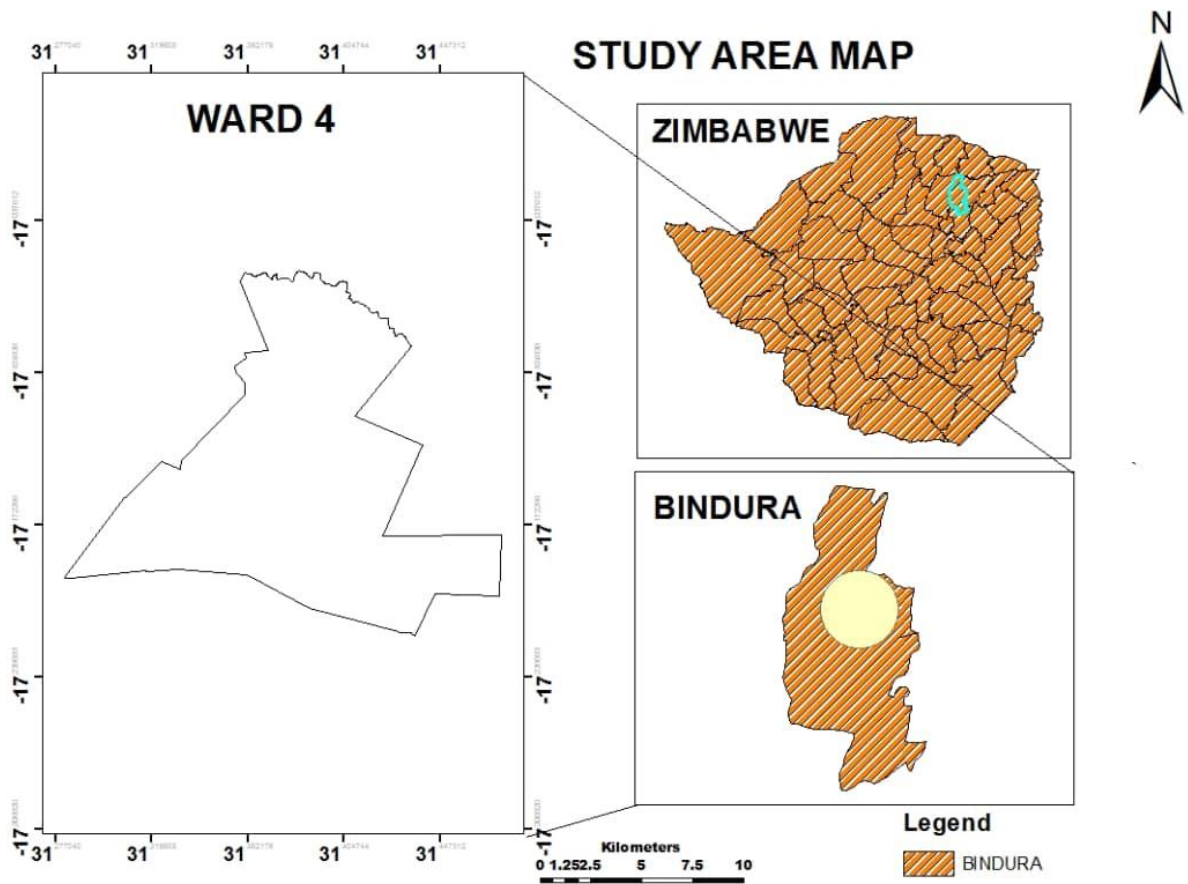


Figure 3.1.3 Study map of Ward 4 Matepatepa Bindura

3.2 Research Design

A descriptive research design was employed in the study of the contribution of non-timber forest products to livelihoods in the Matepatepa area. The study began with an exploratory phase, which involved gathering information from various sources, such as literature review, to identify the types, uses, and management of NTFPs in the area. The exploratory phase also involved purposive selection of eight key informants, such as NTFP harvesters, traders, and consumers, who provided insights on their perceptions, practices, and challenges related to NTFP use and management. The descriptive phase of the study involved collecting primary data through surveys, interviews, and observations, to describe the contribution of NTFPs to livelihoods in the Matepatepa area. The survey targeted households for data on the types, frequency, and income generated from NTFP

harvesting, trading, and consumption. The interviews targeted key informants and explore their perceptions, practices, and challenges related to NTFPs use and management. The observations were conducted in the field and documented different types of NTFPs that are available in the area, and which are utilised by the communities.

3.3 Target population and Sampling

The target population of the study includes the community members in ward 4 in Bindura who harvest and use the NTFPs. The District has a total of 400 NTFPs collectors in Matepatepa. About 25% of the collectors were purposefully selected. This is according to Bostley (2019), who stated that a sample which is over 5% of the population gives relevant and adequate results. A purposive sampling strategy was used to select participants, including households and community members in the collection, processing, and trade of NTFPs in the area. The sampling population had 400 farmers involved in the harvesting and trade of NTFPs. Purposive sampling allowed the selection of respondents based on the depth of information on the research (Pawar, 2020).

3.4 Data collection procedure

The data was collected using a structured questionnaire (Appendix 1). The questionnaire collected data on the types of NTFPs harvested, the uses of these NTFPs, their contribution of these to livelihoods. The questionnaire was piloted to 10 people to identify errors and to improve on the clarity of the questions. After piloting, the questionnaire was adjusted and corrected and then administered to 100 people.

A total of ten Key informants were interviewed using a semi-structured interview. These includes two ward environment technicians, two extension officers, two non-governmental representatives from Christian Aid and Bio Innovation Zimbabwe, two representatives of the private off takers from Kaza oils and Bayoba and two community leaders. One focus group discussion was held with a mixture of community members, leaders, government stakeholders and authorities comprising of 15 participants. The reason for one focus group is because of time and cost constraints. The FDG was at the community hall in Matepatepa which is central and accessible to all the respondents in the study.

3.5 Data analysis

Data was analysed using thematic analysis. Quantitative data was analysed using SPSS and Microsoft Excel using descriptive and comparative statistics such as Paired T-tests to ascertain the mean differences between the income and food security status before and after introduction of the communities to NTFPs.

3.6 Ethical Considerations

Informed consent was obtained from the participants, including explaining the research purpose, the participant's role, the risks, and benefits of participation, and the right to withdraw from the study at any time. The confidentiality of the participants' data was maintained throughout the research process. Furthermore, the study will acknowledge and respect the knowledge, values, and beliefs of the community and ensure that the study does not exploit or stigmatize them. Finally, the study adhered to the highest ethical standards and contributes to the advancement of knowledge, sustainable development, and social justice.

CHAPTER 4

4.0 RESULTS

4.1 Types of NTFPs harvested in Matepatepa Bindura

The majority (93.3%) of the respondents indicated that they mainly harvest wild fruits, medicinal plants (53.3%) while others harvested vegetables, honey, fiber and grass (Table 4.1),

Table 4. 1: NTFPs harvested by the respondents in the study

NTFPs harvested	Frequency	Percentage
Wild Fruits	56	93.3
Medicinal Plants	32	53.3
Vegetables	27	45.0
Honey	11	18.3
Fibre and grasses	24	40.0

The majority (88.3%) of the respondents harvested *Ziziphus mauritiana* (Masau), followed by *Syzygium cordatum* (Hute) (85%) and *Vitex payos* (tsubvu/chocolate berry) fruits (Table 4.2). The least of the harvested wild fruit species is *Sclerocarya birrea* (marula) 31.7%.

Table 4. 2: Wild fruit species harvested

NTFPs Harvested	Frequency	Percentage
<i>Vitex payos</i> (tsubvu/chocolate berry)	36	60.0
<i>Uacapa kirkiana</i> (mazhanje/sugarplum)	28	46.7
<i>Ziziphus mauritiana</i> (masau)	53	88.3
<i>Annona senegalis</i> (maroro)	21	35.0
<i>Ficus carica</i> (maonde)	15	25.0
<i>Syzygium cordatum</i> (hute)	51	85.0
<i>Sclerocarya birrea</i> (marula)	19	31.7
<i>Strychnos spinosa</i> (matamba)	34	56.7

Harvesting is mostly done by women (wild fruits) whilst fuelwood and medicines are mostly harvested by men in the community. Vegetables are mostly harvested by women whilst honey and fiber are mostly harvested by men.

4.2 Contribution of NTFPs to rural livelihoods

NTFPs were mainly used as food (90%) whilst few (10%) people use fiber in their lives (Figure 4.1).

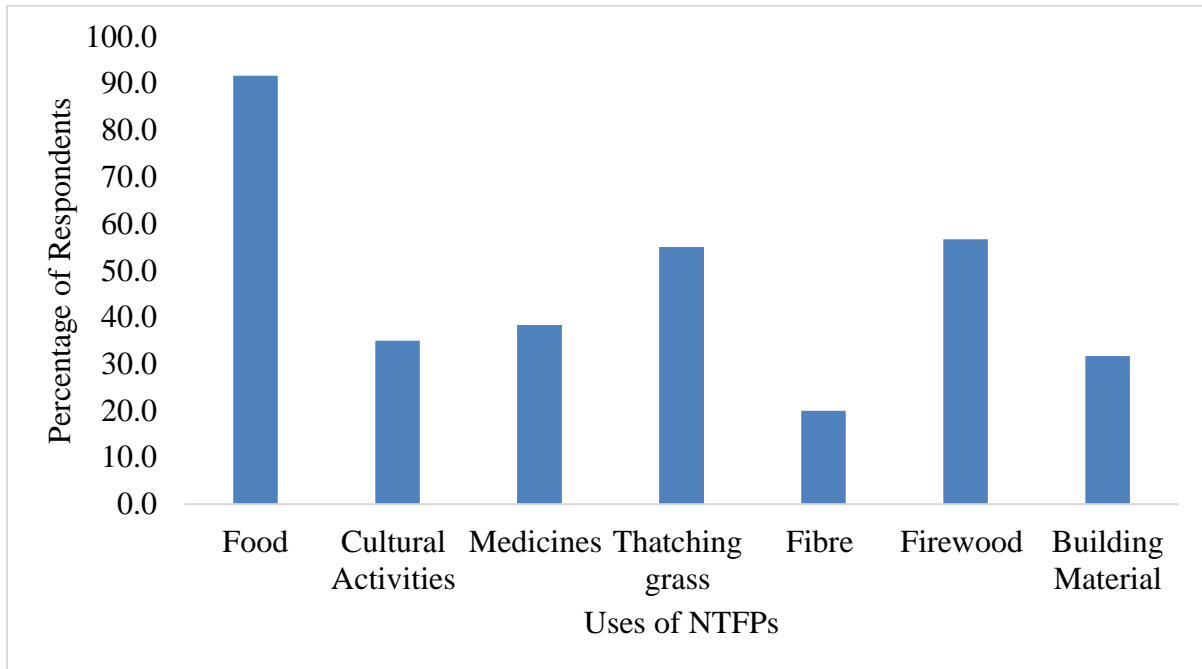


Figure 4. 1: Contribution of NTFPs to Livelihoods

The respondents usually harvest *Myrothamnus flabellifolius* leaves, roots of *Annona stenophylla* (Muroro) and *Aloe greatheadii* Schönland (Gavakava), and roots of *Brachystegia boehmii* (Mupfuti) for medicinal purposes.

The highest average annual income for the respondents was farm income (US\$711.12) which contributed 55.4% of the income followed by NTFPs (US\$452.12) which contributed 35.2% of the household income (Table 4.3). There were significant differences between incomes from three different sources of income.

Table 4.3: Average Annual Household Income from farm and non-farm activities

Type of Income	Average Annual Household Income	Std deviation	Income Share (%)
Farm Income	711.12	2.453455	55.4***
Non-farm Income	121.23	3.243545	9.4***
NTFPs Income	452.12	1.26777	35.2***

Wild fruits contributed the highest income (45%) followed by firewood contributing 22.1% of total household income (Table 4.4).

Table 4. 4: NTFPs and their share contribution to household income

NTFPs	Number of Households Involved	Percentage Proportion of the households	Proportion of NTFPs Income
Firewood	35	58.3	22.1
Wild fruits	49	81.7	45.6
Bamboo	12	20.0	0.6
Honey	15	25.0	7.8
Vegetables	12	20.0	6.3
Medicines	19	31.7	5.7
Fibre	11	18.3	0.1
Grass and thatch	33	55.0	4.5
Broom grass	29	48.3	5.7
Other	5	8.3	0.6

Table 4.5 shows that Farm income (65.26%) contributed highest income followed by NTFPs income (25.23%). Under medium income respondents, the highest contributor of income was NTFPs income (47.74%) followed by Farm income (44.95%). Farm income was significantly higher whilst non-farm income and NTFPs income were not statistically significant.

Table 4. 5: Share of income by average income levels

Source of Income	High Income		Medium Income		Low Income		Kruskal- Wallis test (sig.)
	Income	%	Income	%	Income	%	
Non-Farm Income	59.23	9.52	33.13	7.31	31.08	14.74	0.134
Farm Income	406.2	65.26	203.8	44.95	101.1	47.95	0.001
NTFP income	157.05	25.23	216.4	47.74	78.65	37.29	0.065

4.3 Factors affecting dependency Levels of Households on NTFPs

Educational level ($p=0.0026$), Size of land ($p=0.03$), Farm income ($p=0.04$), non-farm income ($p=0.002$) were significant factors affecting household dependency on NTFPs (Table 4.6). An increase in 1 acre of land leads to a decrease in NTFPs income by \$23.77, whereas an increase in 1 stage of education leads to an increase in NTFPs income by \$12.53. In addition, an increase in \$1 of farm income leads to a reduction in NTFPs income by \$4.88 whereas an increase in non-farm income by \$1 leads to a decrease in NTFPs income by \$2.78.

Table 4. 6: Regression Output on socio-economic factors and NTFPs income

Model	Unstandardised		Co- Standardised co- efficiencies	t	Sig.
	B	std. Error			
Constant	124.22	3.445			
Educational Level	12.53	2.123	10.98	1.566	0.026*
Size of land	-23.77	1.122	-21.87	-2.6778	0.003*
Household size	2.89	0.344	1.97	2.099	0.123
Farm Income	-4.88	0.123	-32.19	-1.887	0.004*
Non-farm Income	-2.78	1.223	-0.76	-0.0998	0.002*
Age	-7.85	0.445	-3.84	-0.6654	0.765
Sex	-1.96	0.251	-1.77	-1.112	0.887
Employment Type	0.65	0.986	0.02	1.998	0.876

* sig at 0.05 significance level, R=5.54 R-squared (adjusted)=5.28

The values $R = 5.54$ and $R\text{-squared (adjusted)} = 5.28$ refer to the goodness-of-fit measures of the regression model. They provide information about how well the model fits the observed data. $R\text{-square}$ of 5.28 implies that the independent variables account for 52.8% of variation on the dependent variable.

4.4 Effects of NTFPs harvesting on the environment

Deforestation and forest degradation were the major effects of harvesting NTFPs (91.7%) followed by soil degradation (81.7%). About 55% of the respondents stated that NTFP harvesting altered habitats.

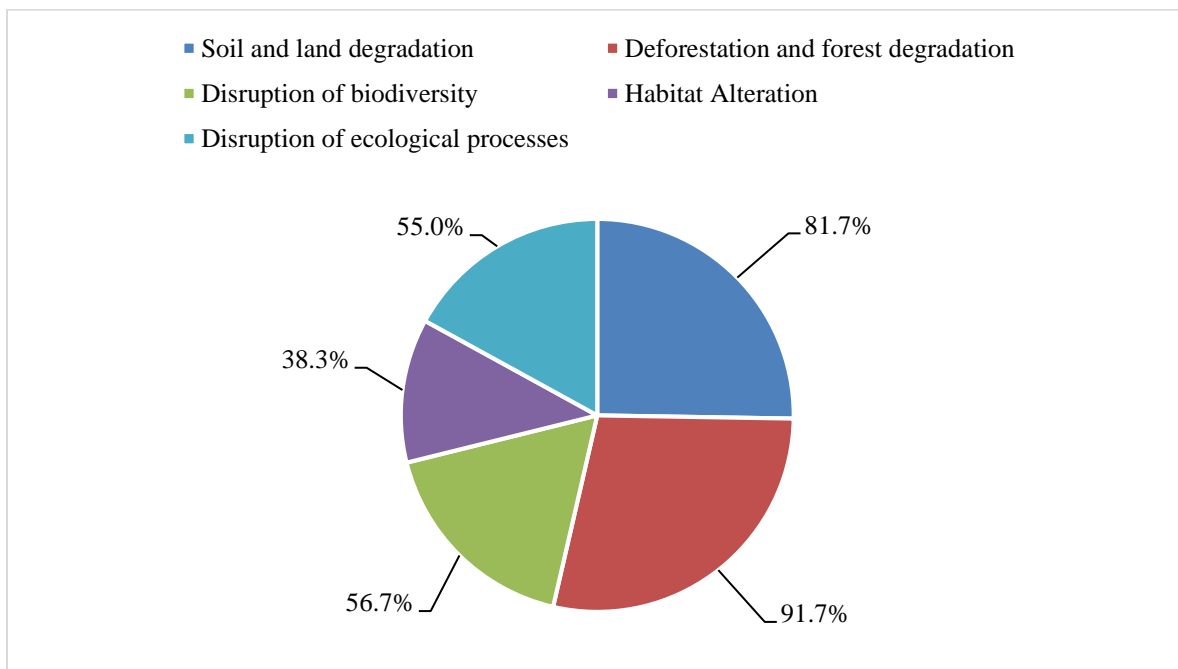


Figure 4.4: Effects of NTFPs harvesting on the natural resources

CHAPTER 5

5.0 DISCUSSION

5.1 NTFPS HARVESTED IN WARD 4 MATEPATEPA

The results show that, most families in ward 4 Matepatepa relied heavily on non-timber forest products (Table 4.1). A number of forest products that include fruits, mushrooms, honey and insects are mainly harvested for food though some are channeled towards economic gains. This is similar to a study carried out by Mufandaedza (2015) which showed that NTFP were popular because of their potential to reduce poverty, improve rural development and conserve biodiversity. The climate in this area is conducive of tree growth and hence availability of fruits, barks and roots as well as insects that inhabit in trees. Table 4.2 shows that wild fruits were mainly harvested. This may be because some fruits sell better than others do thus giving more income. In addition, some of the fruits contribute to rural livelihood as they aid in household food security.

5.2 CONTRIBUTION OF NTFPS TO RURAL LIVELIHOOD

Results from the study (Figure 4.1) indicate that NTFPs contributed to rural livelihoods for various uses. This is similar to a study carried out by Heubach et al (2011), and Sunderland and Ndoye (2004) who found that NTFPs contributed a larger extent of household income and livelihoods for people living in rural areas. Other activities that contributed to the livelihood of rural people in Ward 4 Matepatepa are farming and non-farming activities. For consumption and economic gains fruits, vegetables and honey were collected whilst barks and roots were used as medicine for different diseases like headaches, toothaches and back pains. Results from this study also showed contribution of NTFPs culturally and traditionally where some of the forest products like reeds were used in traditional shrines and cultural activities such as rituals. This is similar to results of Chandra et al, (2019) who documented about thirty-seven plant species that are used for religious and ritualistic purposes. In this study different NTFPs also contributed to household income after selling them (Table 4.4). Sunderland and Ndoye (2004), obtained similar results in Tanzania where the poorest communities derived about 90% of their income from NTFPs.

5.3 ECONOMIC CONTRIBUTION OF NTFPS

Results show the contribution of NTFPs to household's income as well as contribution of other activities, which include farm and non-farm activities (Table 4.3). Income from farm and other non-farm activities helps reduce reliance on forest products, as supported by Arnold (1995) who highlighted that NTFP dependency is mostly high during non-farming seasons showing that reliance on NTFPs is less during farming seasons.

Wild fruits contributed the highest NTFP household income followed by firewood (Table 4.4). This is supported by Kudegera et al, (2021) who stressed that NTFP were critical as income and livelihood sources especially for people living in and around forested areas. This might be because of the unstable economy, which therefore increases dependency on NTFPs by communities. Shackleton (2007) suggested that limited access to formal jobs and other income-generating activities causes people to seek alternatives such as NTFPs as sources of income to support their livelihood especially during tough economic times. Heubach et al, (2011) found similar results while working with 900 households in West Africa and NTFP contributed an average of 22-25% of total household income.

Income from NTFP (Table 4.5) was generally high for low and medium income households due to the fact that these households rely heavily on forest products and have unstable income generating sources. Belcher and Schreckenberg (2007) observed that NTFPs require little capital to harvest and process, hence accessible even to the poor.

5.4 FACTORS AFFECTING DEPENDENCY LEVELS OF HOUSEHOLDS ON NTFP

The results reveal that the greatest factor affecting dependency of communities of NTFP was education level (Table 4.6). Factors like size of land and farm income cause a reduction in NTFP income suggesting reduction on NTFP dependency. This is because most communities that depend on NTFP harvesting are poor and lack basic education thus most of them are not formally employed. In addition, lack of land also contributes to reliance on forest products and this is supported by Kant and Kumar (1999) who observed that marginalised groups like women and landless people are often involved in NTFPs collection and sale, hence contributing to their livelihood.

5.5 EFFECTS OF NTFP HARVESTING ON NATURAL RESOURCES

Figure 4.4 shows that deforestation and forest degradation were the major results of harvesting non-timber forest products including soil degradation. Collection of roots sometimes exposes the trees to various agents of erosion, like water and wind and most trees wither and die. Deforestation and forest degradation poses severe threats to the availability of NTFPs due to weak property rights regimes and ineffective legal frameworks in rural communities over natural products. Similarly, Belcher and Kusters (2004) added that powerful external interests frequently secure exclusive access to NTFP markets, leaving only a small share of the benefits for local harvesters.

CHAPTER 6

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

NTFPs play a crucial and vital role in enhancing rural life and providing food security to households. The NTFPs harvested in Ward 4 include honey, mushrooms, fruits, barks and fibres among others. Non-timber forest products contribute to rural livelihood in ward 4 economically, culturally and medicinally. Results suggest that NTFPs provide more a reasonable share of income annually together with other sources of income that the local people have like farming and non-farm activities. Factors that affect dependency of people on NTFPs include level of education, household size and employment type. Soil and land degradation, deforestation, habitat alteration, disruption of biodiversity, and disruption of ecological processes were effects of harvesting NTFPs in ward 4 of Matepatepa.

6.2 RECOMMENDATIONS

- Promote sustainable harvesting of NTFPs. Local leadership should engage with government authorities to ensure NTFPs are harvested sustainably.
- Provide capacity building on sustainable harvesting techniques and value addition.
- Integrate NTFPs within agriculture. This diversifies and strengthens rural livelihoods.
- More sustainable harvesting practices should be considered in order to avoid reduction in provision of forest products.

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Appendix 1 QUESTIONNAIRE

Dear Participant,

My name is Tariro Pamela Mapeto. A student at Bindura University Science Education. I am conducting a study on the contribution of Non-Timber Forest Products (NTFPs) to rural livelihoods in Matepatepa, Bindura. I would like to invite you to participate in this study by completing the following questionnaire. The purpose of this study is to identify the NTFPs harvested and used by rural communities, determine the contribution of NTFPs to rural livelihood, identify factors determining dependency on NTFPs, and identify effects of harvesting of NTFPs on the environment.

Section 1: Socio-Economic Characteristics

1. What is your age?

- a) 18-25 years
- b) 26-35 years
- c) 36-45 years
- d) 46-55 years
- e) Above 55 years

2. What is your gender?

- a) Male
- b) Female

3. What is your marital status?

- a) Married
- b) Single
- c) Divorced

4. What is your highest level of education?

- a) No formal education
- b) Primary education
- c) Secondary education
- d) Tertiary education

5. What is your occupation?

- a) Farmer
- b) Trader
- c) Artisan
- d) Other (please specify)

6. What is your monthly income? USD

7. How many people are in your household? members

8. How many children do you have? Children

Section 2: Identification of NTFPs

1. Have you ever harvested non-timber forest products in Matepatepa?

- a) Yes

b) No

2. Which NTFPs have you harvested?

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3. What are the different ways that you use NTFPs?

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4. How frequently do you harvest NTFPs?

a) Daily

b) Weekly

c) Monthly

d) Occasionally

e) Never)

5. What are the benefits of harvesting NTFPs for you and your family?

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Section 3: Contribution of NTFPs to Rural Livelihoods

1. How important are NTFPs to your livelihood?

- a) Very Important
- b) Important
- c) Neither important
- d) Not Important
- e) Useless

2. How much household income comes from the sale of NTFPs?USD

3. What do you use the money from the sale of NTFPs for?

- a) Buy food.
- b) Pay school fees.
- c) Buy livestock.

- d) Buy household property.
- e) Build
- f) ISALs
- g) Other

4. How do NTFPs contribute to food security in your household?

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5. What other sources of income do you have besides NTFPs?

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6. How has your standard of living improved since you started harvesting NTFPs?

- a) Increased

- b) Remained the same.
- c) Decreased

Section 4: Factors Determining Dependency on NTFPs

1. What are the factors that influence your decision to harvest NTFPs?

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2. What are the challenges that prevent you from harvesting NTFPs?

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3. What would happen if you were not able to harvest NTFPs?

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4. Do you have any alternative sources of income if you were not able to harvest NTFPs?
 - a) Yes
 - b) No

5. How has the availability of NTFPs changed over time?
 - a) Increase
 - b) Remained the same.
 - c) Decreased

Section 5: Effects of Harvesting NTFPs on the Environment

1. Do you think that the harvesting of NTFPs affects the environment?
 - a) Yes
 - b) No

2. If yes, how does it affect the environment?

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3. Are there any regulations in place to ensure sustainable harvesting of NTFPs?

a) Yes

b) No

4. What changes in the environment have you noticed since you started harvesting NTFPs?

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5. What steps can be taken to ensure the sustainable harvesting of NTFPs?

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Thank you for participating in this study. Your responses will help us gain a better understanding of the contribution of NTFPs to rural livelihoods in Matepatepa, Bindura.

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